Power, Responsibility and Justice

Practices of Local Stakeholder Participation in Flood Risk Management in England and Germany

Chloe Anne Begg

BA, MA, MSc.

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A thesis submitted to Lancaster University of the requirements for the degree of Doctor of Philosophy

"Without 'engaged' *and* 'empowered' communities'

living with floods simply will not work"

(Nye, Tapsell & Twigger-Ross, 2011: p.292, original emphasis).

Abstract

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Over the past few decades there has been an increasing interest in the active involvement of local stakeholders in the management of floods in Europe. Such involvement is seen as necessary as the management of floods becomes more complex. Management approaches now seek to include a range of potential measures to reduce risk in addition to structural defence measures (e.g. spatial planning, emergency management, property-level protection measures, etc.). Local stakeholder involvement is seen to be important because governments lack resources, both human and financial, required to deliver all these measures alone.

This thesis draws on a range of literature, concepts, theories as well as qualitative and quantitative data collected in England and Germany to discuss the implications that participative approaches have on the fairness of European flood risk management (FRM). As a result, the studies included in this thesis each provide a specific approach to understanding the role of local stakeholder participation in European FRM but taken together provide a rich and multi-sited contribution to current discussions and debates about environmental justice. Studies of environmental justice are interested in who is included and excluded from decisions related to the distribution of environmental goods (resources) and bads (risks). It is argued that fair decision-making processes arise when power is equally distributed between all (potential) participants (procedural justice). It is also argued that just procedures can lead to fairer distributions in resources and risks (distributional justice). This thesis highlights the difficulties of achieving such justice in practice.

I that participation in practice generally focuses on transferring responsibility to the local level at the expense of power at the local level. In addition, resources are distributed in such a way as to create and strengthen vulnerabilities related to flood risk. It is concluded that if European FRM is to become more just, investments need to be made to ensure that those who are made responsible for FRM (who are often also the most vulnerable to flood impact) accept that responsibility and have the resources required to fulfil that responsibility.

Acknowledgements

This PhD would not have conceptualised, carried out or completed without the encouragement and support of a number of people.

I would like to thank my supervisors, Gordon Walker and Rebecca Whittle for welcoming me when I was in Lancaster and providing me with the support and inspiration for the research that was to become core part of this PhD. After I registered for the PhD, your Skype calls kept me on-track and sane. Thank you for your kind words and unwavering support.

Thank you to Christian Kuhlicke for encouraging me to register to complete the PhD and always providing me with a space to air and develop my thoughts. You provided me with an endless supply of insights, inspiration and support throughout the last seven years and I am extremely grateful.

Thank you also to my colleagues, office-mates and co-authors Ines Callsen and Maximilian Ueberham. It was a joy to work with you. I am not sure what I could have done without your humour and support.

I would also like to thank Ilan Kelman for being so reliable, patient and supportive during our endless streams of email conversation.

Thank you to the European Commission for providing funding for the projects from which the data used in this thesis was drawn (European FP7 projects CapHaz-Net - Grant Agreement No. 227073 and emBRACE - Grant Agreement No. 283201). I would also like to thank the anonymous reviewers for their suggestions for improvements to the individual papers and my two examiners, Simon Batterbury and Sally Priest for your careful reading of my thesis, fruitful discussion and considered recommendations to the improvement of the thesis as a whole. Thank you also to all those people who took time to take part in the interviews and surveys used in this thesis. Without your insights and contribution, there would be nothing to write about.

Finally, and most importantly, I would like to thank Stephan for encouraging and motivating me throughout the entire process and for being the sounding-board for all of my ideas that needed to be verbalised. I wouldn't have been able to get to this point without you.

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Preface and candidate statement

The mechanisms of governance that define who is included in and excluded from decision-making processes have long fascinated me. Through this thesis I was able to explore the way that responsibility and accountability for the management of natural hazards is shared throughout society. This interests me because of the potential implications it has on flood risk exposure, vulnerability, resource distribution, equality and therefore justice.

Thus, in this thesis I investigated the implications that inclusive forms of decision-making, which ostensibly aim to engage and involve local stakeholders (such as local government, NGOs, community groups, businesses and residents) in the management of flood risk, have on justice. I combined the data and findings from my work within two European FP7 projects, CapHaz-Net: Social Capacity Building for Natural Hazards (2009-2012) and emBRACE: Building Resilience Amongst Communities in Europe (2012-2015). In doing so, I was able to draw on data from two European contexts: England and Germany. I also made use of a range of qualitative and quantitative data sources and analyses.

An alternative format to that of a traditional thesis was employed for this PhD by incorporating five journal papers for peer-review as the centrepiece (4 published and 1 in submission). Each chapter links to the main argument of the thesis, but may also be read as a standalone manuscript. They each include an abstract, literature review, methods, results, discussions and conclusions. These papers are supported by an introductory chapter (Chapter 1), a discussion of methodology (Chapter 2) and a concluding chapter (Chapter 8).

Chapter 1 presents the problem addressed by this thesis and locates the thesis within its academic context. It also links each of the individual papers to each other by providing the overall argument of the thesis. Chapter 2 provides an overview of the general approach used in the thesis and reflects on the different methods used. Chapter 3 is an empirical study which focuses on the implications that shifts in governance have on responsibility in England. Chapter 4 is also an empirical study which describes the effects that shifts in governance have on accountability in Saxony, Germany. Chapter 5 compares the opportunities for participation in England and Saxony and discusses the repercussions that these have on how resources and risks are distributed throughout society. Chapter 6 highlights the importance of participation in FRM by focusing on perceptions of responsibility of citizens who have experienced flooding in the past. Chapter 7 reviews existing empirical literature on local stakeholder participation in European FRM through an environmental justice framing and

provides recommendations for how issues related to responsibility and accountability might be addressed through participation. Finally, Chapter 8 brings everything together by discussing the conclusions of the thesis as a whole.

This thesis has been completed during the course of the degree of Doctor of Philosophy at Lancaster University in the discipline of Geography. The research used in this thesis was conducted during my employment at the UFZ in Leipzig, Germany. This work has not been previously accepted for a degree at Lancaster University or another institution.

Ultimately, I led and carried out the PhD. The decision to include the selected publications and responsibility for ensuring the coherence of this thesis was mine. One of my supervisors, Gordon Walker, was involved in writing one of the papers (Chapter 3). Rebecca Whittle, also my supervisor, provided comments on that paper. Both supervisors provided support in structuring of the thesis as well as providing comments on three of the four additional papers (Chapter 5, 6 and 7). My co-authors included my colleagues with whom I worked together with in the two European Projects from which the data for the papers was collected (Chapter 3, 4, 5 and 7). In addition, two co-authors were not involved in either of the projects; Torsten Masson, was involved due to his expertise in statistical analysis (Chapter 7) and Ilan Kelman, was involved in the conceptualisation of Chapter 4. My contributions to each of these papers are as follows:

Chapter 3:

Begg, C. (80%), Walker, G. (10%), & Kuhlicke, C. (10%). (2015). Localism and flood risk management in England: the creation of new inequalities?. *Environment and Planning C: Government and Policy*, 33(4), pp.685-702.

I wrote and led this paper. I developed the concept for this paper with support from Gordon Walker and Christian Kuhlicke. I designed, conducted and analysed the interviews as well as developed the four scenarios with the support of Gordon Walker.

Chapter 4:

Kuhlicke, C. (50%), Callsen, I. (30%) & **Begg, C**. (20%). (2016). Reputational risks and participation in flood risk management and the public debate about the 2013 flood in Germany. *Environmental Science and Policy*, 55, 318-325.

This paper was conceptualised by all authors. Christian Kuhlicke led this paper. The media analysis and interviews were conducted by Ines Callsen. I was involved in writing the introduction and concluding sections of the paper.

Chapter 5

Begg, C. (60%), Callsen, I. (20%), Kuhlicke, C. (10%), & Kelman, I. (10%). (2018). The role of local stakeholder participation in flood defence decisions in the United Kingdom and Germany. *Journal of Flood Risk Management*, *11*(2), 180-190.

(2017). The Role of Local Stakeholder Participation in Flood Defence Decisions in the United Kingdom and Germany, *International Journal of Flood Risk Management*. Online first.

The concept of this paper developed as a result of conversations I had together with Ilan Kelman. In order to empirically test the research questions that we developed, we drew on the same interview data that was used in Chapters 3 and 4. I wrote all sections except for the results section on Saxony, which I wrote together with Ines Callsen and Christian Kuhlicke. I conducted and analysed the interviews for the section on England (see Chapter 3) and Ines Callsen conducted and analysed all the interviews for the section on Saxony (see Chapter 4). Comments and suggestions made to the text and structure by all authors. Both of my supervisors also commented on early versions of the text.

Chapter 6

Begg, C. (60%), Ueberham, M. (10%), Masson, T. (10%), & Kuhlicke, C. (20%). (2016). Interactions between citizen responsibilization, flood experience and household resilience: insights from the 2013 flood in Germany. *International Journal of Water Resources Development*, 33(4), 591-608.

To analyse quantitative survey data, I came up with the proposal to develop a dynamic model based on Protection Motivation Theory. The model and the concept of the paper were further developed together with Christian Kuhlicke. I wrote the introduction section with

comments from Christian Kuhlicke. I conducted the initial correlation analysis together with Christian Kulhlicke and Maximilian Ueberham. The review of the paper requested a more in depth data analysis than the one we had previously conducted. This required external support; particularly in regards to running the regression analyses. Therefore, due to his expertise in statistical analysis, we invited Torsten Masson to contribute to the paper. The new data analysis was carried out by Torsten Masson and Maximilian Ueberham. I wrote the discussion and conclusions section in collaboration with Christian Kuhlicke. Both of my supervisors also commented on early versions of the text.

Chapter 7

Begg, C. (100%). (2018). Power, responsibility and justice: a review of local stakeholder participation in European flood risk management, *Local Environment*, DOI: 10.1080/13549839.2017.14221

I developed the concept as well as completed all of the writing of this paper. Both of my supervisors commented on early versions of the text.

Chloe Begg

Prof. Gordon Walker

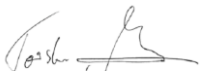
Dr. Rebecca Whittle

Dr. Christian Kuhlicke

Ines Callsen

Maximilian Ueberham

Dr. Ilan Kelman



Thorsten Masson

Chapter 1 Introduction

This chapter presents the problem dealt with by the thesis. It also provides an outline of the thesis including a summary of the five original papers that constitute its core.

1.1 Justice and flood management

Every year, flooding causes damage and distress to communities across the world. In 2013, for example, 37% of overall losses worldwide from natural catastrophes were flood-related. This is substantially higher than the 22% average for the period since 1980 (Munich Re, 2014). However, despite large financial investments in risk reduction efforts, loss of life and material damage continue to occur (Kundzewicz, Pińskwar, & Brakenridge, 2017). Such information implies that more needs to be done in order to reduce the damage to society caused by floods.

This thesis aims to understand the practices that are employed to manage the risk of flooding and contribute to existing discussions from the discipline of geography about how the management of flooding in Europe might be improved. Geographers have long sought to understand the causes and effects of flooding. As a result of this research, flood damage is considered to be socially constructed rather than caused by a purely 'natural' event. For example, Gilbert White's *Human Adjustment to Floods* (White, 1945) developed a human-ecological approach to hazards research which aimed to understand the relationship between physical processes and socio-demographic factors and concentrated specifically on solving societal problems (also see Kates, 1971; Montz & Tobin, 2011; Malatesta, 2013). Since then, research has developed to focus on social vulnerability to impacts caused by events such as flooding. Vulnerability is understood as a human induced condition caused by the availability of resources as well as policies that marginalise some groups (Blaikie, Cannon, Davis and Wisner, 1994). Therefore, people who are considered to be vulnerable are those who are most likely to be negatively affected by hazards such as floods as a result of their susceptibility and exposure to the hazard but also their capacities (or lack thereof) to resist and become resilient to it (e.g. Blaikie, Cannon, Davis & Wisner, 2014; Cutter & Emrich, 2006; Tapsell, McCarthy, Faulkner & Alexander, 2010; Kuhlicke, Steinführer, Begg & Luther, 2012). With the prospect of climate change and cuts to government funding, there is an increasing desire to draw on a wide range of capacities from different stakeholders and share the burden of flood management across a range of actors at different social scales.

To contribute to existing human geographical discussions, I discuss the implications that this burden sharing has on the fairness of flood management for those who are most vulnerable to flood impacts. I do so by employing an environmental justice framing. Studies of environmental justice are interested in discussing why the environment is a source of well-being for some and a risk for others, why some people have more access to environmental resources than others and how risks and resources should be distributed (Scholsberg, 2013). The environmental justice discourse was initiated as a result of debates in relation to human-made hazards (e.g. waste management), but it has recently turned its focus towards natural hazards (Walker, 2012). Similar to the literature on vulnerability, the environmental justice literature understands damage caused by flood events to be socially constructed and, therefore, potentially unjust (Lindley et al. 2011). The value of framing flooding as an environmental justice issue allows for debates about why such vulnerabilities and inequalities exist and whether they can be considered as fair, or not (Walker & Burningham, 2011; Walker, 2012; Adger, Quinn, Lorenzoni, & Murphy, 2016).

Although the advent of Hurricane Katrina can be seen to have stimulated a discussion about justice in regards to flooding in the USA (e.g. Walker, 2012; Bullard and Wright, 2009; Sanchez & Brenman, 2008; Morse, 2008; Cutter 2006; van Gigch, 2008; Maantay & Maroko, 2009; Collins and Grineski, 2017; Montgomery and Chakraborty; 2015; Shiverly; 2017, just to list a few), literature that evaluates flood-related justice in the European context is comparatively sparse (Johnson, Penning-Rowsell & Parker, 2007; Lindley et al. 2011; Walker & Burningham, 2011; Walker, 2012; Thaler & Hartmann, 2016; Adger et al. 2016). This thesis contributes to existing discussions about justice and European flood risk by discussing empirical examples of the management of floods. Walker (2012) distinguishes between discussions about evidence-based vulnerabilities and inequalities, which provide a description of what the situation 'is' and claims about those vulnerabilities and inequalities in terms of justice, which transforms the discussion into normative arguments for how things 'ought' to be. This distinction is useful and is used to structure the thesis.

It is important to clearly state that I did not commence this thesis with a focus on environmental justice. Instead, this focus developed as a result of the thesis process. My starting point was an interest in describing the role of local stakeholder participation in the management of floods in Europe. The data that I drew on to investigate this role was collected within the framework of two separate European projects, which focused broadly on community resilience (see Chapter 2). The data provided allowed me to investigate local stakeholder participation through a number of different theoretical and conceptual lenses,

which are discussed in four original papers included in this thesis (Chapters 3-6). One thing that these papers all have in common is that they provide examples of flood-related decision-making processes and evidence of vulnerabilities and inequalities that arise as a result of these processes. A fifth paper (Chapter 7) brings these findings together by employing an environmental justice framing to discuss how local stakeholder participation in the management of floods is and ought to be. Therefore, this thesis not only provides single contributions to specific areas of human geographical debate in regards to local stakeholder participation in European flood management, taken together, they also provide a contribution to discussions about environmental justice.

There are no agreed upon definitions of justice (Walker, 2012). Often the terms justice, fairness, and equality are used interchangeably in the literature (Johnson et al. 2007). In this thesis I make the distinction between the terms as follows: on the one hand, the terms unequal and uneven describe distributions of decision-making power, resources and risk, whilst on the other hand, the terms fairness and justice provide a language for evaluating these distributions. There are a number of influential philosophical traditions of social justice which can be drawn upon when discussing whether flood management is fair or not (i.e. utilitarianism, liberalism, and egalitarianism). Utilitarians aim at maximising the aggregate happiness of individuals (Mill, 2010; Johnson et al. 2007). For flood management this means that the benefits offer the greatest gain for the society (Thaler & Hartmann, 2016). Liberals place their faith in the free market (Hayak, 1944). This promotes individual responsibility instead of state intervention in the management of floods (Thaler & Hartmann, 2016). Egalitarians focus on the equal distribution of resources across individuals (Rawls 1971; Sen, 1992). In regards to flood management this means that resources should be targeted at the most vulnerable individuals in society (Johnson et al. 2007). These philosophical traditions manifest when discussing whether the resources for managing floods and the risk of flooding are fairly distributed (distributional justice) and how policies and decision-making processes deal with flood inequalities (procedural justice) (Johnson et al, 2007; Walker & Burningham, 2011; Walker, 2012; Thaler & Hartmann, 2016).

It may not be possible to ensure that the exposure to flood risk is distributed evenly as floods are natural and unpredictable events which occur in some places rather than others rather than being intentionally spreadable across space (Walker, 2012). However, it is possible to ensure that resources, such as state support and finances, for managing risk are fairly distributed. Decision-makers are faced with the challenge of having to decide which factors

to take into account when distributing resources to improve the management of floods. The question is who is likely to benefit from different perspectives of justice?

Studies of social vulnerability have made a strong case for the need to not just take exposure and the broad impacts of floods (e.g. financial damage and death – although these factors are also important) into account when developing adaptation policy but also how people at risk perceive, cope with and adapt to those impacts (Tapsell et al. 2010; Kuhlicke, Scolobig, Tapsell, Steinführer & De Marchi, 2011; Lindley et al. 2011). Studies on flood justice and vulnerability in the UK have mapped out social vulnerabilities across communities in England and Wales and found that flood exposure does not always result in flood vulnerability (Lindley et al. 2011; Walker & Burningham, 2011). Large cities like London are highly exposed to flood risk but were found to have low scores in social vulnerability (Lindley et al. 2011). Instead, it is the communities that are exposed and deprived that were found to be most vulnerable due to limited capabilities to prepare for, respond to and recover from flooding (Tapsell &Tunstall, 2008; Lindley et al. 2011; Walker & Burningham, 2011; Collins & Grineski, 2017).

Therefore, studies of environmental justice and flooding provide a strong argument for policies which make sure that the all vulnerabilities (both of communities with large populations/valuable infrastructure as well as communities with small populations/lack of valuable infrastructure) are addressed when distributing resources (both human and financial) to manage floods. Large cities with large populations and valuable infrastructure are likely to receive state assistance which leads to low vulnerability scores. However, small communities with small populations and a lack of valuable infrastructure are less likely to receive state assistance and therefore, are more likely to receive a high vulnerability score because they are less likely to be able to protect themselves for flood damage. Although it is important that exposed large cities receive resources to manage the risk that floods pose, it is also important that communities with small populations and lack of valuable infrastructure are not disadvantaged by the decisions being made. ***I refer to small communities that are exposed to flood risk but do not receive state support and/or those who do not have the motivation or resources to become involved in decision-making processes or to take action to prepare and protect themselves as those who are most vulnerable to flood damage.***

This line of argumentation reflects an egalitarian approach to risk management. Based on this approach, this thesis assesses the extent to which attempts to distribute resources for flood management prioritise those who are most vulnerable (Rawls 1971) and whether the

most vulnerable have the capabilities required to cope with and adapt to flood-related impacts (Sen 1992).

Arguably, the reason that those who are the most vulnerable are the most vulnerable in the first place is because of the current risk-based approach to flood management. The focus on risk-based management gained acceptance in the early 1990s. In his book about the "Risk Society", Beck (1992) described the process whereby modernisation was creating a culture of manufactured risk, whereby human actions led to environmental risks such as, Chernobyl and the Love Canal. However, as a result of human engineering and climate change, natural hazards, such as floods, as previously mentioned, are increasingly perceived as resulting not just from non-human forces but as something that is created and therefore can be controlled or addressed by humans (Wachinger et al. 2013). However, rather than controlling nature by employing reactive approaches which focus on structural measures, a more proactive and holistic approach called flood risk management (FRM) has gained priority over the last two decades (Johnson & Priest, 2008; Nye, Tapsell & Twigger-Ross, 2011). The increase in severity and frequency of flood events and the corresponding recognition that not all floods can be defended against; have in part motivated this change of focus (Johnson & Priest, 2008). As a result, FRM focuses not just on structural measures such as dikes and water storage but also on non-structural measures such as spatial planning, relocation, building codes, infrastructure design, forecasts, warnings, insurance, and communication (e.g. encouraging citizens to take measures to inform, prepare and protect themselves). The implementation of such a breadth of measures requires the involvement of a wide range of stakeholders (Walker et al, 2010). Burden sharing is necessary not only as a result of the possibility of the increased severity and frequency due to climate change, but also because of cuts to state funding. As a result, a redistribution of responsibility across different levels of society is taking place. This situation poses the question of who ought to have the power to decide which measures should be implemented and how resources are distributed.

Currently, decisions are taken at the national level in regards to the distribution of resources (e.g. objective, statistical cost-benefit analyses). These decisions aim to provide distributive justice to the greatest number (utilitarianism). At the same time, the involvement of stakeholders at the local level is seen to play an important role in ensuring community resilience (liberalism). This thesis investigates how justices, both procedural and distributive, are framed at different scales and the impacts that these different definitions of justice have on social vulnerability local level. Based on this, I make an argument for the importance and relevance of an egalitarian approach to FRM, which provides support to local stakeholders by

creating space for participation in decision-making processes (procedural justice) and assistance for the implementation of FRM measures, especially for the most vulnerable, in order to ensure that social impacts of floods are reduced (distributive justice).

I use the term local stakeholder to refer to any group or individual who is potentially affected by the effects of flood-related decision-making, either directly or indirectly (Freeman, 1984). In the context of FRM, this includes local government, NGOs, local businesses, community groups and local residents.[1] Whether local stakeholders become involved in FRM is believed to be influenced by the perceived acceptability of the risk. Local stakeholders will request state action and/or take personal action if they perceive a risk as being unacceptable (Fischhoff, Lichtenstein, Slovic, Derby & Keeney, 1984; Buchecker, Salvini, Di Baldassarre, Semenzin, Maidl & Marcomini, 2013). In other words, individuals must perceive the existence of a risk and that the potential impact of a given hazard as being severe enough to warrant their involvement in the management of floods. ***By involvement, I refer to the active engagement of local stakeholders in decision-making processes as well as individuals undertaking measures to prepare and protect themselves.*** Much effort has been spent on promoting the importance of risk communication and participative activities which aim to increase risk perception and encourage action (Maidl & Buchecker, 2015). However, perceived responsibility also plays a role in the types of involvement local stakeholders will be willing to undertake (Lindell & Perry, 2000; Paton, 2003; Soane et al., 2010; Terpstra & Gutteling, 2008).

I am interested not just in the influence that perceived responsibility has on local stakeholder involvement in FRM but also, more generally, in the effect that specific examples of local stakeholder responsibility for FRM has on the fairness of FRM.

I argue that, in some cases, local stakeholders are required to take responsibility for their own preparedness and protection without having the power to influence the definition of their responsibility and in the absence of external support. This responsibility may be taken up by those who feel responsible (i.e. perceive the risk, believe that their actions can reduce flood risk and have the resources to be able to take measures to prepare and protect themselves) but unfortunately, not all local stakeholders feel responsible. This thesis provides explanations for why local stakeholders may or may not feel responsible. These findings have implications for the fairness of FRM, particularly in regards to ensuring that the most

[1] The papers included in the thesis focus on different types of local stakeholders (e.g. Chapter 7 only focuses on local residents, whereas Chapter 3 focuses on all the actors listed above). However, the focus is clearly stated in each of the papers.

vulnerable can gain external support to be able to profit from FRM. Participation is potentially an approach for fostering responsibility, assisting local stakeholders in their involvement in FRM and, as a result, improving distributional risk.

Although it is acknowledged that the way in which environmental problems are governed (procedural justice) plays an important role in the way resources and risks are distributed (distributional justice) (Schlosberg, 2007; Walker, 2012; Adger et al. 2016), few scholars have focused explicitly on the relationship between opportunities for those at risk to participate in FRM and distributional justice (see Johnson et al. 2007 for an exception). In order to fill this gap, this thesis identifies and evaluates the influence that attempts to involve local stakeholders in the planning and implementation of flood management measures have on whether resources are distributed in such a way as to ensure that all individuals have the ability to prepare for and protect themselves from flood impacts. Importantly, although forms of protest from local stakeholders against the state play an important role in local stakeholder influence on decision-making, I am particularly interested institutionalised opportunities for local stakeholders to participate and influence decision-making. Existing literature suggests that such opportunities can improve decision-making outcomes.

In the literature on local stakeholder participation in European FRM planning, local stakeholder participation is seen to lead to a number of benefits such as, social learning (Pahl-Wostl, 2006), active citizenship, community empowerment and the improved acceptance and quality of decisions, which improves legitimacy (Webler et al. 1995; Chambers 2002; Paton 2007; Walker, Whittle, Medd & Watson, 2010; Featherstone et al. 2012). Such benefits can be enabled through decentralisation, stronger local government, and improved local democracy (Featherstone, Ince, Mackinnon, Strauss & Cumbers, 2012; Painter, Orton, MacLeod, Dominelli & Pande, 2011). In addition, it is argued that rather than requiring local stakeholders to self-organise and take responsibility, decisions related to the definition of problems and their solutions should be deliberated and co-produced (Mees et al. 2016). By drawing on more varied skills, knowledge and resources (both human and financial) (Paton, 2007; Walker et al, 2010), trust, communication and collaboration among and between various actors can be promoted (Wachinger & Renn, 2010). All these features are seen as essential for the improvement of the management of natural hazards (Kuhlicke et al. 2012). Moreover, Arnstein (1969) argued that “participation without redistribution of power is an empty and frustrating process for the powerless” (p. 216), a statement continually verified by more recent works on participatory processes (Cooke & Kothari, 2001; Hickey & Mohan, 2004) including with respect to floods (Wisner 1995). The existence of

institutionalised opportunities for participation may delegitimise non-institutional forms of participation such as protest by depriving local stakeholder involvement of it its "proper political dimension" (Žižek, 2002). In other words, participation without power means that, although local stakeholders can be involved in decision-making processes, they do not have the power to affect their situation. As a result, their input leads to little change regarding the predefined status quo (Allmendinger & Haughton 2010; Featherstone et al. 2012). Therefore, if local stakeholder participation is to influence the final decision and improve the acceptance and quality of the outcome, it should encourage deliberation and co-production from the planning to implementation stage of the FRM decision-making process. In other words, ***participation should aim to involve local stakeholders in the definition of their responsibility for FRM as well as the identification of resources (both human and financial) that can be utilised so that local stakeholders can effectively fulfil their responsibility for FRM.***

In order to assess the fairness of the examples of participation processes presented in this thesis, I have drawn on the principle of procedural justice. In the environmental justice literature procedural justice is linked to holding or controlling power (Green & Penning-Roswell, 2010; Walker, 2012) and the rights of those, who can effect or who are affected by a decision, to be involved in that decision (Shrader-Frechetter, 2002). Hunold and Young (1998) put forward five principles of procedural justice which promote (1) inclusive and (2) fair processes, which involve participants at each stage of the decision-making process with the aim to (3) eliminate disparities and (4) promote joint decision-making between participants which also (5) acts as the final decision.

To understand the influence that existing practices of local stakeholder involvement in FRM have on the ability of those who are most vulnerable to prepare and protect themselves against flood impacts, I identify who is involved in the decision-making processes related to the planning and implementation of FRM-related measures, and how. In a first step, this analysis provides the basis for a discussion about the power that different stakeholders have to influence decisions and the effects that this has on how resources and, therefore risk, is distributed. In a second step, drawing on the environmental justice discourse, I discuss how resources might be distributed in order to ensure fair decision-making processes and encourage the fair distribution of risks. The following subsection briefly describes the opportunities for participation in two European contexts before providing an overview of the issues that arise in regards to justice that will become the focus of this thesis.

1.2 Justice and flood risk management in two European geographical contexts

The involvement of local stakeholders in the management of flood risk has been supported at the global level through international frameworks (Agenda 21, Hyogo Framework, and Sendai Framework) as well as at the European level through European Directives (2000/60/EC; 2007/60/EC). I focus on empirical examples of local stakeholder participation in FRM in two European geographical contexts. Specifically, I focus on England instead of the UK as significant differences in FRM exist for each constituent country (England, Northern Ireland, Scotland, and Wales). I also focus on Saxony and Bavaria instead of Germany as national agendas are set for FRM, but the responsibility for implementing these agendas is placed in the hands of the *Bundesländer* (i.e. federal states). These regional settings are all caught up in the Europe-wide process of shifts away from solely focusing on structural measures towards FRM (Nye et al. 2011; Schanze, 2006; Thieken et al. 2016). I have chosen these countries because they both place emphasis on the importance of involving local stakeholders in the management of flood risk. These changes at the national level have different histories and motivations which I will briefly discuss below.

England

At the time of research, participation had become a prominent topic in various policy contexts in England. Even before the introduction of the Flood Risk Regulations (2009) and the Flood and Water Management Act (2010), which translates the European Floods Directive into national law, there was an increasing emphasis on the government placing boundaries around the state's ability to protect its citizens entirely from flood damage (e.g. "Making space for water": Defra, 2005). Instead, the need for local stakeholders to play a larger role in managing floods was articulated (Pitt, 2008; EA, 2009). The focus on decentralisation of responsibility for services previously delivered by the state goes beyond FRM and represents a general ethos of the British Government. The "Big Society" agenda emphasised the importance of local stakeholder involvement in solving local problems (Cameron, 2010). This agenda was translated into regulation through the Localism Bill (2010) and later the Localism Act (2011), which endorses localism on the premise that local stakeholders are "those best placed to find the best solutions to local needs" (Localism Bill, 2010: p.2). All of these documents have had an impact on the way in which floods are managed, strengthening the role of the local authority and stressing the need to involve stakeholders at the local level. Local stakeholders such as local government, businesses and residents have been encouraged to become involved in providing funding for flood defence schemes (Flood and Coastal Resilience Partnership Funding; EA, 2011), organised groups can

become involved in spatial planning (through a Neighbourhood Development Plan or a Neighbourhood Development Order; Localism Act, 2011, Schedule 9) as long as their inputs do not conflict with the goals of Local Plans (e.g. they cannot reduce planned developments but can influence how they are implemented) (CPRE, 2012), and they are encouraged to take action to prepare and protect themselves (Cabinet Office, 2011).

Localism has also been linked to the 'Third Way' approach which was strongly promoted in the UK by the Blair Government in the late 1990s-2000s (Coaffee & Johnston, 2005). The 'Third Way' aims to find a balance between unleashing enterprise and market forces and ensuring the just provision of key services (Coaffee, 2005). However, Localism has also been accused of legitimising neo-liberal policies, which aims to decentralise government and allow the market to control the provision of public services (Kisby, 2010). The impacts of Localism on flood management-related justice are investigated in this thesis.

Germany

In Germany, the Floods Directive was transferred into national regulation through the German Federal Water Act (2010) (*Wasserhaushaltsgesetz*). The states (*Länder*) are officially responsible for the management of floods. Newig, Challies, Jager & Kochskämper (2014) presents three different approaches to the way in which Flood Risk Management Plans (FRMPs) are developed across the *Länder*: 1) some *Länder* have chosen to adopt the governance structures which are already in place for the implementation of the Water Framework Directive (2000/60/EC); 2) some *Länder* have employed rather restricted forms of participation; and 3) some *Länder* have opted for intensive stakeholder participation. In regards to the two *Länder* focused on in this thesis, Bavaria provides an example of the first approach. In Bavaria FRMPs are developed at the Regional level through Regional Water Forums, which include stakeholders representing civil protection, cultural heritage and the insurance sector, but deems participation with individuals inappropriate (Newig et al. 2014).

Saxony, on the other hand, has opted for the second approach. Participation generally takes place through a *Planfeststellungsverfahren* (a public approval process; PFV) when structural measures have reached the planning stage. The PFV not only applies to flood protection measures, but to all larger planning processes (e.g. highway construction). It is embedded in the *Verwaltungsverfahrensgesetz*, which is a law that regulates interactions between public administrations and the public. The aim of the PFV is to develop a legally binding plan. Within this highly formalised process, development plans must be publicly available for written consultation with various stakeholder groups including affected municipalities, exposed

citizens, environmental groups and other stakeholder groups. These submissions must be considered, and written responses must be provided by responsible authorities. In some cases, authorities can replace the *Planfeststellungsverfahren* with a *Plangenehmigungsverfahren* (e.g. when an Environmental Impact Assessment is found to be unnecessary; WHG §68). The latter approval process aims at accelerating the planning process. It does so by excluding participation from the planning process. This means that public participation is neither foreseen in the decision-making process nor in the assessment of environmental impacts.

However, despite limitations to participation in decisions related to structural measures, participation is desired in regards to individual preparedness and protection (e.g. for businesses and residents). In Germany, for example, residents are required by law to prepare and protect themselves against potential flood damage (WHG, 2009).

Power, responsibility and justice

Despite the emphasis on the importance of and benefits related to local stakeholder participation in theory and policy, through the research underpinning this thesis I have concluded, that there are limited practical benefits. There is a general lack of evidence, in the data presented in the thesis but also in the wider literature, which provides concrete examples of ***deliberative and co-productive*** participation between the state and local stakeholders.

The brief country overviews presented above show that while local stakeholder participation in formal FRM planning-related decisions is state-driven and restricted in scope and influence, there is a clear interest in ensuring local stakeholders take responsibility for the implementation of state-defined measures both in regards to flood defence funding (in England), and through the take up of personal mitigation measures (i.e. the measures taken to protect and prepare oneself and one's property – flood protection wall, check valves, installation of a pump, etc. – before a flood event in both countries). I am concerned that the examples of local stakeholder involvement, presented in this thesis, may result in the "privatisation of risk" (Steinführer et al. 2008) in which local stakeholders are expected to take responsibility without attention to whether they have the resources or motivation to fulfil this responsibility, rather than a balanced and 'just' approach to FRM.***I use the term responsibilisation in this thesis to refer to the emphasis placed by the state, at the European and national levels, on the importance of local stakeholders taking responsibility for flood risk through becoming more involved in FRM decision-making processes and***

taking action to prepare and protect themselves. At its core, this thesis investigates the way in which different local stakeholders perceive opportunities to participate and responsibilisation in two European contexts. I highlight a number of issues related to how power, resources and risks are distributed across different scales.

I argue that driving forces of local stakeholder involvement in FRM presented in the thesis are based on a desire to achieve goals and delivering plans which have been pre-defined by the state (Watson, 2009), rather than genuinely involving local stakeholders in the co-production of democratic definitions of the problem and solution (Swyngedouw, 2009). As a result, local stakeholder involvement in FRM is unable to ensure the fair distribution of power, resources and risk. This is because of the lack of power provided to local stakeholders in decision-making processes as well as a preoccupation with responsibilities that require local stakeholders to become involved in FRM without effectively dealing with perceptions of responsibility or building the capacities needed for local stakeholders to become involved and reduce flood impacts. Based on the findings of this thesis, I provide recommendations for future local stakeholder participation with the aim of improving justice and FRM.

1.3 Boundaries of the study

This thesis contributes to discussions about specific types of local stakeholder involvement in FRM (e.g. involvement in decision-making processes – i.e. flood defence, spatial planning and emergency management – as well as personal mitigation measures to prepare and protect oneself.

I acknowledge that in addition to perceiving oneself as responsible and believing that one's involvement can make a difference in regards to the level of flood risk, compensation may also play a role in vulnerability and equality in regards to resilience and recovery (e.g. the perception of physical and psychological loss which results from flood experience) (see Deeming et al. 2012). However, due to data availability, an in depth analysis of the effects of compensation and insurance is not provided here. Moreover, this thesis does not provide an evaluation of the effectiveness of specific personal mitigation measures. Instead, this it focuses more generally on the motivations for and perception of local stakeholder responsibility in regards to becoming involved in decision-making processes and taking measures to prepare and protect oneself from flood-related damage and how this influences the fairness of decision-making procedures and risk distribution.

In addition, this thesis focuses on pluvial and river rather than coastal flooding in Germany. This is because of the location of the German example (Saxony and Bavaria), which are both

land-locked states. The English example represents a broader focus on flood-related policy (e.g. Partnership Funding and Neighbourhood Planning) rather than examples of specific types of flood events.

The following subsection presents the research questions addressed in this thesis before providing an overview of the five original papers which constitute the core of this thesis.

1.4 Research questions and an overview of the original papers

To summarise the central focus emerging from the above discussion, in this thesis I investigate the implications that more inclusive forms of decision-making have on justice in relation to FRM. In order to evaluate the implications of local stakeholder responsibilisation on fairness of FRM and provide recommendations for ways forward, I provide answers to the following questions:

1) What *is* the role of local stakeholders in FRM processes, in principle and in practice (procedural justice)?
2) How are resources and risks distributed as a result of FRM decision-making processes, particularly in relation to patterns of vulnerability and equality (distributive justice)?
3) What role *should* local stakeholder participation play in the reduction of flood risk?

The following section provides an overview of the original papers included in this thesis. Each paper presents specific arguments and findings, which when taken together can be used to provide answers to the above questions.

1.4.1 Paper 1: Chapter 3

Title: Localism and flood risk management in England: the creation of new inequalities?

Authors: Chloe Begg[1], Gordon Walker[2], Christian Kuhlicke[1]

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Keywords: Localism, Big Society, British politics, risk governance, inequality, responsibility, vulnerability, resilience

Published: **Begg, C.,** Walker, G., & Kuhlicke, C. (2015). Localism and flood risk management in England: the creation of new inequalities?. ***Environment and Planning C: Government and Policy***, 33(4), pp.685-702.

This study was conducted in 2012 as part of the CapHaz-Net project. Walker et al. (2010) characterised shifts away from government to governance as a mixture of multiple actors, networks and partnerships; new forms of authority and control; and multi-level governance structures. In order to understand the implications of these changes in the way natural hazards are managed, I focused on the implementation of the Localism Act (2011). I did this by conducting twelve interviews with expert actors who work in the fields of spatial planning, FRM, and community engagement. At the time of research the Act had only recently been implemented so it was possible to gain a first impression of how the interviewees perceived the changes and their implications for FRM. Generally, the Localism Act requires local actors to take more responsibility for delivery of a range of services including FRM measures.

The study focused on three areas of FRM that were likely to be affected by the changes in legislation: 1) spatial planning, 2) flood defence and 3) emergency management. It sought to highlight the social capacities required to meet the aims of shifts towards localism. It was found that in order to shift responsibility to local actors, resources and motivation are required. This paper developed four potential future scenarios based on the findings.

The contribution to this thesis is the finding that although attempts are made to involve local stakeholders, fairly distribute finite funds and take disadvantaged communities into account, the example of local stakeholder responsibilisation presented in this study may still produce inequalities. These inequalities mean that only communities and individuals that have motivation and resources available to take up responsibility are likely to benefit from improvements to FRM. Although the state may argue that local stakeholders need to take a more active role in the management of floods, this normative expectation is not a given. So to ensure that such responsibility is accepted and acted upon, support may be required; particularly in communities that lack resources and motivation to become actively involved in order to deal with inequalities. Such support could improve the fairness of FRM as those who are most vulnerable are not left to deal with flood risk on their own.

1.4.2 Paper 2: Chapter 4

Title: Reputational risks and participation in flood risk management and the public debate about the 2013 flood in Germany

Authors: Christian Kuhlicke, Ines Callsen, Chloe Begg

Department of Urban and Environmental Sociology, Helmholtz Centre for Environmental Research GmbH – UFZ, Permoserstrasse. 15, 04318, Leipzig, Germany

Keywords: Risk governance, Conflict, Media analysis, Blame, Accountability, Stakeholder

Published: Kuhlicke, C., Callsen, I., & **Begg, C**. (2016). Reputational risks and participation in flood risk management and the public debate about the 2013 flood in Germany. ***Environmental Science and Policy***, 55, 318-325.

This study was conducted as part of the emBRACE project. The case study of Saxony, Germany provides an example of a situation where local participation exists but responsibility remains in the hands of the state. This paper discusses the repercussions of such a distribution of power. It presents the results of a media analysis and stakeholder interviews. It was found that the institutional setting presented in the study not only limits local stakeholder participation, it also provides the possibility for decision makers to shift accountability and blame to local stakeholders in the event of a flood.

As a result, **the contribution of this paper to the thesis** is the finding that local stakeholder participation in Saxony, Germany, leads to distributions of accountability. Although, local stakeholders do not have the power to influence decisions, they are still blamed for stalling decision-making processes which led to large flood damage as a result of the 2013 floods. This is problematic because it creates conflict between the state and local stakeholders rather than risk reduction for those who are most vulnerable. In this case, the opportunity for participation has resulted in the state and local stakeholders being preoccupied with managing reputational risks (Rothstein et al, 2006; Power, 2010), rather than flood risks. This situation strengthens inequalities in relation to power between stakeholders but also in regards to the distribution of resources and risk.

1.4.3 Paper 3: Chapter 5

Title: The Role of Local Stakeholder Participation in Flood Defence Decisions in the United Kingdom and Germany

Authors: Chloe Begg[1] [2], Ines Callsen[1], Christian Kuhlicke[1] and Ilan Kelman[3]

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Keywords: Flood defence, Participatory processes, Public engagement, Risk governance

Published: Begg, C., Callsen, I., Kuhlicke, C., & Kelman, I. (2018). The role of local stakeholder participation in flood defence decisions in the United Kingdom and Germany. *Journal of Flood Risk Management*, *11*(2), 180-190.

To compare the implications of local stakeholder responsibilisation in England and Saxony, Chapter 5 combines the empirical research collected in Chapter 3 and 4. It does so to focus on the outcomes of opportunities for local stakeholders to participate and whether such opportunities might lead to a reduction in flood damage. It was found that institutional structures, which do not allow local stakeholders to meaningfully take part in discussions about flood risk or the identification of solutions, may lead to a reduction in damage in areas that receive structural measures. However, in areas that cannot receive structural measures, the practices of participation described in both England and Saxony, Germany were found to create boundaries for participation which lead to conflict and frustration in Saxony and may increase inequalities in both locations.

The contribution of this paper to the thesis is the finding that although local participation is implemented differently in each case study, both examples show that formal decisions related to flood defence restrict the influence that local stakeholders can have on decisions and potentially institutionalise inequalities by providing structural measures to those who can afford it (in England) or those who are assessed by the state as being most worthy of tax-payer spending (in Saxony). Hence, injustices arise when alternatives to flood defence are not provided to those at risk who cannot receive state-provided defence measures. Alternative measures are required in order to ensure that everyone has the ability to mitigate against and prepare for flood impacts. In other words, alternative measures are required to improve the fairness in FRM. This raises questions in regards to whether participation is being used to its full potential.

1.4.4 Paper 4: Chapter 6

Title: Interactions between citizen responsibilization, flood experience and household resilience: insights from the 2013 flood in Germany

Authors: Chloe Begg[1 2], Maximilian Ueberham[1], Torsten Masson[1 3] and Christian Kuhlicke[1]

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Keywords: Participation, flood risk management, governance, household survey, responsibility

Published: **Begg, C.,** Ueberham, M., Masson, T., & Kuhlicke, C. (2016). Interactions between citizen responsibilization, flood experience and household resilience: insights from the 2013 flood in Germany. ***International Journal of Water Resources Development***, 1-18.

One example of an alternative to structural measures, and an aspect of local stakeholder responsiblisation that is present in both England and Saxony, is the emphasis on the importance of local stakeholders taking responsibility for their own preparedness and protection. A case study on resilience in Germany as part of the emBRACE project focused on the experience of households at risk of flooding. This paper assesses both the motivation of local stakeholders to take responsibility for FRM and the impacts of local stakeholder responsibility by surveying households that have taken personal measures and experienced flooding after such measures were taken. Specifically, chapter 6 analyses 889 household surveys from Saxony and Bavaria, Germany by developing and testing a dynamic model so as to understand the effect that flood experience has on the motivation of households to take part in the management of floods. This study found that flood experience plays an important role in whether households feel responsible and are motivated to play an active role in FRM.

The contribution that this paper provides to this thesis is the finding that households that do not feel responsible for FRM, or believe that their personal action cannot reduce flood risk, are likely to be those who have experienced severe flooding in the past. This finding suggests that those who are most vulnerable are likely to require support in order to improve their ability to mitigate against and prepare for flood impacts. This is because people who experienced severe flooding in the past may not be motivated to take action in the future. However, they are interested in becoming involved in FRM-related decisions. Therefore, local stakeholder participation provides an opportunity to address issues related to fairness and, therefore, justice by discussing FRM measures with those who are most vulnerable. Such discussions are potentially necessary if residents are expected to take up responsibility.

1.4.5 Paper 5: Chapter 7

Working title: Power, Responsibility and Justice: a Review of Local Stakeholder Participation in European Flood Risk Management

Author: Chloe Begg

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Keywords: Environmental justice, Flood Risk Management, Vulnerability; Fairness; England, Germany, the Netherlands

Published: **Begg, C.** (2018): Power, responsibility and justice: a review of local stakeholder participation in European flood risk management, ***Local Environment***, DOI: 10.1080/13549839.2017.1422119

To gain a deeper understanding of the potential roles of local stakeholders in FRM, Chapter 7 focuses on the results of a literature review of 30 European empirical studies which provide examples of institutionalised opportunities for participation for local stakeholders in decisions related to FRM. This literature review was conducted towards the end of the thesis. After completing the previous four Chapters I was faced with the challenge of having to bring each of these studies together under one conceptual framework. The focus on environmental justice emerged towards the end of the thesis. It arose as a result of my musings about the overarching contribution of the research presented in this thesis. After re-reading each contribution it became clear to me that justice was a reoccurring theme throughout each of the papers. Moreover, the papers included in this thesis represent the development of my understanding of justice and the role the local participation plays in ensuring that FRM is a just process at the local level.

This contribution places the published papers included in this thesis within the context of additional empirical findings related to local stakeholder participation in European FRM and discusses these findings in the light of their implications for justice. The review found that although there is an emphasis on the importance of involving local stakeholders at the beginning of the decision-making process, participation, in practice, is largely limited to the implementation of state-defined solutions. Although both England and Germany differ in their motivation for restricting participation in planning and the promotion of individual action, the vulnerabilities and inequalities that result are similar. Responsibility is transferred to local stakeholders without the power and support required to fulfil it. This paper provides an argument for the important role that local stakeholder participation can play in making sure that inequalities are dealt with in a fair way.

1.5 Concluding remarks and key contribution

This chapter has introduced the problem dealt with by this thesis and placed it within the context of existing literature. I have outlined the structure of the thesis including a summary of each of the original papers (Chapter 3-7) with their findings and contributions to this thesis.

Taken together the five papers included in the thesis provide a set of particular interrogations of the moves towards shifting responsibility in FRM by looking within, and between

countries, and using different conceptual frameworks and methods. The focus on environmental justice represents the development of my thinking as I moved through the journey to find a way to understand what the role of local stakeholder participation in European FRM is, and what it ought to be.

Ongoing changes in the way that floods are managed in Europe emphasise the critical role that local stakeholders play in ensuring improvements in flood risk reduction. There are a range of measures that can be employed to manage floods. However, rather than being involved in the identification and selection of those measures in a meaningful way, often responsibility for flood risk is transferred to local stakeholders. This means that local stakeholders are expected and required to take responsibility for the implementation of state-defined measures. Although, shifts in responsibility aim to share the burden of flood risk, there is the crucial question of who is likely to benefit from the responsibilisation of local stakeholders. Whilst, changes in FRM-related policy acknowledge the need to involve those at risk to improve FRM, I argue that the most vulnerable communities – i.e. communities that do not have access to structural measures or resources to participate in decision-making processes and/or protect and prepare themselves – are likely to be particularly negatively affected by shifts in responsibility. This is not to suggest that the state was able to provide 100% protection against floods in the past. The concern is that shifts in responsibility will be used to rationalise the lack of state-provided protection rather than improve decision-making procedures and providing local stakeholders with the support they need to be able to fulfil that responsibility. Such a situation could lead to flood risk-related inequalities particularly in regards to how resources and risks are distributed. This means that only individuals and communities that have access to particular capacities such as resources (both human and financial) and motivation are able to profit from local stakeholder responsibilisation (Johnson et al. 2007; Blaikie et al, 2014; Thaler &Priest, 2014).

Two main areas of local stakeholder involvement in FRM were found: 1) involvement in planning and policy making (i.e. the definition of the solution and resources) and 2) involvement in the implementation of FRM measures (i.e. the implementation FRM measures). Although these two areas are generally considered to be separate in practice, I argue that they are interrelated. The fairness of FRM could be improved by ensuring that those who are made responsible for the implementation of FRM measures are involved in definition of the solutions (procedural justice) as well as the identification of resources which can be drawn upon to implement FRM measures. Such an approach could lead to improvements in the distribution in resources and risks (distributional justice), which ensures

that those who are most vulnerable are able to prepare for and protect themselves against flood-related impacts (distributive justice).

Therefore, the **key contribution** of this thesis to discussions about environmental justice is to demonstrate how procedural and distributive justice go hand-in-hand. If local stakeholder responsibility is to be a part of the solution, investments need to be made to ensure that those made responsible accept that responsibility and have the capacities required to fulfil that responsibility. Transferring responsibility without ensuring that the capacities required to take up that responsibility exist is likely to lead to an increase, or strengthening, of exposure and vulnerabilities, leading to injustices. However, participation with local stakeholders which aims to deliberate and co-define responsibility, and provide support for local stakeholders to take responsibility at the planning and policy making stage of the decision-making process, may result in improvements in the fairness of FRM as well as a reduction in flood-related impacts.

1.6 Glossary of key terms

The following subsection provides the definitions of key terms used throughout this thesis.

Local stakeholder: Any group or individual who is potentially affected by the effects of flood-related decision-making, either directly or indirectly (Freeman, 1984). In the context of FRM, this includes local government, NGOs, local businesses, community groups and local residents.

Involvement: The active engagement of local stakeholders in decision-making processes as well as individuals undertaking personal mitigation measures to prepare and protect themselves.

Justice: Often the terms justice, fairness, and equality are used interchangeably in the literature (Johnson et al. 2007). In this thesis I make the distinction between the terms as follows: on the one hand, the terms unequal and uneven describe distributions of decision-making power, resources and risk, whilst on the other hand, the terms fairness and justice provide a language for evaluating these distributions.

There are a number of influential philosophical traditions of social justice which can be drawn upon when discussing whether flood management is fair or not (i.e. utilitarianism, liberalism, and egalitarianism). There is a strong history in the literature on natural hazards of providing support for those considered to be the most vulnerable in society. Therefore, this

thesis investigates the extent to which practices of participation in FRM lead to justice in an egalitarian sense.

Participation: The process of the state and local stakeholders working together to define solutions, identify resources and implement solutions.

Resilience: "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions" (UNISDR, 2007b: unpaginated).

Responsibilisation: The emphasis placed by the state, at the European and national levels, on the importance of local stakeholders taking responsibility for flood risk through becoming more involved in FRM decision-making processes and taking action to prepare and protect themselves.

Vulnerability: Individuals are vulnerable to floods as a result of their susceptibility and exposure to the hazard but also their capacities (or lack thereof) to resist and become resilient to it. Small communities that are exposed to flood risk but do not receive state support and/or those who do not have the motivation or resources to become involved in decision-making processes or to take action to prepare and protect themselves as those who are **most vulnerable** to flood damage.

Chapter 2 Methodology

In this chapter, I discuss how I went about the research that forms the core of this thesis. Each original paper included in this thesis provides its own description of the methods used to carry out the individual study. The aim of this chapter is not to repeat those descriptions but to more generally discuss the approach that I used during the process of completing this thesis. It does so by debating the strengths and limitations of qualitative and quantitative data as well as discussing the way in which the different data and methods contribute to discussions about justice and FRM.

2.1 General approach

Rather than a single project based on the results of a predefined research agenda, this thesis takes an alternative format which brings together a range of data, review work and conceptual thinking. Drawing on data from two European FP7 projects enabled the comparison of two European contexts – England and Germany – and the integration of different disciplinary perspectives, which provides a nuanced view of the issues and opportunities surrounding local stakeholder participation in FRM-related decision-making. This thesis draws on qualitative (e.g. interviews, media analysis and a systematic literature review) as well as quantitative (e.g. household survey) data. The qualitative data allows for a descriptive overview of the opportunities to participate in and take responsibility for decisions related to planning and implementation of FRM measures, while the quantitative data provides an understanding of public perceptions of responsibility. Each paper stands alone but taken together provides a rich and multi-sited contribution to current discussions and debates about environmental justice.

The data that I used to discuss local stakeholder involvement in European FRM were developed within the framework of the two European projects. CapHaz-Net: Capacity Building for Natural Hazards (2009-2012) aimed to identify and assess policies and practices related to social capacity building for natural hazards in Europe. It developed state-of-the-art reviews of topics such as risk governance, social vulnerability, risk perception, risk communication and risk education. The second project, emBRACE: Building Resilience Amongst Communities in Europe (2012-2015) aimed to identify indicators of and develop a conceptual framework of resilience which was tested and grounded in cross-cultural contexts.

Drawing on data from these two projects, I set myself the task of repurposing existing data for this thesis. In other words, this alternative format required a large amount of conceptual and analytical thinking after the data was already collected. During the early stages of preparing this thesis, I set out to investigate the role of local stakeholders in European FRM and through this process I found myself asking questions related to the vulnerabilities and inequalities that opportunities to participate create. Therefore, it made sense to me to discuss the fairness and, therefore, justice of these vulnerabilities and inequalities. This led me to environmental justice which provided me with a language to discuss the implications of local stakeholder participation.

It was a challenge to inductively draw together the links between four papers. That such an approach was successful highlights not only the relevance of environmental justice for the discussion of the outcomes of local stakeholder participation but also provides an example of the way in which social research evolves through practice (Law, 2004). The investigative nature of social research requires the flexibility to deal with the results that arise.

In sum, repurposing available data to discuss local stakeholder involvment in European FRM allows for the comparison of two European contexts. It also allows for the use of different conceptual frameworks, data and methodologies. However, when viewed through the lens of environmental justice, they provide useful insights not just in regards to the fairness of the way FRM decision-making processes are structured and the outcomes that arise but also provide the basis for discussions about what the role of local stakeholder participation ought to be.

This subsection has described the general approach to this thesis. The following subsections describe the strengths and limitations of the different datasets.

2.2 Qualitative and Quantitative data

I had the benefit of being able to draw on a range of data which represent a number of perspectives about what the role of local stakeholder participation in European FRM is and should be. Among scientists and engineers there is the assumption that quantitative data is more reliable than qualitative data. Such an assumption hints at the different philosophical ideas behind quantitative and qualitative research. On the one hand, a reliance on quantitative data for generating results is positivist; it aims to minimise bias and test hypotheses in the ‘real’ world. On the other hand, qualitative data tends to see things as more complex, subjective and socially constructed (Adler and Clarke, 2003). As this section will show, there are benefits to both types of data when answering the three research

questions posed by this thesis to evaluate the fairness of FRM (see Chapter 1, section 1.3). An overview of the methods employed in the individual papers is presented in Table 2-1.

Table 2-1 An overview of methods employed in each paper

Chapter	Data	Theories/concepts employed
3	12 interviews with FRM experts (e.g. National and Local governance, planner, NGO, and academics)	Governance and resilience
4	12 interviews with decision-makers and local stakeholders 360 Newspaper articles	Governance and reputational risk
5	The interviews used in Chapters 3 and 4	Governance and participation
6	889 household surveys	Protection motivation theory
7	Literature review of 30 peer-reviewed articles	Environmental justice

To answer the **first research question** about the role of local stakeholders in FRM processes, and gain an overview of some of the ways in which local stakeholders are involved in FRM, the thesis draws on qualitative and quantitative data. The qualitative data highlights the geographies of the opportunities for and the structures of participation in European FRM. Specifically, it draws interviews (12 in England and 12 in Saxony; see Chapters 3, 4 and 5) and a media analysis focused on gaining an overview of a range of different perspectives of the role of local stakeholder participation in FRM from a range of stakeholders (for Saxony; see Chapter 4). The interviews and media analysis are both able to present opinions and discursive framings about the role of local stakeholder participation in principle and practice. In addition, quantitative data, in the form of a large-scale survey, is used to understand the perceptions of responsibility and motivation of local stakeholders to become involved in FRM (Chapter 6). These findings about the role of local stakeholder participation provide the basis for the discussion of the **second research question** in regards to whether resources and risks are distributed in a fair way, which in turn, offers a starting point from which to answer **the third research question** by providing recommendations about what the role of local stakeholder participation should be arise (Chapter 7). The following sub-sections provide a detailed discussion of the philosophical assumptions related to the strengths and limitations

of qualitative and quantitative data in general. It also discusses the ways that the different data and methods employed in each of the papers contributes to understandings of justice.

2.2.1 Understanding governance structures: qualitative datasets

Chapter 3 employs semi-structured interviews to understand the implications of policy changes on the way in which responsibilities for FRM are shared in England. Semi-structured interviews are generally used by the social sciences to learn a wide range of things such as "people's backgrounds and experiences, their attitudes […] and their views about the groups of which they are apart and the organizations with which they interact" (Adler & Clarke, 2003:267). However, they are also heavily criticised as a method. Major limitations include issues related to reliability, validity, researcher bias and reproducibility (Diefenbach, 2009). However, these are not necessarily problematic as long as they are reflected upon carefully by the researcher (Diefenbach, 2009). This sub-section describes my attempts to address such issues.

In regards to reliability, the interviewees that I contacted (Chapter 3) were selected based on their knowledge on the topic: the potential influence of the Localism Act (2011) on English FRM. Because the changes in legislation were so recent at the time of research, I decided that it would be fruitful to interview people who were familiar with it. Therefore, I chose to interview members of government both at the national and local level as well as academics, planners and members of a national charity rather than businesses and residents. It was assumed that these actors, based on their organisational roles, would be able to provide a broad overview of the issue at hand at that particular moment in time. The selection of interviewees was based on suggestions from networks and the interviewees themselves. All interviewees were offered anonymity to encourage open and frank dialogue, and the permission of individuals to quote their responses was obtained. In addition, they were offered the opportunity to review the manuscript before submission.

In regards to validity, I did not aim to produce an objective account of the situation. My goal was to dig into some of the issues that may be expected to arise from recent policy changes based on the experience and opinions of the interviewees. I had conducted a literature review of policy documents as well as academic literature before conducting the interviews so I had a general idea of the debates surrounding the issue. However, rather than aiming to test a set of hypotheses from the outset of the study, I focused generally on the way that local stakeholder involvement was structured at the time of the interviews, the potential

changes to that involvement and whether local actors were in the position to realise the potential changes.

In regards to researcher bias, I tried to be aware of my own interests and biases in relation to this research. Thus I tried to allow the interviewees freedom to discuss the themes and only intervened when I felt that the interviewee was moving too far off topic, as I was mindful of the time constraints of the interview and the need to receive comments on the three themes that I was interested in.

Finally, to secure a reproducibility of findings but also further address researcher bias, I went about reading and coding the transcripts after I conducted the interviews. I read through each transcript from beginning to end and then re-read each transcript carefully, highlighting the text that appeared to discuss details related to the role of local stakeholders, changes in this role and capacities need to fulfil this new role. I tried to limit the number of themes or codes as much as possible, rather than allowing their proliferation. After coding four transcripts, I had a list of preliminary codes. I then coded the rest of the transcripts and recoded the other transcripts adding new codes when the data did not fit into an existing code. After reading through the data collected for each code some of the codes were combined. Based on the codes I started to develop my argumentation and interpretation of the implications of policy changes in the form of potential future scenarios. I supported my interpretation of the data by drawing on literature including other case study findings in order to place my research within the context of existing research on the topic. I conducted twelve interviews. I decided that this was sufficient due to the strong common themes that had arisen out of those undertaken. Diefenbach (2009) argues that although data from different interviewees referring to the same topic will provide a richer picture, it is not possible to determine if the number of interviews conducted is sufficient. A greater number of interviews might lead to reassuring and convincing results, but it does not increase the validity in a methodological sense.

This paper was able to provide an overview of the way in which local stakeholders are involved in FRM in England as well as examples of the potential inequalities that arise as a result of this involvement. One limitation of this study is that, due to its timing in regards to the policy changes, the research was not able to discuss the impacts of local stakeholder responsibilisation. Instead, the findings of the interviews resulted in the development of four future scenarios of the implications of local stakeholder responsibly based on the results of the interviews. These scenarios present a range of future possibilities, which enable the assessment of the success of local stakeholder responsibilisation in specific communities. For

example, the results of this paper point to potential issues related to local stakeholder responsibilisation, specifically in regards to justice – i.e. whether local stakeholders have the resources and motivation to take up responsibility.

Chapter 4 focused specifically on gaining the opinions of both decision-makers and local stakeholders (i.e. with regional and local government decision-makers, representatives of responsible administrative bodies, community groups, and non-governmental organisations) in regards to opportunities for local stakeholder participation in the planning of flood defence measures by conducting twelve interviews. The interviews conducted for Chapter 4 were done so in a similar way to that described in the above subsection on Chapter 3.

Chapter 4 also used a media analysis to complement the interview findings. A content analysis of a media discourse can be used to "interpret meaning" from the content of text data (Hsieh & Shannon, 2005). Newspapers were collected and analysed over a period of 4 weeks starting on June 1st 2013 and ending on July 2nd 2013. This review process resulted in the selection of 360 articles relating to the 2013 flood. The contents of the articles were coded into two broad categories: 1) reflections and discussions about the flood events and their causes/ opportunities for improvement, and 2) data and information about the flood event (e.g. number of damaged homes and total financial damage (see section 4.2).

One criticism of a content analysis is that it is not 'objective' (Diefenbach, 2009; Hsieh & Shannon, 2005). However, this assumes that a strict objectivity exists. To increase the depth and credibility of the findings, this paper uses the media analysis to complement the interview data used in Chapter 4.

This study provides an analysis of how local stakeholders are involved in FRM in Saxony, Germany as well as the perceived outcomes of that involvement. This provides input for discussion about the fairness of FRM as well as recommendations for how local stakeholder participation in FRM ought to be. In regards to the limitations of this study, like Chapter 3, Chapter 4 was not able to discuss whether participation, which focuses on co-producing FRM solutions with local stakeholders is effective in practice. Chapter 4 was unable to assess whether participation in planning could improve the fairness of FRM. This was due to a lack of examples of deliberative and co-productive participation.

Chapter 5 took the opportunity to highlight the similarities and differences between England and Germany by comparing the interview data used in Chapters 3 and 4. As discussed in Chapter 1, I did not begin this thesis with the aim of providing a contribution to discussions about environmental justice. Instead, this focus arose later on in the thesis process as I

embarked on the search for a language to employ which was able to effectively describe the implications of my findings. Therefore, the papers included in this thesis provide a basis for the discussion of justice but they also represent the development of my thinking as I negotiated the thesis process. In this paper I struggled to find a way to explain the implications of local stakeholder involvement. It was clear to me that the examples highlighted issues and missed opportunities in the way that participation was employed in both countries. However, what was lacking was a way to effectively describe why this is a problem and what can be done about it. The environmental justice framing used in Chapter 7 helps to clarify and strengthen my argumentation.

A number of challenges arose when conducting the comparative study presented in Chapter 5. This is because the two sets of interviews were conducted within the framework of two different projects. Although the result of the study produced interesting comparative findings and reflected the political context of both case studies well, it was challenging, methodologically, to bring together two studies with differing study designs. For example, although focusing broadly on the topic of the role of local stakeholder participation in FRM, the interview questions were not exactly the same. The English case study's questions focused on identifying the stakeholders involved in FRM, the impact of recent political changes, and whether or not responsible stakeholders have the capacity to fulfil their responsibilities. Meanwhile, the Saxon case study's questions also identified the stakeholders involved in FRM, but focused on the perceived impact that participation can have on decision-making processes, and sought suggestions for alternative ways to involve local stakeholders in FRM.

As a result, in regards to some aspects of interest in the study, true comparison was not possible. For example, in Saxony the process of participation is clearly set out in legislation and practiced by the state, therefore it is easy to understand the role of local stakeholder involvement even without the interview data. In England, however, the involvement of local stakeholders is more complex and was in flux at the time of the interviews. As a result, unfortunately, not all areas of relevance for the comparison (e.g. local stakeholder involvement in EIA-related processes), were discussed in the interviews. This means that it was unclear what the process from planning to implementation of flood defence is, based on the interviews. Therefore, I was only able to make general statements about this in the paper. This may not have been an issue or could have been overcome if these studies were designed in one project. However, this issue does not undermine the main argument of the paper. Based on the results of the interviews, tensions can be seen which highlight potential issues

related to distributive and procedural justice based on the opportunities for local stakeholders to become involved and influence FRM.

In sum, Chapter 5 discusses opportunities for participation, presents inequalities in both England and Germany FRM and highlights the importance of involving local stakeholders in discussions about alternatives to structural measures to improve FRM-related justice.

2.2.2 Understanding local stakeholder motivation to become involved in FRM: quantitative data

The previous subsection suggested that local stakeholders should be involved in decisions related to alternatives to structural measures. One way that they can become involved in such measures is through the implementation of personal protection measures. Quantitative data is used in the social sciences within natural hazards research to acquire information about knowledge and perceptions (Bird, 2009). The study conducted in Chapter 6 analysed a survey of 889 households in Saxony and Bavaria, Germany that experienced the 2013 flood in order to understand the relationship between responsibility and action and how practices of responsibilisation influence household resilience.

In this paper, my co-authors and I developed a model based on protection motivation theory which was originally developed for psychological research on health behaviour (Rogers, 1983; Rogers & Prentice-Dunn, 1997) and has been employed in flood-related research to better understand how factors such as threat and coping appraisal shape people's motivation to take action (Bubeck, Botzen & Aerts , 2012b; Grothmann & Reusswig, 2006; Zaalberg, Midden, Meijnders & McCalley, 2009). Chapter 6 investigates the influence of repetitive flood experience on the likelihood of citizens to take personal mitigation measures. focuses on how residents who have taken action in the past perceive risk after they have experienced flooding despite that action. Specifically, this paper is interested in how this perception impacts on appraisals of efficacy, responsibility and participation in order to draw assumptions about the likelihood of future action.

The initial review of this paper requested a more in-depth analysis of the data using a regression analysis in addition to the correlation analysis that we originally provided. The correlation analysis alone was not seen to be statistically relevant enough to support the arguments that we wanted to make. This highlights one of the challenges of quantitative research. On its search for robust and objective results, the data was placed through a number of 'tests' which, in the end, are arguably still subjective due to our decisions as authors to test the data in certain ways and to include some items and exclude others

(Walker, 2012). Therefore, it is questionable if quantitative research is truly immune to subjectivity.

One of the limitations of this study was the inability to make any concrete statements about the influence that participation has on whether respondents take personal measures. This is because of the timing of the questionnaire. The questionnaire focused on previous flood experience and actions taken before the 2013 flood. The question related to participation experience was asked in general terms and therefore it was not clear if the respondents had taken part in participatory activities before or after they had taken personal measures or before or after the 2013 flood. Although the study does not explicitly assess the opportunities to become involved in planning, the implications of local stakeholder responsibilisation through the requirement to take personal measures highlights potential inequalities in regards to risk distribution and the importance of assisting vulnerable stakeholders to be able to better prepare and protect themselves as well as ensuring their involvement in decisions related to FRM to ensure that FRM is more just.

2.2.3 Linking qualitative and quantitative findings

The previous sections provide an overview of the way in which qualitative and quantitative data local stakeholder participation in European FRM is and should be. The qualitative data provides specific examples of a range of local stakeholder perceptions in regards to the role of participation, whether it leads to inequalities and how it should be improved. This data was particularly insightful in regards to being able to draw out similar worldviews (Chapter 3) and tracking the development of social discourses (Chapter 4). The quantitative data highlights the implications that local stakeholder involvement in FRM has on the ability of households to be able to cope with flood impacts and the likelihood that they will take personal measures to protect themselves in the future (Chapter 6). Taken together, the four aforementioned contributions provide an argument for the importance of improvements to local stakeholder participation in European FRM.

Due to the alternative nature of this thesis, the single papers not only provide specific approaches to understanding the role of local stakeholders in European FRM but also a rich and multi-sited contribution to current discussions and debates about environmental justice. Indeed, it is the combination of findings that provides a complex and nuanced understanding of the problem at hand. However, the four papers described above provide only a few examples of why debates about justice should be taken into account in FRM.

To place my own work within the context of existing empirical research on the role of local stakeholder participation in European FRM and environmental justice as well as identify further evidence of vulnerabilities and inequalities in relation to local stakeholder participation and FRM, I conducted a literature review (Chapter 7). A subject search using Web of Science returned 335 results. First the abstracts were assessed for their relevance to local stakeholder involvement in decision-making practice. This is because, although there are a lot of examples of the benefits of participation in theory, I was particularly interested in how participation is employed in practice and how this can be related to environmental justice. This process resulted in 30 peer-reviewed articles. It was a challenge to bring together a range of studies that, although focused broadly on the same topic, employed different conceptual framings (e.g. social learning, legitimacy, co-production, etc.) and a range of methods (e.g. observations, surveys, interviews, media analyses and focus groups). I focused specifically on the examples of participation that each paper described and the lessons that the studies drew from these examples. The studies were also conducted in a range of contexts and geographical locations not only within Europe but also within specific countries. The way that I overcame this was to focus specifically on local stakeholder participation in three countries that were most often subject to study in the articles. For this reason, this paper draws on examples from England, Germany and the Netherlands. My aim was to draw out particular examples of local stakeholder participation and highlight general similarities across different locations. Through this approach, I was able to draw out a number of trends that reoccurred throughout the literature despite conceptual and methodological differences.

This study plays a particularly important role in this thesis as it links Chapters 3-6 but also provided me with the opportunity to further develop my argument for the importance of participation but also the link between planning and local stakeholder responsibility in more detail. By drawing on these studies and 25 additional studies, my argument was developed further. The literature review was able to show the importance of not just providing support so that local stakeholders can take responsibility but also the importance of involving local stakeholders at the planning and policy stage in discussions about responsibility and providing space for the identification of non-structural measures.

2.2.4 Reflections and concluding remarks

The approach used in this thesis does not only provide single specific contributions to the literature on local stakeholder involvement in FRM, taken together, the contributions provide a broad contribution to environmental justice debates and how these relate to flooding as a

form of risk. It does this by drawing on a range of data and methodologies which capture the perspective of a range of local stakeholders in regards to their opinions about shifts in governance which place responsibility in their hands.

This thesis reflects my journey as a researcher through the engagement with a number of theories, concepts and methods that led me towards discussions about justice and FRM. My research has shown me the differing ideological and normative understandings of what the role of local stakeholder participation in European FRM is and should be. The interviews and media analysis presented me with differing arguments for and against participation, whilst the household survey shows the physical and emotional effects of flooding and highlights the potential of participation.

This thesis also provided me with the opportunity to collaborate with a range of scholars across geographic locations and disciplines. These collaborations have opened my eyes to the differences as well as similarities in the way that local stakeholder participation is understood and implemented in a range of different geographical contexts but also in different disciplines. I found it fascinating to investigate the different perspectives on participation in practice in different political contexts (e.g. neoliberal – England and social democratic – Germany). I found it particularly noteworthy that regardless of these differences, the vulnerabilities and inequalities that arise from opportunities to participate are similar (Chapter 5, 7 and 8). Different disciplines provide a different way of viewing the same problem. For instance, whilst the discipline of geography provides a range of arguments for deliberation and co-production between the state and local stakeholders (Chapter 7), in the psychological literature, the specific focus on the individual provides a deeper understanding of the reasons why people do and do not act to prepare and protect themselves (see Chapter 6). For me, the important distinction and need for integration between local stakeholder involvement in decision-making and local stakeholder involvement in implementing FRM measures, became clearer as a result of this multidisciplinary work.

This Chapter has shown that qualitative and quantitative research both provide opportunities to better understand issues related to justice and FRM. The qualitative data provides an overview of a range of world views and social discourses about responsibility, whilst the quantitative data highlights the psychological impact of flood experience on perceptions of responsibility. The quantitative and qualitative data used, therefore, provides a multifaceted overview of the influence that local stakeholders can have on discussions related to FRM and the issues for justice that arise when responsibility is placed in the hands of local stakeholders.

Although the research took place in two European contexts and was able to provide a number of insights in regards to the implications of participation on the fairness of FRM, it does not provide a strict comparison beyond the one aspect that was covered in both contexts: flood defence (Chapter 5). It is also only able to provide a discussion about a selection and not all FRM-related measures (e.g. this thesis only discusses structural flood defence, spatial planning, emergency management and personal mitigation measures).

Although, as is often the case, my research was limited by the practicalities of resources, time and institutional context, I would have liked to have carried out a study in Germany which was more similar to that carried out in England focusing not just on flood defence, but also on spatial planning and emergency management in order to gain a clearer understanding of the difference in how each of the measures of FRM are employed in each context and the role of local stakeholder participation in each measure. Furthermore, I would have liked to have been able to conduct a survey similar to that conducted in Saxony and Bavaria to England in the aftermath of the 2013/2014 floods. This would have been able to compare the different contexts in regards to the acceptance and take up of responsibility by local stakeholders.

In addition, the papers included in the thesis are able to discuss the limitations of participation based on the restrictions that exist in regards to the ability of local stakeholders to become involved an influence decisions. However, the lack of empirical evidence of participation between the state and local stakeholders, which aims at providing space for a deliberative discussion of local stakeholder responsibility and the identification of resources (both human and financial) which can utilised to implement that responsibility co-productively, means that it is only possible to provide an argument for more participative processes rather than evidence of the direct effect that participation has on FRM in terms of a reduction of risks. Examples of involvement of local stakeholders and evidence of the potential increase in vulnerabilities which may arise as a result of local stakeholder responsibilisation without local stakeholder motivation, opportunities for participation and assistance in the form of resources (both human and financial), are presented in the following chapters.

Chapter 3

Localism and flood risk management in England: the creation of new inequalities?

Chloe Begg, Gordon Walker, and Christian Kuhlicke

Abstract: There has been a noticeable shift in the way in which flood risks are managed in England. This is being driven in part by European developments but also by changes in governance across diverse domains of public policy. A key characteristic is a move to transfer responsibility for the management of flood risk away from the central government and towards the local level. This paper aims to describe and evaluate the potential implications of this shift by focusing on three connected policy areas: flood defence, spatial planning, and emergency management. We draw on an analysis of policy documentation and expert interviews to map out current changes in governance. We then outline a number of potential scenarios for how these changes may play out in the future, emphasising that differences in resource availability and local motivation could result in new patterns of vulnerability and inequality.

3.1 Introduction

One of the recognised aims of disaster risk reduction is to increase community resilience (UNISDR, 2007a). Resilience can be understood as:

"the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions" (UNISDR, 2007b: unpaginated).

To take the example of flooding, achieving community resilience is widely seen as necessitating a move away from management strategies which rely exclusively on large-scale engineering-based, cost-intensive technical measures and reactive top-down approaches (Coninx, 2008; Johnson & Priest, 2008; Samuels, Klijn & Dijkman, 2006), and towards a more integrative, holistic, multistakeholder approach (Begg, Luther, Kuhlicke & Steinführer, 2011; Butler and Pidgeon, 2011; Deeming, Whittle & Medd, 2012; Kuhlicke & Steinführer, 2010; Nye, Tapsell & Twigger-Ross, 2011; Richards, White & Cater, 2008; Watson, Deeming &

Treffeny, 2009). Participation and engagement with a wide range of actors at each stage of the disaster risk cycle (ie, preparedness, response, recovery, and mitigation) are accordingly seen as a key part of increasing community resilience to flood risk (Wachinger, Renn, Begg & Kuhlicke, 2013; Walker, Whittle, Medd & Watson, 2010), with involvement of local stakeholders being crucial.

These understandings of community resilience building are reflected in policy strategies such as "making space for water" (UK: Defra, 2005) or 'Ruimte voor de Rivier' [Netherlands: PKRR (2006); additionally, for Poland see Begg et al (2011, page 46)]. Such strategies seek to widen participation and community engagement in decision-making, but also to encourage householders and businesses to take responsibility for making their properties more resistant and/or resilient to floodwaters. In these ways, those locally at risk—residents, businesses, farms, infrastructure managers, etc.—are gradually being transformed into risk managers or "flood risk citizens" (Nye et al. 2011) who through the "privatisation of risk" (Steinführer et al. 2008) are encouraged, or even required, within a multiscale risk governance network, to take decisions and choices with regard to the prevention and mitigation of hazards (cf. also Butler & Pidgeon, 2011; de Vries & Fraser, 2012; Holub & Fuchs, 2009). Johnson and Priest (2008) accordingly see this 'rolling back' of the state's role as leading to a "changing landscape of risk responsibility" (p.513).

We understand these recent shifts towards a greater relevance of the 'local' in flood risk management (FRM), and more generally in disaster risk reduction as a specific form of the 'localism' that has characterised many areas of recent governance practice (Coaffee, 2005). As discussed later, localism is a form of decentralisation that favours the 'local' (in contrast to the regional, national, or international) as a level where decisions should be made and problems can be best addressed. Given that there are competing evaluations of recent shifts towards greater localism, both supportive and more critical, it is important to consider particular cases of such shifts and their actual and/or potential outcomes (Painter, Orton, MacLeod, Dominelli & Pande, 2011). With this in mind, in this paper we aim to critically evaluate the emergence of localism in the ongoing reshaping of FRM in England. The way in which FRM is organised differs throughout the UK (e.g., between England and Wales), so a specific focus on England rather than the whole of the UK is necessary.

In a first step we provide a general overview of the ways in which shifts towards localism, particularly the current UK government's 'Big Society' agenda, are affecting how floods are governed in England. In a second step we refer to specific policy examples which are linked to the Big Society and impact upon the following three fields of FRM: (1) flood defence

(protecting developments that are already there); (2) spatial planning (protecting future developments); and (3) emergency management (enhancing preparedness and emergency response). For each aspect of FRM we draw on an analysis of policy documentation and a series of semistructured interviews conducted with actors who work in the fields of spatial planning, FRM, and community engagement (cf. also Derkzen & Bock, 2009; Randle, 2005). Through the interviews we aim to gain insights into how the Big Society is currently being translated into practice and to elicit expert views on how ongoing trajectories of change may develop in the future (given that in various respects we are still at an early stage in the roll-out of policy intentions). In a summarising section we then describe four different future scenarios that outline the potential consequences of localism through the Big Society as it may be realised in practice, with the aim of highlighting some of the capacities required from local actors to be able to implement the opportunities that the Big Society provides in their local area. Reviewing these potential scenarios, we suggest that the creation of spaces for increased involvement in local FRM governance is not likely to result in better participation or in improved FRM for vulnerable communities without the parallel development of specific capacities, such as resources and motivation (see also Buček & Smith, 2000; Kuhlicke, Steinführer, Begg & Luther, 2012). This produces significant challenges, including the potential for the creation of new local and regional inequalities. We begin, though, by outlining in more detail the empirical data we have been able to draw on.

3.2 Research design and sources

While the Big Society has provided a rationale for specific changes in policy (e.g., see subsections 3.4.1 and 3.4.2) and a reemphasis of existing initiatives (e.g., see subsection 3.3), the recent nature of these changes means that it is difficult to ascertain the implications for FRM in practice. These difficulties are reflected in our study design in two ways. First, we drew on policy documents, peer-reviewed sources, and less formal public commentary on the themes of the 'Big Society', localism, and shifts towards the local management of flooding in order to gain an overview of ongoing debates and developments. Second, we undertook interviews with practitioners with expertise in flood defence, spatial planning, and emergency management and their knowledge of recent changes in policy (see Table 3-1). All interviewees were offered anonymity to encourage open and frank dialogue, and the permission of individuals to quote their responses was obtained. The interviews focused on three broad questions: (1) who are the main actors currently involved in FRM? (2) How is the Big Society and localism agenda likely to affect this involvement? And (3) do the actors charged with responsibility have the capacities to fulfil these responsibilities? The interviews

were conducted face-to-face or over the phone between January and April 2012 (a follow-up interview—interviewee 12—was conducted in June 2013) and lasted for approximately forty-five minutes. Hand-written notes were taken during or after the interview, and all interviews were recorded and transcribed.

In the discussion that follows we aim to avoid the considerable ambiguity in terms such as the 'community', 'neighbourhood', 'local actors', and 'the public' that proliferate Big Society and FRM-related documentation. We do this by using a three-way distinction to aid in differentiating the general category of 'local actors' (Begg et al. 2011): (1) the professional public—local government, local private sector, and practitioners (e.g., engineers, consultants, or insurers); (2) the organised public—NGOs and interest groups (e.g., local fishing associations, nature conservationists, and citizen initiatives); and (3) the general public—individuals and local residents.

Table 3-1Interviewees

No.	Organisation / Profession
1.	Academic –Urban Planning (particular field of interest: Flooding)
2.	Environment Agency – Flood Defence Management
3.	Academic – Planning (particular field of interest: Flooding)
4.	Planning Consultant
5.	National Floods Forum – Community Engagement Officer
6.	County Council – Flood Management Officer
7.	Unitary Authority – Flood Risk Planning Manager
8.	Town and Country Planning Association – Planner
9.	Academic – Planning (particular field of interest: Community Participation)
10.	Metropolitan Borough – Community Flood Management
11.	Unitary Authority – Community Network Manager
12.	Unitary Authority – Emergency Planning Manager

3.3 A short history of localism in British politics and FRM in England

Localism is far from a new idea or concept within British politics. In the 1970s localism appeared as a notion which supported public sector reform (Coaffee & Johnston, 2005). The development of the 'Third Way' approach (Giddens, 1998) emerged out of a rethinking of the role of the state and sought to find "a means of grafting traditional social democratic concern for equity and social justice onto an economic system based on free markets" (Hamilton, 2001, p.90). Finding a balance between unleashing enterprise and market forces and ensuring the just provision of key services was an important component in these attempts at reform (Coaffee, 2005), and a move towards localism became a key part of this balance. A heavily market-led approach was criticised as lacking community involvement and promoting the decentralisation of responsibility rather than power (Boyle, 2009; Coaffee & Johnston, 2005). Consequently, the mid-1980s and early 1990s saw the rise of 'New Localism'. This sought to introduce a form of decentralisation which aimed to be efficient and effective, while encouraging participation, equality, diversity, and innovation (Coaffee, 2005). The Blair government's "Modern local government: in touch with the people" white paper (DTLR, 1998), the subsequent Local Government Act (2000), the Brown government's Sustainable Communities Act (2007), and the community empowerment white paper "Communities in Control" (DCLG, 2008) are all examples of previous government attempts to involve the local level in decision-making and implementation.

The current Coalition government (2010–present) is now pushing for a further and arguably more radical form of localism articulated as the 'Big Society'. Like the description of localism in the last paragraph, ideas such as decentralisation, shared responsibility, participation, and community feature strongly in the idea of Big Society and emphasise the positive connotations that make localism an attractive political concept. For example, the Minister for Decentralisation, Greg Clark, stated that "localism is the ethos; decentralisation is the process, and the outcome is the Big Society" (HC, 2011, p.13). According to the Cabinet Office, "the Big Society is about helping people to come together to improve their own lives. It's about putting more power in people's hands—a massive transfer of power from Whitehall to local communities" (no date, unpaginated), given that local actors are "those best placed to find the best solutions to local needs" (Localism Bill, 2010, p.2).

Backed by such powerful advocacy, specific reforms have recently translated into legislation through the Localism Act (2011). These include measures to enable individuals to take a more active role in their communities through transferring decision-making power from central state to local authorities, encouraging volunteerism, and supporting co-ops, mutuals,

charities, and social enterprises. Such groups are to be enabled to bid for and run public services and, by giving more power to local councils and neighbourhoods, to take planning decisions that shape their area.

Turning from the general political moves towards greater localism in government to FRM governance in particular, the recognition of the importance of involving multiple actors in the management of floods is comparatively recent. In the decades after World War II until the late 1970s, flood management: "focused on land drainage and flood defence dominated by structural 'hard engineering' solutions with little regards for environmental impact" (Johnson and Priest, 2008, p.514; also see Penning-Rowsell, Parker & Harding, 1986; Penning-Rowsell, Johnson & Tunstall, 2006). During this period, responsibility for flood management resided strongly in the hands of central government. During the 1980s and 1990s there was a shift away from drainage to defence (Johnson & Priest, 2008; Nye et al. 2011), but again the focus was on 'hard engineering' and keeping the water out. Since the 1990s, largely as a result of the sustainable development agenda, there has been an increasing awareness of the environmental and social aspects of flood management (Johnson & Priest, 2008; Penning-Rowsell et al, 2006). It was at this point that localism started to become a relevant part of a new paradigm of FRM. This shift, along with the realisation of the inability to completely control floods and their consequences through structural measures, resulted in a rethinking of established management concepts. This is highlighted in documents such as the Department for Environment, Food and Rural Affairs's (Defra, 2005) "Making space for water". These changes are also reflected in wider movements towards increased participation in FRM and include the repercussions of the Pitt Review (Pitt, 2008) which proposed significant policy reforms following the major floods in England in 2007. In addition, European legislation such as the European Union's Water Framework Directive (EC, 2000) and the Floods Directive (EC, 2007) have emphasised the need to 'encourage' the involvement of interested parties within FRM (article 10). In England these directives are realised in the UK through the Flood Risk Regulations (2009) and Flood and Water Management Act (FWMA, 2010). All of these documents have had an impact on the way in which floods are managed, strengthening the role of the local authority and stressing the need to involve actors at the local level.

What all these documents imply is that by taking into account the local context and the needs of local actors, more democratic and better decision-making processes can be enabled. In such ways the idea of localism is presented as a positive phenomenon, linked to notions of active citizenship and community empowerment, and enabled through

decentralisation, stronger local government, and improved local democracy (Featherstone, Ince, Mackinnon, Strauss & Cumbers, 2012; Painter et al. 2011). Various benefits are seen to come about as a result of a stronger involvement of local actors in policy making, such as achieving a better reflection of the diversity of local perspectives and experiences in the 'real' world (Marks & Hooghe, 2004) and drawing on more varied skills, knowledge, and capabilities (Paton, 2007; Walker et al. 2010). In turn, these benefits are expected to improve trust, communication, and collaboration among and between various actors (Wachinger & Renn, 2010): all necessary features of the development of greater community resilience in the face of uncertain risks and threats (Kuhlicke et al. 2012).

However, there is also a more critical stance on the emergence of localism in contemporary politics which sees it as providing rhetorical support for local participatory empowerment but only in a way that serves to legitimise central governmental decisions—thereby, reinforcing mainstream ideologies and marginalising alternative approaches and therefore doing little to challenge the status quo (Allmendinger & Haughton, 2010; Derkzen & Bock, 2009; Featherstone et al. 2012; Herbert, 2005; Miraftab, 2004; Painter et al. 2011; Raco, Parker & Doak, 2006). This critique sees the central government as 'steering', in the sense that it is setting the agenda for national standards and targets, and then expecting local governments and communities to 'row', in the sense that they are given responsibility to implement and achieve these standards and targets (Coaffee, 2005; Coaffee & Johnston, 2005; Deeming et al. 2012; Garland, 1996; Herbert, 2005; Kokx & van Kempen, 2010; Watson et al. 2009). As a result, community groups are left to deliver plans set out by the state (Painter et al. 2011) and at the same time are typically confronted by diminished resources, and a lack of, or unequal distribution of, capacities to handle this 'responsibilisation' (Herbert, 2005; Randle, 2005). The assumption that greater community involvement and empowerment is an automatic result of localisation has therefore been severely questioned (Derkzen & Bock, 2009; Raco et al. 2006; Randle, 2005). Moreover, it is argued, localism is likely to work better in some areas than others, with the prospect of increasing inequalities reflecting existing patterns of deprivation and social exclusion (Bailey & Pill, 2011; Stott & Longhurst, 2011; Walker, 2012; Walker & Burningham, 2011). The potential for such consequences to appear for FRM as a result of resent shifts towards a Big Society is explored in the following section.

3.4 Implications for flood defence, spatial planning, and emergency management

Although shifts towards localism in FRM in England are not new, the outcomes that may arise from the Big Society and through the Localism Act are yet to be fully understood. This section

therefore provides descriptions of policy changes so far introduced in three core policy areas of flood defence, spatial planning, and emergency management. In each case these changes are then explored through analysis of the views and expectations of our expert interviewees.

3.4.1 Flood defence

In England funding for flood defence schemes has been significantly reformed. Defra (2011a) will no longer fully fund flood defence schemes as it has in the past; instead, funding must now partly come from other sources. For example, the new Flood and Coastal Resilience Partnership Funding scheme allows claims to be made from the government for Flood Defence Grant-in-Aid, but also expects funding to come from external sources such as local councils and businesses (EA, 2011). Defra rationalises its decision to implement Partnership Funding based on findings of the Pitt (2008) Review:

"[The review] said that Government should allow and encourage communities to invest in measures that protect them, so that more can be done whilst giving communities a bigger say. This new approach creates the opportunity for as many communities as possible to enjoy the benefits that flood and coastal defences bring. Any contributions that do come forward under the new approach will supplement Government funding and mean more households can be protected" (Defra, 2011b, p.4).

Partnership Funding thus encourages communities to come together and manage their own defences. Such initiatives are said to create a platform for increased involvement and community ownership over flood protection measures (Defra, 2011b).We argue that the justification for Partnership Funding is in line with the Big Society agenda (also see Carrington, 2010).

Three aspects of a flood defence scheme, linked to sustainability, will influence the amount of national funding available from Defra (2011a): (1) benefits for householder; (2) benefits for businesses, agricultural productivity, and protection of national and local infrastructure; and (3) environmental benefits (e.g., ecosystem services). The maximum amount of funding for a flood defence scheme will be based on "multiplying each of the aspects by a set of payment rates, which are fixed amounts of national funding per unit of outcome or benefit achieved" (ibid, p.1). Measures will be taken to make sure that vulnerable and deprived areas score higher and therefore attract higher amounts of funding.

There have already been successful examples of communities becoming involved in the investment of local schemes. In some areas Partnership Funding has been actively embraced. For example, in Morpeth the Northumberland County Council contributed £12 million

towards a scheme and a further £10.6 million was funded by the government (EA, 2012). The scheme is said to reduce the risk of flooding to 0.73% chance of a flood similar to September 2008 occurring again. Another example is that of Cockermouth, which was able to secure £4.4 million towards the Cockermouth Flood Risk Management Scheme (interviewee 5; CFAG, 2012). In Cockermouth councils, businesses, and local residents came together to invest in a flood defence scheme which is argued to reduce the risk of future flooding to 1% (CFAG, 2012).

In regards to funding, councils and private sector businesses that are sufficiently resourced to put up funds as part of the Partnership Funding scheme are clearly required (a point emphasised by interviewees 2, 4, 5, 6, 7, and 8). As explained by one interviewee: "*There are opportunities for people who have the resources to exploit them"* (i4: consultant). For example, one of the reasons for the success of the Morpeth scheme outlined above is the fact that the council was able to make such a large funding contribution.[2] In addition, the contributions required for the Cockermouth scheme were seen to be 'affordable' (i.e., the 'voluntary' tax precept had to raise only £126 000, not the millions needed in Morpeth).[3]

As a result of new funding measures, it was therefore argued that vulnerabilities and inequality are likely to occur:

"*rural areas are going to be the ones that suffer again because there isn't the partners around … in a small community. And the community themselves, being small, are not going to be able to raise the vast thousands upon millions of pounds that are needed towards any flood scheme*" (i5: community engagement officer).

Although the deprivation of areas at risk is to be taken into account within the funding methodology, wider issues of equality and the potential of creating second-order or new vulnerabilities for small communities in rural areas is clearly of concern (interviewees 5 and 6). In sum, the concept of community used in this section relates to the actors that have the motivation and resources to be able to put up the required funding [see related observations by Meijerink and Dicke (2008) on 'diked communities'].

3.4.2 Spatial planning

It has been widely argued that the integration of disaster management (including FRM) in community-level spatial planning is essential (Burby, Deyle, Godschalk & Olshansky, 2000;

[2] Personal communication with Hugh Deeming, 22 May 2012.
[3] See footnote 1.

Godschalk, 2002; Sanderson, 2000; Woltjer & Kranen, 2011) and that such an integration can lead to "sustainable hazard mitigation" (Burby et al. 2000, p.99) through the careful and locally appropriate control of where future developments should take place.

However, in England, as in many other countries, flooding is but one of the many issues that affect spatial planning and, as reflected in most of the interviewee comments, has been shown to often take a back seat to issues like economic development (Pardoe, Penning-Rowsell & Tunstall, 2011; Richards et al. 2008). According to the National Planning Policy Framework (NPPF) (DCLG, 2012), flooding must be taken into account along with a host of other issues that affect the land-use planning process, such as sustainability, economic growth, green belt management, and biodiversity. The role of FRM in spatial planning is therefore recognised, but how decisions about local planning are to be made is in the process of quite radical change.

The Localism Act places planning decisions more substantially at the local level through the abolition of the regional tier of plan development (DCLG, 2011a). One way of making up for the lack of a regional tier is addressed by the 'duty to cooperate in relation to planning for sustainable development', which is a statutory obligation that requires local authorities, lead local flood authorities (county councils and unitary authorities), and public bodies [eg, the Environment Agency (EA)] to work together on planning for sustainable development across administrative boundaries (Localism Act, 2011, paragraph 110). These partnerships are used to inform local plans. Local plans must conform to the guidelines provided by the NPPF, which replaced the Planning Policy Statement 25 (PPS25) "Development and Flood Risk" (DCLG, 2009).[4]

Local authorities must consult with the EA (2013) on any development proposals that involve areas at risk of flooding. However, the EA can only provide advice; it does not have the power to stop development. The local planning authority is the final decision-maker, but if they intend to grant permission to a major development against the advice of the EA, they have to notify the Secretary of State in England who may decide to review the application.

Two ways in which local actors can now become involved in planning in general but also in relation to flooding issues are through the Neighbourhood Development Plan (NDP) and the Neighbourhood Development Order (NDO). The NDP is a: "plan which sets out policies

[4] Although the government, in its attempt to make planning more efficient, has distilled thousands of pages of planning regulations and guidelines into a succinct fifty-nine-page document, little has changed in regards to policy principles for FRM: planners should still refer to the PPS25 practical guide document until the government chooses to replace it (EA, 2013).

(however expressed) in relation to the development and use of land in a particular neighbourhood area" [Localism Act, 2011, Schedule 9 Clause 38A 7 (2)]. The NDO is an "order which grants planning permission in relation to a particular neighbourhood area" [Schedule 9 Clause 61E 2 (2)]. The NDP and the NDO are very local and community based, initiated through a parish council or neighbourhood forum and ultimately have to be adopted by the local authority.

It is expected that NDPs and NDOs will be undertaken by parish councils in areas where such authorities exist.[5] Once an NDP or NDO has been prepared, an independent examiner will check that it meets the right basic standards. Crucially for FRM, though, an NDP or NDO cannot be used to block development if growth is part of the local plan. Instead, neighbourhood planning can:

- develop a shared vision for a neighbourhood;
- choose where new homes, shops, offices, and other development should be built;
- identify and protect important local green spaces;
- influence what new buildings should look like" (CPRE, 2012).

After all standards are met and the plan is finished, the local council must organise a referendum which requires 50% of the vote for the local planning authority to bring it into force; "this ensures that the community has the final say" (DCLG, 2011b, p.3).

At the time of the interviews, these changes had just taken place in legislation. Therefore, instead of concrete examples, the interviewees were able to only speculate, based on their experience, about the challenges that may arise from these changes.

Recent changes in planning seem to have left local government actors confused about how to respond (interviewees 3, 6, and 9). For one interviewee, the changes reflected a complete lack of understanding of how planning works:

"They are saying that it is not up to them to define this … [it is] up to local government, but that shows a complete lack of understanding of what we're doing. This is a technical

[5] In areas without parishes (some 65% of the population) 'neighbourhood forums' are the neighbourhood planning body (Localism Act, 2011, Schedule 9 Clause 61F 5 a–d). The Localism Act (2011) states that a neighbourhood forum may consult with the organised and general public and must have a minimum of twenty-one members. Members must consist of individuals who live, work, or are elected officials in the neighbourhood concerned. Additionally, they must have a written constitution (Schedule 9 Clause 61f 5a–d). The local planning authority must decide whether the group meets the right standards (this includes being representative of the community as a whole).

discipline that demands consistency of standards so that we can do proper assessment" (i6: local government representative).

Therefore, it was argued that greater support is needed from central government to improve the skills of local government actors to be able to better deal with their new responsibilities (interviewees 1, 3, 5, and 6). In practice, though, it was felt that little has been done to empower or enhance the capacities of local actors so that the new opportunities of neighbourhood planning could be properly taken up with shifts towards localism requiring the general public to change the way in which they perceive their role in society (interviewee 3). This could meet resistance—for, as interviewee 4 argues: *"That's what we pay our taxes for, somebody else to make the decisions or come to conclusions"* (i4: planning consultant). Additionally, it was stressed by a community engagement officer that involving local actors is resource consumptive for all the parties involved:

"another area that we need to be aware of is that actually, you know, how much of a burden are we landing onto these communities? These communities are often working, they have full-time jobs maybe and families that they are committed to which take up a lot of their time. [And] everything that they are doing within their community is within a voluntary basis" (i5: community engagement officer).

It was also noted that, even if a range of local actors do become involved, consensus within groups can be hard to find (interviewees 2, 4, 8, and 9). As a result of the new actors and interests involved in the decision-making process, it was argued that it could become more difficult to come to a consensus or a decision that will please everyone (interviewees 2, 4, 8, and 9). The 'greater good' was continuously referred to as a way of defending decisions (interviewees 2, 4, 6, and 7). For example, in regards to neighbourhood planning, those plans that do not adhere to notions of the greater good (i.e., the local plans) are likely to be side-lined, echoing claims discussed earlier that participation might legitimise policy changes but do little to challenge the status quo. Owing to the limited effect that neighbourhood planning can have, the way in which the Big Society agenda has been brought into policy through the Localism Act appears to contradict what it seems to advocate (interviewees 1, 4, 5, and 8):

"what this government has done in the name of the Big Society and localism for planning is quite complex and in some sense it is quite contradictory and I think that gets back to a much bigger issue again … which is about power ... . For me, there is nothing in the Big Society that empowers people" (i8: planner).

"There is an expectation, built by this government, that this is all devolving power to the local people and that locals will be in control and that locals will have the power to determine what happens. That is not actually the case. What will actually happen is that the locals will have a partial say based on their representations into the local development framework assuming that they are prepared to go through that because it is mind bogglingly tedious and long and can be expensive and … we don't know where the money is coming from for all this and I think that the real issue is that the local authorities will have the final say … [T]he extent to which the government have hyped localism against the ability of the locals to actually affect change … is not going to match-up" (i4: consultant).

What both quotes underline (echoing critiques discussed earlier) is that, instead of the Big Society and related moves being local, it appears that decision-making is still centralist; there has been a shift in responsibilities without the promised shift in power. Creating opportunities for participation does not necessarily result in more participation. Without the motivation and resources required for neighbourhood planning, local actors are unlikely to take up this opportunity.

3.4.3 Emergency management

Emergency management has always involved a wide range of actors and, by nature, is locally organised. Current emergency planning arrangements are based on the UK Civil Contingencies Act (2004), which aimed to establish a national emergency planning framework for the UK. The act is based on the concept of integrated emergency management (IEM). IEM is focused on the consequences of events rather than their causes. Therefore, (interviewees 5, 6, and 8). Nearly all interviewees emphasised that it takes time, resources, and skills to be able to work effectively with diverse local actors.

Therefore, there was a concern that participation could become a box-ticking exercise, or a transfer of responsibility without potentially necessary external support (interviewee 9). As interviewee 3 argued, it is one thing to provide an opportunity for involvement; it is something else to really get people involved (see also Derkzen & Bock, 2009; Randle, 2005).

Furthermore, shifts in responsibility might not reflect the perception of the local actors that are intended to be involved. People cannot be 'forced' to become involved (interviewee 5), IEM is a holistic approach to preventing and managing emergencies that entails six key steps: anticipation; assessment; prevention; preparation; response and recovery" (Cabinet Office, 2012, p:4).

There are two category responders who have responsibilities under the act: category-1 responders are considered as core responders (fire brigade, police, local authorities, etc.), while category-2 responders are considered corresponding such as utilities and transport. Although the list of actors who are required to coordinate as a result of the act mainly consist of the organised and professional public, an increasing emphasis on emergency preparedness activities that raise awareness and involve the general public is emerging: *"… we need to get out and talk to people. It is about going to each community … and asking: 'how do you want me to talk to your punters?' And then going and talking to them in that way. Obviously that is extremely time resourceful but I think, I truly believe that that is what you have to do*" (i7: flood risk planning manager). This is argued to be largely due to the fact that the government cannot offer complete protection (interviewee 4; Kuhlicke, Steinführer & Meyer, 2013).

The Coalition government's commitment to the Big Society expresses the need to "reduce the barriers which prevent people from being able to help themselves and become more resilient to shocks" (Cabinet Office, 2011, p.3). The Community Resilience Programme (CRP), established in 2008 (Cabinet Office, 2013), is referred to as being a "part of the government's Big Society commitment" (Cabinet Office, 2011, p.3) and aims to build community resilience through awareness raising, removing barriers for participation, and supporting "effective dialogue between the community and the practitioners supporting them" (page 5). The CRP is led by Local Resilience Forums. It aims to create a multihazard approach to emergency management by linking actors (local and national organisations and the voluntary sector) charged with traditionally separate tasks (interviewee 12; Griffin, 2011).

It has been argued that the Big Society, through the CRP, does not necessarily change the work that is already being done in some communities, but it does serve to legitimate it (interviewee 12). While it might help some communities which have not already developed emergency plans, for those communities who have there is little significance in terms of greater resources for developing the plans. Owing to current lack of funding, it is expected to be difficult for local governments to actively engage the general public (interviewees 2, 6, 7, and 11) and encourage them to take responsibility for their own protection (interviewee 2). Although working and communicating with the general public is generally seen to be of great importance and more resources could always be used, some feel that it is unlikely to change people's perceptions:

"I'm not sure if you gave me an extra, say, five people … I am not sure … that even if we had more people in there that we would be able to changes minds a lot. What we are doing is

through the local resilience forum is seeing how we can work with other organisations so we have got a different set of resources" (i12: emergency planning manager).

Emergency planning can be seen as a balancing act between bringing actors together and making sure that communication ensures effective cooperation in order to cope with the occurrence of a flood event (interviewee 12).

Moreover, while it is important to try and encourage people to consider their individual resilience, it was argued that, in regards to community resilience, it is it is much more effective to encourage community-based actions. For example: "*if you are an individual household, sandbagging your own front door won't make any difference but sandbagging a full street diverting some water away into another water course can be helpful*" (i12: emergency planning manager).

Although this trend could be seen as a transfer to the local level in regards to encouraging parish councils and existing community groups to develop emergency plans as well as encouraging the general public to take action, it can also be seen as a communication exercise and ceding to the understanding that flood defence, spatial planning, and emergency responders cannot offer 100% protection or response in the event of a flood. Therefore, it is important that local actors start to think about what they would do in the event of an emergency and in the event that emergency responders are unable to provide their local area with assistance (interviewee 12). As Mileti (1999) points out, local resiliency: "*means that a locale is able to withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life and without a large amount of assistance from outside the community*" (p.32).

Like defence funding and spatial planning, CRP is considered likely to be taken up in some areas while in others it is likely to be somewhat less effective (interviewee 11): "*some communities, they've got a very strong community spirit and communities have often got lots and lots and lots of different resources and in other areas, particularly the larger areas, you find that you get no feedback from the community at all*" (i12: emergency planning manager).

As already highlighted in the previous section on spatial planning, changes towards increased participation may not reflect the way in which local actors perceive their role in society. This point was also highlighted in regards to emergency management: *"[In some instances communities are] quite reliant on support from local authorities and support from local agencies. So there's a quite paternalistic kind of culture to look more towards government*

agencies to provide that kind of support rather than being self-sufficient themselves" (i12: emergency planning manager).

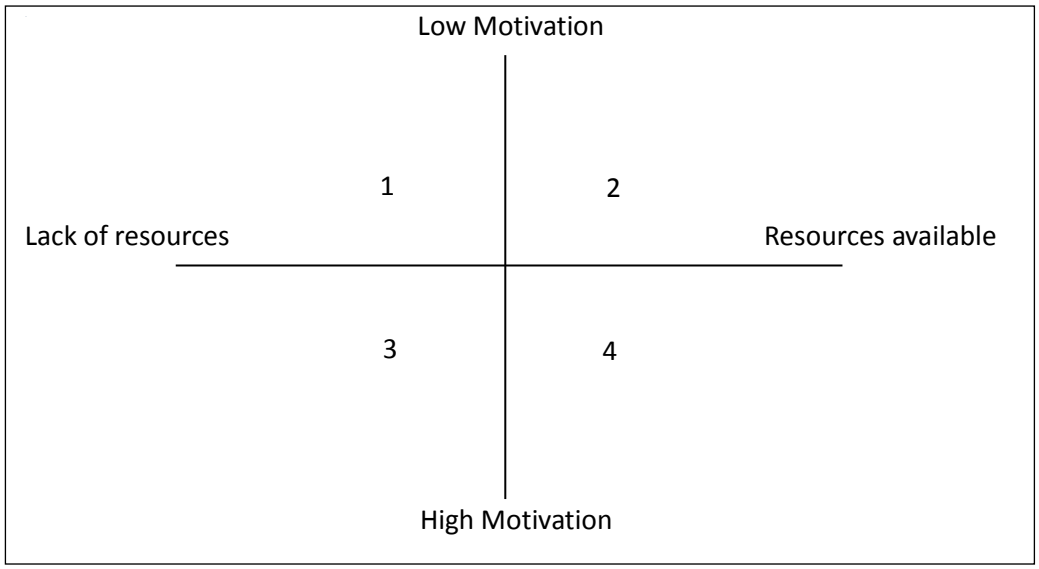
It was argued that this understanding of responsibility is having an effect on the way that the general public understand living with flooding (interviewee 8). Therefore, raising awareness and turning that awareness into action will be difficult in some cases. Communities that have limited access to support and funding and/or have low motivation to take action are likely to be more vulnerable in an emergency than communities with access to such capacities.

3.5 Future scenarios and challenges

Drawing together the discussion and analysis up to this point, we can see a recurrent concern that the way in which localism is being (or is likely to be) implemented across different 'at-risk' communities in England means that outcomes will depend significantly on the types of capacities available to these communities. Most of the interviewees in this paper support the inclusion of a greater range of local actors in FRM-related decision-making processes, but their further reflections reemphasise the struggle between centralised and decentralised governance (also see Clarke & Cochrane, 2013). Current attempts at localism structure responsibilities within specific, central-government-defined boundaries, but without (in most interviewee's assessments) providing the necessary resources (government support and finances) for these responsibilities to be properly exercised across the wide range of community contexts in which flood risks are encountered. At the same time, our analysis also revealed that the success of local actor involvement and more generally of localism in FRM depends crucially on the motivation of residents at risk to become involved in flood-related governance activities. Therefore, without appropriate resources and motivation, shifts towards localism are not likely to be successful. In other words, although localism is likely to work in some areas, this shift is likely to create new challenges in others, leading to distinct inequalities in degrees of resilience.

In order to identify the range of future possibilities that exist, we developed four different scenarios structured by four combinations of axes of 'motivation' and 'available resources' across scales that extend from high to low in each case, and which constitute potential future scenarios for particular localities (see Figure 3-1.). The term 'resource' is used here to describe the support including physical, emotional, and financial, as well as legal, rights available to enable the transfer of power and responsibility to the local level. The term 'motivation' is related to the way in which people perceive responsibilities in regards to FRM and whether they are motivated to take actions to become involved in that management.

Figure 3-1 Future localism scenarios



Scenario 1 can be seen to reflect a least-favourable situation. Scenario 4 represents an optimal situation. And scenarios 2 and 3 represent the hurdles that lie in between the success (scenario 4) and failure (scenario 1) of increasing localism in FRM. The following subsections further explore each scenario in turn.

3.5.1 Scenario 1: lack of resources and low motivation

The interviewees saw this scenario as being the current situation in some flood risk areas, highlighting issues of inequality and also the potential of creating second-order or new vulnerabilities, as in the example of the inability of rural communities to attract flood defence funding. This scenario emphasises concerns over the lack of funding and other forms of support available to build knowledge and motivation. Cheetham (2002) sees awareness raising and participative activities as the prerequisites of people coming together to manage their own problems. In other words, without efforts made by the professional public to engage, raise awareness, and convince the organised and general public of their responsibilities in regards to FRM, it is unlikely that they will take up this responsibility on their own accord (at least not in all cases).

3.5.2 Scenario 2: resources available but low motivation

Here, even if funding and other resources are available in an area, the motivation of the local actors to take responsibility for the management of flood risk is low. This scenario stresses concerns about the professional public understanding of the importance of involving a range of local actors and knowing how to employ effective participative activities (Campbell & Marshall, 2000; Colbourne, 2009).

3.5.3 Scenario 3: lack of resources but high motivation

Under this scenario local actors are motivated to act and be involved, but are limited in their resources to realise these commitments—this may particularly characterise areas that have experienced a recent flood or experience reoccurring flooding. This scenario again stresses the difficulties involved in having access to financial and supportive resources (see scenario 1) but also how the rights that enable the involvement of the organised and general public are specified, particularly the limits that are placed around decision outcomes. For example, the complexity of the central-government-defined framework for neighbourhood planning is seen to create barriers for involvement of the general public.

3.5.4 Scenario 4: motivation and resources are available

This scenario represents a type of localism in which all actors come together to solve a common problem, work towards a local consensus, and have access to the funding and expertise required to implement their solutions within the policy frameworks that have been put in place by the central government. This scenario may well characterise the position for some communities facing flood risks in parts of England (e.g., flood defence in Morpeth), but was not emphasised in the accounts of the interviewees.

As we can see, having access to both resources and motivation is of great importance. The descriptions from scenarios 1–3 show that it is not enough to simply have one or the other. For localism to be most effective, developing both resources and motivation is essential.

3.6 Conclusion

Our examination of current developments in FRM in England, and scenarios based on current documentation and a range of actors' reflections on ongoing policy development, emphasises that flood risk communities could experience quite different future outcomes, raising concerns about equality between areas. There is the strong likelihood that some vulnerable communities will be unable to capitalise on the opportunities that the Big Society presents, whilst others will be able to take advantage of the scope to empower local actions and decision-making processes. Questions of inequality and justice have been increasingly recognised as important to how FRM is to be exercised (Walker, 2012; Walker & Burningham, 2011); but the Big Society, whilst arguably acting to enhance opportunities and inclusion in procedural terms, may lead to increasingly problematic inequalities between areas in terms of how effectively FRM is implemented and the degrees of protection, mitigation, and resilience that are achieved. On the basis of these findings, more research is needed in order

to gain an understanding of the resources and capacities that exist in specific localities and therefore whether or not recent shifts towards localism are likely to be embraced in that locality or not.

We have argued that these different situations and scenarios revolve around two key axes of available resources which influence local actor involvement in the implementation of FRM, on the one hand, and motivations which influence the willingness of local actors to take up greater responsibilities, on the other. These two axes may combine in different ways in different local areas, providing opportunities for some, but frustrations and obstacles for others. In particular, it is clear that the simultaneous moves to localism and austerity measures that are diminishing public sector spending, particularly at a local level, create severe tensions within the Big Society agenda. In order to successfully shift power and responsibilities to the local level, time and resources, including funding and support, are needed in order to develop skills and the motivation for local publics to take responsibility and act to build their resilience to future flood risks.

Postscript: My thinking developed as a result of conducting this study. This development is relevant because it shapes the approach that I took to the successive papers presented in this thesis. When I began this research I was inspired by the government's call for more power for and the involvement of local stakeholder in the management of local problems. However, the more I investigated the opportunities for local stakeholder involvement which was provided by the state, the less convinced that power was power effectively transferred in a way that effectively match the responsibility expected from local stakeholders. As a result of the findings of this paper (i.e. that only communities that already have resources – both human and financial – and motivation are likely to profit from shifts towards localism; whilst those who do not have access to these capacities are likely to become vulnerable or have their vulnerabilities strengthened), my focus moved away from focusing on how to ensure that local stakeholders take responsibility to asking if it is 'fair' to require local stakeholders to take responsibility in the first place?

Since this paper was written in 2012 little research has been conducted on the effects of localism on FRM (see Thaler and Hartmann, 2016 for an exception). Instead, Brexit, increased decentralisation and austerity had all taken place and by the time this thesis was completed (mid 2018) the Big Society could be considered something of a distant memory. However, rather than rendering the findings this study irrelevant, I would argue that as a result of these

occurrences, the findings of this study are even more relevant today. In other words, localism is not threatened by austerity but strengthened by it. As a result of Brexit, austerity and rapid decentralisation there may be an argument for not having the appropriate funds to engage and ensure that local stakeholders have the motivation and resources to take responsibility for FRM. On the other hand, the need for local stakeholders to be motivated and take responsibility is crucial. This is because, if local stakeholders do not or cannot take responsibility , inequality in relation to communities that are resilient to flood-related impacts and those that are not will be strengthen.

Chapter 4

Reputational risks and participation in flood risk management and the public debate about the 2013 flood in Germany

Christian Kuhlicke, Ines Callsen, and Chloe Begg

Abstract: Stakeholder participation is seen to be integral for the improvement of flood risk management. In many cases, however, participation in flood risk management practice has also become a space of conflict and debate. In order to better understand these conflicts, this paper focuses on the interplay between the practices of participation which seek to improve the management of first order risks such as floods and second order reputational risks which arise as a consequence of arguments about participation in political and publicised discourses.

Our analysis draws on empirical data related to the experience of the 2013 flood, which affected large parts of eastern and south-western Germany. The empirical data was gathered in Saxony and includes interviews conducted with citizens and experts involved in participatory processes in flood risk management as well as analysis of newspaper articles published during and directly after the 2013 flood.

The analysis found that practices of participation in flood risk management are highly politicised in Saxony and Germany in general. The basic argument that surfaced in the aftermath of the 2013 flood was that because some groups were very powerful and active in pursuing their individual interests during participatory processes, the planning and construction of technical measures took too long to provide some communities with protection against the flood and hence increased their overall susceptibility. As a consequence of this public blaming of participation for the damages that occurred in 2013, the very structure of participatory processes as well as the right of actors to participate in flood risk management were questioned. The paper concludes that the interplay of institutionalised practices of participation and public and media-related discourses about participation stand in close connection in Saxony. The institutional setting only allows for very limited participation in decision-making processes and, at the same time, provides the

possibility for responsible administrations to delegate responsibility and blame to those stakeholders participating in risk management in case ‘‘something goes wrong’’.

4.1 Introduction

Eleven years after the devastating flood of 2002, large parts of Germany experienced severe floods again in 2013 resulting not only in billions of Euros in financial damages (€6.7 billion); it also stimulated a public and media-driven debate about the role of participation in flood risk management. Before the flood water had time to recede, political and public debates about the role of participation in flood risk management were initiated. The general argument was that because some groups were very powerful and active in pursuing their individual interests in participatory processes, the planning and construction of technical measures slowed down, which resulted in an increased vulnerability of the larger community. In fact, the public and media blamed participatory processes for being at least co-responsible for the extent of the 2013 flood. As a result, the very structure of participatory processes as well as the right of actors to participate in flood risk management was questioned.

This public debate stands in sharp contrast to the policy and scientific discussions about the benefits of participation. These discussions highlight that the legitimacy and the outcome of environmental decision-making processes is enhanced through participation (for more details see Section 4.3). However, the flood of 2013 in Saxony produced a more critical view of participatory processes. Instead of improving flood risk management, it was argued that because of participation the quality and legitimacy of decision-making processes in flood management decreased and communities became more vulnerable.

In order to gain a better understanding of the argument and its possible implications for public participation in environmental risk management, this paper engages with how the practice of participation interacts with arguments and discourses about participation. In order to understand this interaction, this paper unravels how second order reputational risks, such as loss of credibility, reputation and legitimacy are systematically connected with participatory processes in risk management and their associated demands for a more inclusive decision-making process (Rothstein, 2006; Rothstein & Downer, 2012; Power, 2007).

The paper is structured as follows: in Section 4.2, the reader is introduced to the case study and to general information about the 2013 flood as well as to the methodological approach employed in this study. In Section 4.3, our understanding of the interplay of participation, risk governance and the emergence of reputational risks is outlined informing our analysis of the empirical material presented in the subsequent chapters. In Section 4.4 we describe the

media and political narratives publicised during and shortly after the 2013 flood, which are then contrasted in Section 4.5 with the views of experts and citizens involved in participatory processes in flood risk management. The analysis will show how the public framing of participatory processes is reflected upon by interviewees and how interviewees frame and manage the reputational risks associated with participatory processes. The concluding Section 4.6 summarises and discusses the main findings and provides recommendations about how to more systematically engage with the question of how the practices of participation and arguments about participation in public and political discourses interact and the implications that this might have for flood risk management.

4.2 Case study and methods

The case study examined in this paper is based in the federal state of Saxony, Germany. Saxony has been affected by a number of severe flood events during the last decades. In 2002 an unprecedented flood devastated the state. In addition, a number of smaller but nevertheless destructive floods occurred in 2006 and 2010 before another record breaking flood event, similar in magnitude to that of 2002, occurred again in June 2013. While the estimated costs related to damages recorded in the 2013 flood (€1.9 billion) were lower than the estimated damages recorded in 2002 (€8.7 billion) (DKKV, 2015), the flood triggered an enormous public and political debate about the appropriate strategy of flood management.

Generally, the responsibility of flood management is that of the federal states (*Bundesländer*). After the experience of the 2002 flood, the management strategy in Saxony was completely overhauled. Saxony considerably improved its warning system through the establishment of the Saxon Flood Centre (*Landeshochwasserzentrum Sachsen*), which is responsible for providing various stakeholders with information. Saxony also developed so-called flood protection concepts which specify the concrete measures that are to be implemented along the large rivers in Saxony. The development of flood protection concepts is based on an expert-driven, risk-based management approach. Participation in Saxony, as in most other *Bundesländer*, formally takes place only when specific measures are planned to be implemented and is usually organised within a so-called *Planfeststellungsverfahren* (a public approval process; PFV). This applies not only to flood protection measures, but to all larger planning processes (e.g. highway construction). In Germany, the PFV is the most common and at the same time most comprehensive approval procedure. It is embedded in the *Verwaltungsverfahrensgesetz*, a law regulating how public administrations should interact with the public. The aim of the PFV is to develop a legally binding plan (*rechtssicher*).

Within this highly formalised process, development plans have to be made publicly accessible to various stakeholder groups including affected municipalities, exposed citizens, environmental associations and other stakeholder groups. This process provides stakeholders with the opportunity to communicate their interests and concerns in written form. These submissions must be considered and evaluated by responsible authorities. In general, this mode of consultation leaves very little room to influence the overall development of a flood protection scheme as well as its implementation. Instead, it seems to legitimise decisions ex-post rather than providing a real choice of different alternatives ex-ante (Wiechmann & Terfrüchte, 2013). In some cases, authorities are even allowed to replace the *Planfeststellungsverfahren* by a *Plangenehmigungsverfahren*. The latter approval process aims at accelerating the planning process. It does so by excluding participation from the planning process. This means that public participation is neither foreseen in the decision-making process or in the assessment of environmental effects.

In sum, although the European Floods Directive encourages the active involvement of interested parties in the development of flood risk management plans (submitted end of 2015), the right to participate is likely to be restricted in Saxony. Instead of the types of inclusive participation that are suggested in the literature, participation is likely to remain at the level of consultation through processes such as the *Planfeststellungsverfahren* (Newig, Challies, Jager & Kochskämper, 2014).

While the scope of participation in flood management is rather narrow, the controversies surrounding the management of floods were quite widespread in 2013. Stakeholders either objected to the planning and implementation of technical flood protection measures (retention basins) or publicly pleaded for an acceleration of planning and implementation processes (see Otto, Hornberg & Thieken, 2014). What these objections have in common, as the following analysis will show, is that representatives of the public generally see their right to participate as being restricted, while representatives of responsible organisations and some politicians argue that certain stakeholder groups used their right to participate excessively. Empirically, the analysis is based on a newspaper archive collected during and after the 2013 flood. In addition, and to provide contrast to the debates which took place in the media, interviews were conducted with citizens engaged in participatory processes in flood management and representing local citizens' initiatives as well as with politicians and administrators.

The media archive is primarily based on the two most read regional newspapers in the study area; that is the *Sächsische Zeitung* and the *Leipziger Volkszeitung*, and further substantiated

with online articles and extended by selected nationwide news-papers. Newspapers were collected and analysed over a period of 4 weeks starting on June 1st 2013 and ending on July 2nd 2013. This review process resulted in the selection of 360 articles relating to the 2013 flood. Table 4-1 provides an overview. Articles of particular interest for this analysis engaged more thoroughly with the wider context of the flood event. Criticism of public engagement in participatory processes was one of the dominant and also defining narratives presented in the media during the 2013 flood. In addition to the analysis of the newspaper articles, 12 interviews were conducted between January and May 2014 (see Table 4-2). All interviews were transcribed verbatim.

Table 4-1 Analysis of newspaper articles related to the 2013 flood and the relevance of participatory processes in the media (bold).

Topic	Total
Reflection/discussion	
- Solidarity with affected residents and communities	38
- Flood management measures/strategy	27
- **Participatory processes and their relation to the 2013 flood**	**26**
- More fundamental consequences of the flood (e.g. relocation)	9
- Comparison with the 2002 flood	4
- Underlying reasons (e.g. climate)	4
- Other articles (personal/local stories)	34
Information	
- Articles providing an overview (e.g. flood levels, rain fall, evacuation, warning)	76
- Disaster management (roles and actions of official organisations as well as governmental actors)	32
- Preparation for the flood and evacuation of communities	28
- Damages/economic consequences	27
- Recovery/reconstruction programs	18
- Events in other countries/*Bundesländer*	18
- Articles providing very specific information (e.g. how to apply for pubic recovery funds)	16
	360

Table 4-2 List of interviewees and the main roles and responsibility in flood risk management.

Interview partners	Roles and responsibilities
3 interviews with representatives of citizen initiatives	Represent the interests of citizens affected by flood risk management-related decisions
3 interviews with representatives of environmental associations (NGOs)	Need to be formally consulted in environment-related decision-making processes (including flood management)
2 interviews with representatives of responsible administration	Leads and oversees the planning process, responsible for organising consultation processes within the *Planfeststellungsverfahren*
3 interviews with representatives of municipalities	Affected by decisions made in flood management and need to be formally consulted in flood-related decision-making processes
1 interview with politician	No formal role in flood management, involved in political decision-making processes in Saxony

4.3 Inclusive risk governance and the emergence of second order reputational risks

Within the field of risk management, there is a demand to broaden the arena of decision-making towards a more inclusive risk governance approach, in "which different actors from science, politics, economics, and the civil society" are invited to play a role in both assessment and management (Renn, 2008, p.11). It has been argued that a well set-up participatory process draws on a range of different sets of knowledge and capacities (Paton, 2007), contributes to increased risk perception, trust (Paton, 2007; Wachinger, Renn, Begg & Kuhlicke, 2013), enables social learning (Pahl-Wostl, 2006) and improves accountability and transparency (Lawton & Macaulay, 2014). Thus, participation can potentially lead to the improvement of the overall risk management process resulting in a more effective reduction of the flood risk (Merz & Heintz, 2013). In order to ensure such positive effects, efforts need to be made to involve a wide range of actors early on and throughout the decision-making process in order to increase the success of risk management-related decisions (Lundgren & McMakin, 2013).

Recently, a more critical stance on participation in contemporary politics has also emerged which argues that participation is employed to provide rhetorical support for local participatory empowerment but only in a way that serves to legitimise classical governmental decision-making processes and would hence do little to challenge the status quo (Begg, Walker & Kuhlicke, 2015; Griffin, 2011; Swyngedouw, 2009; Welsh, 2014). In other words,

participation is considered as a means to deliver plans and achieve goals which have been pre-defined by state actors (Watson, Deeming & Treffeny, 2009).

Again, a different perspective is presented in recent writing on the wider institutional context of the establishment of inclusive decision-making processes in risk management. The shift from government to governance is understood here as a process that places pressure on organisations charged with managing risk as they are increasingly required to act in an environment that is no longer defined by simple top-down command and control mechanisms but by vertical as well as horizontal forms of cooperation and hence by the demands and expectations of a plurality of actors (Walker, Tweed & Whittle, 2014). This requires such organisations to be ‘‘more open and responsive to external voices than previously science-based risk management thinking’’ (Power, 2007, p.96). As a consequence, those with a stake in the process of managing risks may become a “managerial ‘dread factor’ and an explicitly recognised source of risk” for organisations responsible for risk management (Power, 2010, p.137). Organisations are, therefore, increasingly engaged with managing second order reputational risks, understood here as the risk of being held to account and blamed in the wider institutional setting (Rothstein, 2006; Power, 2010). Reputational risks may also shift the focus away from first order risks since organisations are now increasingly preoccupied with how they are perceived and the possible institutional risks related to this perception (Hood, 2002, 2007; Bovens, Schillemans & Hart, 2008).

A “tipping point” which made government organisations as well as private companies aware of the need to more systematically engage with reputational risks was the public debate about the Shell operated Brent Spar oil storage buoy in 1995 (Power, 2010). Initially, Shell, as well as UK government officials, assumed that the public and pressure groups such as Greenpeace would sooner or later understand that the disposal of the Brent Spar buoy by sinking it in the Atlantic would be more effective environmentally than any other method of removal of the platform (see Power, 2010, 219 ff.; Fombrun & Rindova, 2000). However, Greenpeace and other environmental organisations managed to organise a global protest against Shell’s plan. This protest severely undermined the reputation of the company and also affected its turnover. Meanwhile, many private companies as well as government organisations involved in risk management have made reputational management an explicit effort of their organisational structure and made it an objective of corporate management itself (Rothstein, 2006).

Against the background of the outlined “reputational risk argument”, the public and media debate triggered by the 2013 flood is a compelling case as it turns this argument on its head.

It suggests that not only managing authorities or corporate businesses are facing reputational risks, but also representatives of the public and stakeholder groups are exposed to this risk, as the following analysis will further explore.

4.4 Blaming participation for the extent of the 2013 flood: media and political narratives

Based on the analysis of 360 newspaper articles, it was found that the media coverage about the role of participation in flood risk management is characterised by three broad arguments. The first focuses on citizen groups and their role in flood risk management, quite often accompanied with strong and personal accusations. The second argument turns its attention from specific actors to the process itself and questions whether current participatory practices are appropriate. These two arguments are quantitatively the dominant ones. Approximately, 75% of the newspaper articles dealing with participation are about either holding participatory processes accountable for the extent of the 2013 flood or proposing an acceleration of participatory and hence planning processes in flood management. The third argument is concerned with the revision of, or a more critical engagement with, initial arguments published in 2013 and was published a few weeks after the flood event.

The first articles relating to participation were published when the flood peak reached its climax in the upper parts of the tributaries to the Elbe River in early June 2013 and, as a consequence, many communities were flooded. The following quote was published on June 3rd in 2013 in a leading regional newspaper and depicts the opinion of the former Environmental Minister of Saxony.

"He [the then Environmental Minister] has pointed out again and again that flood protection is a task for several generations and not everything can be done at the same time. In such moments [as the flood event] he is particularly annoyed about the citizens' initiatives that bring flood protection projects to court or hamper progress through other forms of opposition" (Sächsische Zeitung, 03.06.2013, p.2).

The statement summarises two of the central characteristics of the argument increasingly put forward in the days that followed: on the one hand, citizens' initiatives' reputation is undermined by blaming them for slowing down the process of implementing flood protection projects and holding them accountable for the extent of the destructive flood events. On the other hand, it also, implicitly at least, suggests that politicians and administrators deflect from their own roles and responsibility in flood risk management. Similar opinions were subsequently expressed by many concerned citizens' in letters to the

editors, by responsible administrators and leading politicians in newspaper articles and reproduced in many editorials of regional newspapers and even some national newspapers. In these contributions, single citizens were blamed for prioritising their own needs as being higher than those of the wider public and by doing so, putting the larger community at risk. As one citizen stated: "*When community groups endanger the safety of residential areas, this goes way too far. Hopefully the opponents of the levee reinforcement get off with a slap on the wrist this time […]. Safety comes before aesthetics*". Similarly, the *Ministerpräsident* (the minister for the state) of Saxony was quoted as stating that: "*The Free State of Saxony will no longer accept that single citizens can prevent construction measures due to their individual interests. The protection of the general public must be rated higher than the interest of a single person […]. Flood protection must have priority*" (Sächsische Zeitung, 06.06.2013, p.1). A leading flood management official from the Ministry for the Environment was quoted with a similar statement: "*Without all this [protests and lawsuits] the dike would have been completed and would have prevented the flood*" (Sächsische Zeitung, 08.06.2013, p.3).

The accusation quite often did not stop at undermining the credibility of a group or individual, some articles even go as far as singling out individuals by name. An influential administrator employed at the State Reservoir Administration of Saxony labelled community groups as "*Stammeskrieger*" (tribal warriors) (Leipziger Volkszeitung, 13.06.2013, p.4), individuals were called "*Flutsünder*" (flood sinners) or "*grumblers*" (Sächsische Zeitung, 15/ 16.06.2013, p.3). An article in the leading tabloid newspaper in Germany described one individual as a "*flood idiot*" (Bild Dresden, 08.06.2013, p.3). His personal reputation was undermined because his property had been flooded the second time since 2002 and because "*2,453 people would not have been evacuated*" if he had not opposed a newly planned flood wall. The 2013 flood proved that "*his opposition was foolish*" (ibid.). In another article, a representative of a local council was quoted as stating: "*Those people opposing certain measures again and again since they prefer to have a nice scenic view on the Elbe River should be lynched*" (Sächsische Zeitung, 13.06.2013, p.3). Although this article underlines that the council representative immediately retracted this statement, this general opinion was overwhelmingly and uniformly presented in most newspapers' contributions during the first days of the flood event: groups and single persons are blamed and held accountable for the extent of the 2013 flood. As a consequence, many citizens report how not only their personal reputation was undermined indirectly through the media coverage, they were also assaulted on the street and personally threatened as a consequence of this public discourse (e.g. Leipziger Volkszeitung, 27.06.2013, p.3; 15).

A second relevant argument presented in the newspaper articles is related to the previous discussion. It was argued that changes in the current structure of participatory processes were required in order to speed up the participatory processes: "*The Environmental Minister Kupfer wants to ease planning and approval processes for flood protection. […]. 'This is not about excluding citizens or restricting their right to participate!' he stressed. 'If there is a compromise, one should start with the construction work*'" (Sächsische Zeitung, 8.06.2013, p.6). As a result of the popularity of this argument, the state of Saxony and the state of Bavaria, which was also severely affected by the 2013 flood, have proposed developing a new law that would give priority to the right of the common good over the right of the individual (LVZ online, 02.07.2013). This discussion has oscillated between the anticipated risk of reducing fundamental democratic rights on the one hand and the execution of coercive measures, if necessary, on the other hand. A mayor of an affected city stated that: "*It is difficult to explain to anyone, why we did not make any progress in many flood protection projects over the last eleven years. Now many citizens ask: Why did nothing happen? There must be acceleration in the process and at the same time basic democratic rights should not be undermined*" (Sächsische Zeitung, 10.06.2013, p.14). In another editorial comment it was argued that "*people, who do not want to be protected, will be forced to be protected*" (Sächsische Zeitung, 13.06.2013, p.13). However, although the need to restructure participation processes was presented as pressing by many leading politicians during the flood, at the time of writing, there was no concrete suggestion made about how to translate these arguments into a new law.

Hardly any alternative opinions gained public attention during and immediately after the flood event. There were no arguments made public about whether citizens might actually have good reason to participate in flood management, or to what extent the concerns of adverse citizens could be helpful for proposing alternative solutions. In the publicised discussion the danger of individual interests always outweighed the possibility that participation is a fundamental democratic right or that it might actually improve the outcomes of decisions in flood management, a point we return to in the subsequent chapter. Although, alternative opinions were more or less lacking we found one example of a local flood initiative speaking of the limitations that surround technical flood protection measures in general: "*These walls would have been overflown and destroyed anyway. We need other concepts*" (Morgenpost am Sonntag, Sachsen, 09.06.2013, p.11). It was only 2 weeks after the flood that alternative views started to gain more attention: "*They are labelled as 'flood sinners': affected persons who reject flood protection walls and who propose alternatives.*

But none of them actually caused the inundations" (Sächsische Zeitung, 15.06.2013, p.3). It was highlighted that none of the objections made by citizens or environmental associations resulted in the postponement of flood protection schemes. A lawyer representing the interest of an individual who opposed a flood protection measure saw the public and political debate as "*a witch-hunt against individuals who have done nothing other than exercise their basic civil rights*" (ibid.). Also the State Reservoir Administration of Saxony qualified its earlier statements in an official statement which emphasised that flood protection measures are "*complex schemes*" and there are always "*multiple reasons*" for delays (ibid). "*We should not point the finger at someone [i.e. community groups] and we did not start this debate [which blamed stakeholder participation for flood-related damage experienced in 2013]*" (ibid.). The article even points out that the *Ministerpräsident's* argument about participation, taken up unquestioningly by many commentators, was actually not based on facts: "*The Ministerpräsident was probably badly informed*" (ibid.).

4.5 Managing the reputational risks of participation ex-post: appeasement and radicalisation

In the following analysis we refer to interviews that were conducted with persons either directly or indirectly involved in participatory processes about 1 year after the flood event. The analysis is based on interviews conducted with representatives of the civil society (e.g. citizen initiatives and environmental NGOs) as well as on interviews conducted with representatives of local and regional authorities, responsible administrations and politicians (see also Section 4.2).

4.5.1 The view of decision- and policy-makers

Among most of the interviewed representatives of local and regional authorities, responsible administrations and politicians there is a clear tendency to support the public accusations and implicit or explicit contestation of stakeholder's reputations, on the one hand. On the other hand, persons directly involved in the public debate in 2013 try to also qualify their opinions with a link to the general as well as their personal situation, which was described as being very emotional at that time. For example, a mayor of one of the affected communities which gained considerable attention on regional and national television stations during the flood stated: "*At the time, we were all over the place in the media [...], something stupid slipped out of my mouth, but well, this was an emotional time, but things have calmed down since then*" (A12, 85–87). However, he still supports his original opinion in regards to the relationship between individual and common interests: "*49 property owners were in favour*

of the flood protection scheme, and only three opposed it. And this was the point […] when the court also said 'That is enough'(A12, 503–506). Similarly, another employee of the regional district (*Landkreis*) stated that in many communities the planning process would have progressed more quickly if individual property owners had prioritised the common interest (i.e. flood protection) over their individual interests (A10, 200–201, cf.also A11.264 ff.).

However, in addition to attempts at validating and reproducing existing arguments (e.g. common good vs. individual selfishness), many of the publicly made accusations were modified, if not completely revoked. One interviewee stated, for instance, that the Ministerpräsident should have more openly admitted that his own administration slowed down the decision-making process since it quite often took them a very long time to process the relevant planning documents: "*This [the slowness of the administration] was the actual problem*" (A12, 668–674). However, it was also argued by a mayor that it was not only the administration, but also law courts which were overloaded and were hence too slow in regards to processing all the pending flood protection-related lawsuits (A13, 623–624). One politician even argued that the law courts did not act in an objective manner in relation to this matter: "*And this is my impression, law courts in Saxony, are biased to a certain extent*" (A7, 329).

Despite the harsh critique of the role of participatory processes in flood risk management that was expressed during the 2013 flood, there was, at the time of the interviews, strong agreement amongst responsible administrators and politicians that citizens should be involved in decision-making processes and that citizens should organise themselves collectively. The reasons given for this conclusion echo many of the well-known arguments provided in the scientific discussion on the benefits of participation. The benefits listed by the interviewees included the beliefs that citizens' initiatives represent and communicate the different interests and expectations of flood exposed citizens, and therefore help to sensitise responsible decision-makers about local issues, and possibly help them to be better able to deal with emerging conflicts (e.g. A10, 144 ff.; A11, 114 ff., A12, 460 ff.). Local residents, it was argued, might have relevant contextual knowledge that can also help to improve the substance of the planning process (e.g. A12, 214 ff.; A10, 319 ff.; A7, 52 ff.).

Furthermore, it was underlined that increased involvement of interested parties should take place particularly during the early planning stages. In retrospect, one interviewee suggested that earlier involvement of affected citizens would have probably helped to reduce the risk of conflicts, reduce the financial costs and the overall lengths of the planning process as well as

the political and media-related turbulence surrounding it (e.g. A12, 279 ff.). This also implies, as one interviewed representative of a municipality stated, that the political demand expressed in 2013 for speeding up the participatory process is rather misleading; it is the administrative handling of the process as well as its outcome that should be accelerated: "*During the participatory process one should have time, but when consensus is found, the administration should be quick in processing the proposed solution. In this respect we had a huge problem before 2013*" (A12, 674–676). Furthermore, it was argued that a more inclusive approach in the early planning phase would probably speed up the overall process as fewer conflicts are expected in subsequent phases as a result (A7, 18 ff.).

However, these appeasing arguments are conditional and qualified in at least two respects. First, it was argued that the final decision should remain in the hands of state actors and should not be opened up to participatory processes: "*In the end, an administration must take the decision and balance the pros and cons between all the different interests and demands that characterise such a process*" (A11, 252–255; 314–316). The reasons for this view are argued to be grounded both in the "*constitutional system*" that requires single interests to be compatible (A10, 297–301) as well as in the deep-seated belief that affected citizens are incapable of overseeing the entire decision-making process, as citizens will base their interests on egocentric reasons rather than the common good: "*If we leave it to the citizens, I am not sure whether all of them are actually able to participate, whether they see the overall picture. At the end, egoistic interests will prevail. Therefore, I think, […] one cannot leave such decision to a basic democratic process or a public referendum. […] The state or the municipality needs to have the final word*" (A12, 639–647).

Secondly, it was argued that the basis of an open discussion must remain on the substantive level. This means that discussion should be based on facts and should not be overloaded with ideological debates, as it is increasingly the case, as one experienced representative of the responsible administration stated: "*If one leaves the level of facts and if one, due to whatever reasons goes after blood, then we have no basis for a discussion. […] If I should accept the argument of a city planner or a preservationist, then he needs to take us seriously too and he needs to deal with the facts*" (A13, 611–615). As this short statement indicates, in some cases the different parties do not share common ground when it comes to the interpretation of underlying information, data and proposed solutions related to the management of flood risks; a point that becomes relevant also in the next section.

4.5.2 The view of representatives from civil society

Most of the interviewed citizens and/or representatives of NGOs or citizen's initiatives have attempted to influence official decision-making processes in flood management for many years. The reasons for this are manifold. Some of them are personally exposed to flood risk or affected by the anticipated negative consequences of a planned protection scheme (e.g. the risk that planned measures might actually increase flood risk in their community), some even had their land expropriated, others represent the interest of a larger group, and yet others represent environmental associations (NGOs) who are concerned about the about the environmental impact of proposed measures. Some of the interviewees were also personally insulted by the media after the 2013 flood and were hence exposed to the erosion of their personal reputation: "*After the flood last year, we had for quite a while some very sinister phone calls, that even resulted in personal intimidations with the baseline: 'This mess is your fault'*" (A8, 162– 164). Another interviewee stated that a tabloid newspaper had branded the person as "*public enemy number one*" (A4, 831).

Because of the 2013 experience as well as a long-lasting controversy, there is a deep seated feeling amongst the inter-viewed stakeholders that their right to participate in decision-making processes as well as their actual power to influence the outcome of such processes is quite limited. Reasons include, among others, a lack of political will on the local or regional level to support proposed alternative measures (e.g. A3), restricted access to relevant information and data sets (e.g. A5), which is further complicated by the fact that administrative bodies "*simply delegate their responsibility and power to a planning office and expect them to get the job done*" (A4, 177–182). As a consequence, great effort is required from the interviewed persons to collect documents and gather data and information, and some have even commissioned engineering offices to produce an independent expert assessment in order to be able to understand the official expert opinions and propose alternative solutions (e.g. A4). However, such endeavours are rarely supported by the administrative bodies; on the contrary, many interviewees feel quite badly informed: "*The average citizen is not able to digest all this information, there were five files. There was no help; there were no information events, nothing*" (A4, 458–461).

However, there are also fundamental institutional barriers limiting the ability of stakeholders to participate. While participation is restricted in the so-called *Planfeststellungsverfahren*, which enables basic, written consultation between the public and the administration, this basic right can be further restricted in two ways. First, by changing the more inclusive *Planfeststellungsverfahren* to a more restricted *Plangenehmigungsverfahren* that does not

foresee any participatory elements for the public. One interviewee argues that the actual transition from a *Planfeststellungs*- to a *Plangenehmigungsverfahren* was used to increase the pressure on property owners, since they were no longer able to oppose the planned measures with the official procedure (A4, 207 ff.). A second barrier to participation is the so called "*Deicherlass"* (levee decree), which was, interestingly, executed by the then Minister for the Environment, Kupfer, in 2010; the Minister who first initiated the trend of blaming citizens for the extent of the 2013 flood. This decree allows authorities to remove trees and bushes from dikes and levees when "*danger is imminent*" without requiring them to consult environmental associations (NGOs), as they usually would need to do. The latter consider this decree as a fundamental restriction of their constitutional participatory rights: "*This means, if the State Reservoir Administration of Saxony [Landestalsperrenverwaltung] claims danger is at hand […] then no participation must take place and the environmental associations are kept out of the process, which also means we get no information about what is planned*" (A5, 57–63). Whether a danger is imminent or not, is, in the end, a decision that is taken by the responsible administration (see A13, 404–463) and a matter of controversial debates (cf. A5, 81 ff.; A7, 378 ff.).

Among the interviewed stakeholders, two strategies become apparent as to how they deal with these barriers and arising conflicts. The first one is what might be called an "*appeasement strategy*". It is based on a strong rational framing of the situation that puts substantive arguments, based on factual and presumably objective information at the forefront: "*In this regard the interaction [with decision-makers] was always constructive and I think it was useful, in the end, that we managed to get in contact with decision-makers on all levels, also with objectivity*" (A6, 119–122). Actors representing this position also emphasise how they got along with administrators and officials on the personal level that they shared a mutual level of respect (A13, 497 ff.).

The second strategy, which was the dominant one among the interviewees, points towards a "*radicalisation*" of the conflict. The reasons for this radicalisation are grounded, above all, in the perceived restriction of the ability to influence decision-making processes within the current institutional structure: "*We tried it within the democratic way [by founding a citizen initiative]. They did not want to listen to us. Then we tried it with newspapers […], and then we went to the city assembly and asked specific questions and then one person shouted at us 'You are not allowed to ask questions, only the mayor is allowed to do so'. And there you can see we are not able to live our democratic rights. There is no space*" (A4, 564–579). The interviewed person proceeds by stating: "*This was a horrible experience. The legal way does*

not lead to success [. . .], our democratic rights do not count and the single citizen does not count either" (A4, 703–706). As this quote shows, this view is connected with perceived exclusion from all democratic processes including courts and from the possibility for outreach through the media, which was further amplified by personal accusation and discrimination in public life as experienced in the aftermath of the 2013 flood. This situation resulted in a complete loss of not only personal reputation but also of trust in democratic institutions. As a consequence, flood management becomes an arena shaped by conflicts and war fought through rhetoric: "*All this will end in a huge and dirty battle. We will not cast off. We […] will not accept this. We will continue. We start now by complaining at the European level so that the European Commission takes notice of all this. We will go all the way*" (A5, 400–405). At this stage, communication between the different groups is no longer possible since there is no common understanding about the underlying "*facts*" and about what is the "*right*" way to proceed in order to improve existing flood management schemes. This highlights considerable differences in underlying value systems between the different groups (Klinke and Renn, 2002).

4.6 Summary and conclusion

The media analysis revealed a quite remarkable uniformity of arguments about the role of participation in flood management put forward by politicians in government and representatives of responsible administrative units. These arguments were published and reinforced through media outlets; at least during the first days of the flood event. The argument aimed at undermining the credibility and legitimacy both of participatory processes, and of stakeholders involved in participatory processes in flood management by holding them accountable for damages of the 2013 flood. In hindsight, this public outcry is considered by the interviewed representatives of government authorities as excessive. Although some of the interviewed representatives of authorities maintained the argument that individual interests quite often dominate the participatory process and pose a risk to the common good, they no longer attributed the flood damage experienced in 2013 to participation. On the contrary, while during the flood event institutional-administrative actors blamed stakeholders through media publications for being responsible for the extent of damages in 2013, and hence deflected from their own role in the planning and construction process, they later reverse the argument by blaming the administrative-institutional context to explain the slowness of the planning and construction processes during the years preceding the 2013 flood.

The analysis of the interviews, furthermore, revealed that stakeholders who were the target of criticism during the 2013 flood faced a double vulnerability. First, they were exposed to public blaming and, hence, needed to deal with severe reputational risks in 2013 through the media coverage and the rhetoric of politicians and administrators. Stakeholders tried to cope with these reputational risks and conflicts emerging from this ex-post by either making efforts to build trustful relationships with administrators and responsible politicians or by becoming increasingly radical in their management of conflicts. The latter response occurred because stakeholders believed that current participatory structures did not provide enough space to meaningfully influence current decision-making processes. This leads to the second vulnerability of stakeholders: although they were held accountable for the extent of the 2013 flood, in their perspective, they hardly had any possibility to actually influence the decision-making processes within the current institutional setting. The case study hence supports the claim that participatory processes would often help to reinforce the status quo by legitimising decisions ex-post rather than providing a real choice of different alternatives ex-ante. It is this restricted approach to participation that created frustration and also radicalisation for stakeholder groups. At the same time, there is an agreement among interviewed representatives of authorities and stake-holders that earlier and more thorough involvement of affected parties in the planning processes would help to reduce the risk of such conflicts.

On a more general level, the empirical findings suggest that not only managing authorities are faced with reputational risks in a more inclusive risk governance setting, as suggested in the literature, but also stakeholders participating in decision-making processes. More specifically, the institutionalised practices of participation are interlinked with public and media-related discourses about participation and second order reputational risks arising from this interaction in the following way: it is the institutional setting within the PFV (*Planfeststellungsverfahren*) allowing only for very limited participation in decision-making processes and, at the same time, provides the possibility for responsible administrations to delegate responsibility and blame to those stakeholders participating in risk management as in the case of the 2013 flood. Although there was no statement made by any interviewees that the publicised blaming of stakeholder groups was coordinated in order to distract the public from blaming responsible authorities for the occurrence of the 2013 flood, the impression remains that participating stakeholders were a convenient scapegoat for authorities and politicians to delegate blame to those stakeholders that could have been also potential blamers or sources of reputational risks. It is a matter of further research to explore

whether earlier and more thorough participation helps to reduce the risk of conflicts and one-sided delegation of blame and hence improves to the overall quality of decision-making processes in environmental risk management.

Postscript: Through the research conducted in this paper, I found that local stakeholders are not just vulnerable to risk but also vulnerable to attacks on their reputation and therefore, right to influence FRM-related planning. At this point in the thesis I started to question the viability of participation in planning (e.g. the definition of the solution and identification of resources).

Chapter 5

The Role of Local Stakeholder Participation in Flood Defence Decisions in the UK and Germany

Chloe Begg, Ines Callsen, Christian Kuhlicke and Ilan Kelman

Abstract: An important aspect of integrated flood risk management around the world is accepted as being the involvement of a range of stakeholders in flood-related decision-making processes. Achieving local stakeholder participation in ways that lead to the expected benefits is burdened by challenges and difficulties. By drawing on examples of practices of local stakeholder participation in flood risk management in two European countries, the United Kingdom and Germany, this paper aims to understand the extent to which local stakeholders are able to influence flood risk management. Empirically, the paper focuses on flood defence planning and implementation-related decisions as they still remain the dominant approach of managing flood risks in those locations. The findings from the two case studies show that involvement of local stakeholders in decisions related to flood defence schemes is limited and likely to lead to conflict and frustration as well as, potentially, a strengthening of inequalities. These lessons have implications for the United Kingdom and Germany as well as for other locations around the world.

5.1 Introduction

Historically, measures to reduce flood risk have been dominated by expert-led approaches to decision-making (Johnson & Priest, 2008). The limitations of such approaches have been widely discussed (Fordham, 1999; Samuels, Klijn & Dijkman. 2006; Schanze, 2006; Scott, 2013; Adelekan, 2016), further highlighted by the damage that floods continue to cause alongside continuing calls for more integrated approaches for dealing with flood risk, achieved by working across sectors as well as across sub-national and national boundaries (Kelman, 2001; Wehn, Rusca, Evers & Lanfranchi, 2015a). As a result, a shift towards societal flood risk management (FRM) has taken place.

FRM has been broadly defined as a “holistic and continuous societal analysis, assessment and reduction of flood risk” (Schanze, 2006). Others have described current FRM in more detail as a “strategic, integrated system of flood risk management that takes more account of the

environmental and social impacts of flood hazard management" (Nye, Tapsell & Twigger-Ross, 2011, p. 289) by promoting flood risk reduction through a combination of structural and non-structural measures (Nye et al. 2011; Challies, Newig, Thaler, Kochskämper & Levin-Keitel, 2016). Structural measures include flood defences, flood water storage, drainage, and pumping, whilst non-structural measures include spatial planning, relocation, building codes, infrastructure design, forecasts, warnings, insurance, and communication (e.g. encouraging citizens to take measures to inform and prepare themselves) (DEFRA, 2005; 2007/60/EC, Article 7 §3; Kelman, 2001; Schanze et al. 2008; Krieger, 2013; Wehn et al. 2015a).

As a result of these shifts, the involvement of a wide range of stakeholders in FRM is seen as necessary to effectively reduce flood-related damage (Johnson & Priest 2008; Nye et al. 2011). The involvement of local stakeholders is seen to be important to improve the quality of decisions and to encourage local stakeholders to take more responsibility for FRM (DEFRA 2011a; Wehn et al. 2015a and according to legal regulations such as the Federal German Water Act – *Wasserhaushaltsgesetzt,* 2009 §5 Ab2). There is a particular emphasis on inclusive governance in which local stakeholders are encouraged to become involved in FRM-related decision-making processes, such as the planning and implementation of structural and non-structural measures (DEFRA 2011a; § 72 VwVfG). Much literature exists on the importance and benefits of involving local stakeholders in such decisions (Webler, Kastenholz & Renn, 1995; Wisner 1995; Few, Brown & Tompkins, 2007; Renn 2008), but there is a lack of empirical studies which focus on the influence that such involvement can have on the final decision and the reduction of flood-related damage (Kuhlicke 2014; Begg, Walker & Kuhlicke, 2015; Otto, Hornberg & Thieken, 2016).

In order to gain a better understanding of how local stakeholder participation can influence FRM, this paper provides an overview of the process of FRM-related participation for structural defences in two case studies. This is achieved by briefly outlining the benefits and limitations of local stakeholder participation as discussed in the scientific literature, before exploring the role of local stakeholder participation in current European FRM policy. To unravel further the practical context of participatory processes in FRM, this paper focuses on the experiences of two European Union Member States at the time of the research: the UK and Germany.

We focus specifically on England instead of the UK and Saxony instead of Germany due to the way in which participatory processes are set up in both countries. In the UK, significant differences in FRM exist for each constituent country (England, Northern Ireland, Scotland, and Wales). Similarly, in Germany, national agendas are set for FRM, but the responsibility for

implementing these agendas is placed in the hands of the Länder (or states). We have chosen these two examples because they have both been influenced by policy changes supporting local stakeholder involvement at the European level (2007/60/EC), but they have different approaches to local stakeholder participation in practice.

Although local stakeholder participation occurs for various aspects of FRM, including risk assessment (see DEFRA, 2009) and flood risk mapping (Meyer et al. 2012), this paper is particularly interested in the way in which this responsibility is delegated and the participation formats that exist in order to improve flood defence schemes. Despite criticisms of flood defence approaches (Tobin, 1995; Etkin, 1999; Fordham, 1999), it remains favoured as a means of ensuring public safety and it is the area of FRM where most funding is spent (Otto et al. 2016). Many decision-making processes assume that structural defences decrease flood risk and assume that populations want them. In fact, unlike alternative, non-structural measures, there is a long history of flood defence as a government-led measure for managing flood-related risk under such assumptions (Fordham, 1999; Johnson & Priest 2008; Tobin, 1995). Moreover, it is an area which has established forums for participation, providing comparable examples across Europe. In order to understand the influence that current participation processes can have on flood defence-related decisions, this paper addresses three overarching research questions: To what extent do stakeholder participation processes 1) encourage deliberative processes, 2) provide input into decisions related to planning and implementation for flood defence and 3) lead to reductions in flood-related damage?

The empirical findings of this paper reveal that despite an emphasis on local stakeholder participation, the actual possibility for stakeholders to participate and to influence decisions is limited in practice which could lead to frustration and conflict as well as increased inequality. Thus, this paper also discusses some of the reasons for the limited space provided for local stakeholder participation in decision-making processes related to flood defence and concludes by outlining some assumptions and challenges regarding local stakeholder participation in such decisions.

5.2 **Participation in** theory **and EU policy**

Based on Freeman (1984), we understand local stakeholders to represent organised groups or individuals who are potentially affected by or who have an interest in FRM in their area of residence, work, or professional representation (e.g., NGOs and elected officials). Actively involving local stakeholders in decisions affecting them provides numerous benefits. The following subsections present some of the theoretical discussions related to the role of

participation in environmental decision-making processes, especially regarding the role of participation in European Union FRM. These discussions provide the basis for the three aforementioned research questions which will be used to evaluate the two empirical examples of local stakeholder participation in flood defence related decisions.

5.2.1 Participation in theory

Active involvement of local stakeholders in environment- and development-related decisions through participatory activities is seen to lead to better accepted decisions thereby improving legitimacy and encouraging active citizenship and democracy (Webler et al. 1995; Chambers, 2002; Paton, 2007; Walker, Whittle, Medd & Watson, 2010; Featherstone, Ince, Mackinnon, Strauss & Cumbers, 2012). Moreover, as Few et al. (2007) point out in regards to climate change adaptation, "[p]articipation has been promoted both instrumentally, as a 'means' of ensuring that decisions are better geared toward their objectives, and as an empowering 'end' in itself, ceding communities greater control over the decisions that affect their lives" (p. 48).

However, inequalities could arise and/or may be strengthened when communities are given control over decisions but little support to deliver FRM-related outcomes (Begg et al. 2015). Therefore, if a participatory process is used as an 'end', rather than forcing local stakeholders to take full responsibility for FRM, participation should be deliberative and encourage co-decision-making between local stakeholders and the authorities by involving local stakeholders in decisions about what that responsibility should entail and providing support to be able to take such responsibility (Begg et al. 2015). Additionally, participation as a 'means' or an 'end' should go beyond informing about, educating on, and consulting regarding predetermined decisions, because this approach would be likely to lead to conflict, frustration, and disempowerment (Few et al. 2007; Otto et al. 2016). For example, Arnstein (1969) argued that "participation without redistribution of power is an empty and frustrating process for the powerless" (p. 216), a statement continually corroborated by more recent works on participatory processes (Cooke & Kothari, 2001; Hickey & Mohan, 2004) including with respect to floods (Wisner 1995). Moreover, participation without power means that, although local stakeholders can be involved in decision-making processes, they do not have the power to affect their situation. As a result, their input leads to little change regarding the predefined status quo (Allmendinger & Haughton 2010; Featherstone et al. 2012). In sum, if local stakeholder participation is to influence the final decision and improve the acceptance and quality of the outcome, it should encourage deliberation and ensure the stakeholders can contribute significant inputs.

5.2.2 Participation in European flood risk management policy

Local stakeholder input in environment and development-related decisions that affect them, including for FRM, has been supported at the international and European levels. At the international level, Agenda 21 of the 1992 Rio Conference on Environment and Development underlines the relevance of participation by stating that "[e]nvironmental issues are best handled with participation of all concerned citizens, at the relevant level (UNDP, 1992 Principle 10). At the European level, various policy documents exist that highlight the relevance of participation, with Begg, Luther, Kuhlicke & Steinführer (2011) providing an overview. Regarding FRM, the European Directive on the assessment and management of flood risk (Floods Directive, 2007/60/EC), which aims to improve efficiency in reducing the flood risk, includes local stakeholder input as an important aspect. Local stakeholder participation is particularly encouraged for developing FRM plans (FRMPs) (2007/60/EC, Article 10).

In relation to developing FRMPs, including structural measures, both the Strategic Environmental Assessment (SEA) (UN, 2003) and the Environmental Impact Assessment (EIA) (2003/35/EC) are relevant policy documents. The Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Trans-boundary Context (the SEA Protocol) (UN, 2003), supports local stakeholder participation by stating that "each Party shall ensure early, timely and effective opportunities for public participation, when all options are open, in the strategic environmental assessment of plans and programmes" (UN, 2003 Article 8(1) p. 5; also see the SEA Directive 2001/42/EC). Additionally, the Directive 2003/35/EC as an amendment to the Environmental Impact Assessment Directive 85/337/EEC of 1985 and the SEA Directive (2001/42/EC) supports public participation for drawing up certain environment-related plans and programmes; however, how local stakeholder participation is implemented in practice is left to the discretion of individual Member States (also see further amendments to Directive 85/33/EEC, 2009/31/EC; 2014/52/EU).

Therefore, policy, like theory, assumes that local stakeholder participation can improve the decision-making process as well as the decision outcome. It has been argued that this turn towards participation suggests a trend towards greater openness and inclusion of stakeholders and their views and expertise (Saurugger, 2010; Chilvers & Kearnes 2016). Although there have been many studies conducted on the benefits of participation and some more recent publications engage with implementation mechanisms of how participatory processes are set up in different European Union Member States in the context of the Floods

Directive (e.g. Heintz, Hagemeier-Klose & Wagner, 2012; Thaler & Priest 2014; Otto et al. 2016), a more detailed empirical account of the extent to which participation in FRM-related decision-making processes in Europe can influence final decisions is lacking. This paper contributes to filling in this gap for flood defence related decisions in two locations.

5.3 Methods

Over the last few decades, both England and Germany have experienced major floods (e.g., England in 1998, 2000, 2007, 2013/2014, and 2015/2016 and Germany in 1993, 1995, 1997, 2002, 2006, 2010, 2012, and 2013). In both countries, as a result of a range of social and political pressures, including implementing the European Floods Directive in national legislation in both in England and Germany, the involvement of local stakeholders in FRM, although in differing forms, has gained emphasis in both policy and practice. Consequently, these case studies provide a comparison of how European FRM policy has been interpreted and implemented in practice.

These empirical examples combine findings from two separate European FP7 projects[6]. The data used is based on a literature review and stakeholder interviews in flood-affected areas. Twelve interviews were conducted across England in 2012 with local decision-makers, including regional and local government decision-makers, community organisations, an urban planner, and academics. Twelve interviews were conducted in Saxony in 2014 with regional and local government decision-makers, representatives of responsible administrative bodies, community organisations, and non-governmental organisations. The interviews in England were conducted in English by a native speaker, while the interviews in Germany were conducted in German by a native speaker.

The implementation of local stakeholder participation is slightly different in each case study, so to reflect this difference, the interview questions also had slight differences. One key divergence is that the English case study's questions focused on identifying the stakeholders involved in FRM, the impact of recent political changes, and whether or not responsible stakeholders have the capacity to fulfil their responsibilities. Meanwhile, the Saxon case study's questions also identified the stakeholders involved in FRM, but focused on the perceived impact that participation can have on decision-making processes, and sought suggestions for alternative ways for local stakeholder participation. Both studies share a

[6] Social Capacity Building for Natural Hazards: Toward More Resilient Societies (CapHaz-Net, Grant number: 227073; see Begg et al. 2015) for England and Building Resilience Amongst Communities in Europe (emBRACE, Grant number: 283201; see Callsen, 2014) for Saxony.

focus on the role of local stakeholders in flood defence-related decisions. Both studies fully transcribed each of the interviews using the f4 program. The English interviews were coded manually and the Saxon interviews were coded using the support of the maxQDR program. The present study compares the findings of both studies. For a detailed discussion of the specific methods used for each case study see Callsen (2014) and Begg et al. (2015).

5.4 Participation in flood defence in practice

The following sub-sections describe the role of local stakeholder participation in the planning and implementation of flood defence measures in England and Saxony.

5.4.1 England

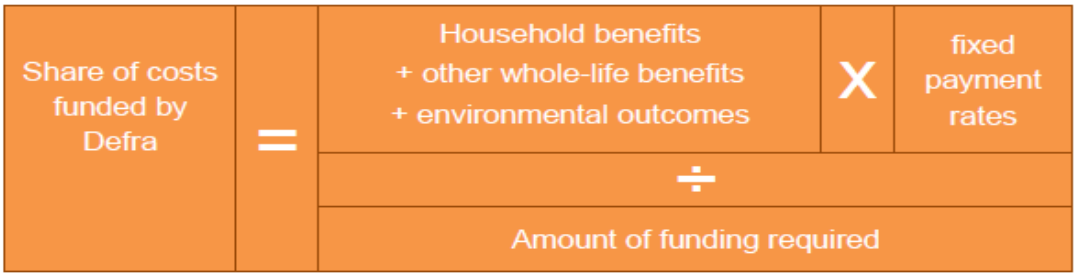
In England at the time of the research, participation had become a prominent topic in various policy contexts. The "Big Society" agenda (Cameron, 2010) emphasised the importance of local stakeholder involvement in solving local problems. This political rhetoric was transferred into regulation through the Localism Bill (2010) and later the Localism Act (2011), which promotes localism on the premise that local stakeholders are "those best placed to find the best solutions to local needs" (Localism Bill, 2010, p. 2). The ethos of the Localism Act and its focus on decentralisation can be seen in the way in which floods are managed in England (Thaler & Priest, 2014). Even before the introduction of the Flood Risk Regulations (2009) and the subsequent Flood and Water Management Act (2010), which translates the European Floods Directive into national law, there has been an increasing emphasis on the government placing boundaries around the state's ability to protect its citizens 100% from flood damage. Instead, the need for local stakeholders to play a larger role in managing floods is articulated (EA, 2009).

Local stakeholder involvement is seen to be necessary in order to ensure the effective delivery of flood defence schemes (DEFRA, 2011a). Wehn et al. (2015a) argue that local stakeholder participation has shifted to the start rather than the end of the planning process. In other words, local stakeholder participation in flood defence planning in England has evolved from a 'design-defend-implement' to a 'discuss-design-implement' process in which citizens are expected to take active responsibility at the beginning of the process rather than passively receive a service (Wehn et al. 2015a). In regards to planning, a statutory requirement 'duty to cooperate in relation to planning for sustainable development' requires local authorities, lead local flood authorities (county councils and unitary authorities), and public bodies (i.e. the EA) to work together to ensure that flood risk is included in Local Plans (DCLG, 2009). Local stakeholders can become involved in the development of Neighbourhood

Plans, which have to be taken into consideration in the Local Plans but it has been argued that scope for changing the status quo through Neighbourhood Plans is limited (Begg et al. 2015) and whether or not the projects are implemented depends on whether funding can be obtained.

The focus on local stakeholder involvement in funding flood defence schemes has emerged as a result of two influential reports: the *Pitt Review* (Pitt, 2008) and *Investing for the Future* (EA 2009). These reports stressed the need for additional sources of funding to deal with flood-related risk at a time of government cuts to flood defence funding. The localism agenda has further helped to promote the importance of local stakeholder participation in the planning and implementation of flood defence schemes. The introduction of the Flood and Coastal Resilience Partnership Funding has encouraged communities to come together in order to fund flood defence schemes through applying for Flood Defence Grant-in-Aid (FDGiA) (DEFRA, 2011c). As a result, the Department for Environment, Food and Rural Affairs (covering England and Wales) no longer fully funds flood defence schemes as it has previously. Instead, funding must now partly come from other sources such as local councils, businesses, and residents (DEFRA, 2012). The amount of funding received from the national government for a flood defence scheme depends on the level of benefits the scheme provides for householders, the economy, and the environment, calculated (Figure 5-1) by multiplying each of these aspects using "a set of payment rates, which are fixed amounts of national funding per unit of outcome or benefit achieved" (DEFRA, 2011b, p. 1). Deprived areas will attract higher payment rates, so they are prioritised for funding using the Department of Communities and Local Government's Index of Local Deprivation (DCLG, 2010).

Figure 5-1 Calculation of share of project cost by Defra (DEFRA 2011b)



Funding is allocated in consultation with the Regional Flood and Coastal Committees (RFCCs) (Benson, Lorenzoni & Cook, 2016). The RFCCs have an independent chair and comprise a combination of local stakeholders including representatives from the EA, local authority

workers, and local experts, such as from conservation, farming, and landowning interests (Benson et al. 2016). Final decisions remain the responsibility of the EA (DEFRA, 2011b).

In order to qualify for full funding, proposals need to achieve a score of 100%. Projects that score below 100% are required to find ways to save costs and/or find other sources of funding (DEFRA, 2011b). DEFRA argues that these changes mean that more funding will be opened up for flood defence (DEFRA, 2011c), because rather than relying on one pot of money provided by DEFRA, communities are able to work together to pool resources in order to contribute to the funding. In other words, although previously not every community could receive funding based on DEFRA's finite funds, the revised approach makes it possible for any community to receive flood defence funding from DEFRA as long as councils, businesses, and residents have access to and are willing to contribute funds towards the scheme. This means that local stakeholders play an active role in whether or not a scheme is funded and therefore whether it will reach the implementation phase.

The results of the interviews here (see Begg et al. 2015) revealed that although some communities are likely to benefit from the funding arrangements set out by Partnership Funding, some communities, particularly those unable to contribute funding to the scheme, are likely to be left out. As explained by one planning consultant: "There are opportunities for people who have the resources to exploit them". Although deprivation levels are taken into account within the funding methodology, it has been argued that the funding scheme is likely to result in fewer choices, and therefore inequality, for areas that cannot raise funding such as small rural areas:

"… rural areas are going to be the ones that suffer again because there isn't the partners around … in a small community. And the community themselves, being small, are not going to be able to raise the vast thousands upon millions of pounds that are needed towards any flood scheme" (interview with a community engagement officer).

The potential increase or creation of inequality was also emphasised by another interviewee:

"well you have got … that difficulty with the small rural communities … they have created a mechanism to try and catch areas of deprivation so that they get a higher score but if it is not scoring high enough they have got very little chance of drawing in the funding … its puts a lot of schemes, you know, out of reach forever" (interview with a flood management officer from a county council).

In other words, local stakeholder participation in selecting flood defence options requires local stakeholders to work within predefined decision-making structures and is limited to

whether or not those local stakeholders have access to the financial resources required to fund flood defence schemes in their local area. Therefore, although the current structures surrounding local stakeholder participation in implementing flood defence options could benefit some communities, without further support, communities and local stakeholders unable to obtain flood defence funding may experience a strengthening of existing inequalities and/or a shift towards non-structural FRM approaches. These findings are similar to those of Thaler and Priest (2014) who argue that, whilst Partnership Funding encourages the involvement of a wide range of stakeholders, it does little to fairly distribute risk. Moreover, once funded the Environment Agency (the EA), local authorities and internal drainage boards, local stakeholders are responsible for managing 'flood assets' (NAO, 2014) but the interviews did not indicate that once flood defences are given permission and funding, that their design, construction, and maintenance are delivered through participatory processes.

5.4.2 Saxony

Since the 2002 flood and the introduction of the European Floods Directive, flood management in Saxony has changed (Grünewald, 2005; Müller, 2010; Otto et al. 2016). Although flood defence related decisions have traditionally been based on providing all citizens with protection against damage from a 1-in-100-year flood in Saxony (Krieger, 2013), the increased pressure to secure citizen safety and to fairly distribute finite funds has meant that a focus on the number of citizens ostensibly protected from flood damage and cost-benefit analyses have started to play an increasingly important role in flood defence related prioritisation (Müller, 2010; Otto et al. 2016). As a result of the 2002 floods, the authorities decided to develop a rationale for prioritising single schemes according to four categories: expected damage, cost-benefit ratio of a scheme, effects on water management, and vulnerability (Socher, Sieber, Müller & Wundrak, 2006). A scheme's rating defines not only the types of flood damage protection measures communities will receive, but also the degree of flood damage protection the scheme will provide (Müller, 2010). Interviews with local decision-makers (Callsen, 2014) revealed that, initially, the prioritisation referred primarily to the timing of the implementation of measures (e.g. very urgent, urgent, etc.) because it was assumed that all measures would eventually be implemented. This has changed gradually over time, so that due to limited funds, lower priority schemes are now not likely be funded at all. As one state representative explained, "the magic word is economic efficiency. In all cases where we have a cost-benefit ratio lower than one, nothing will happen".

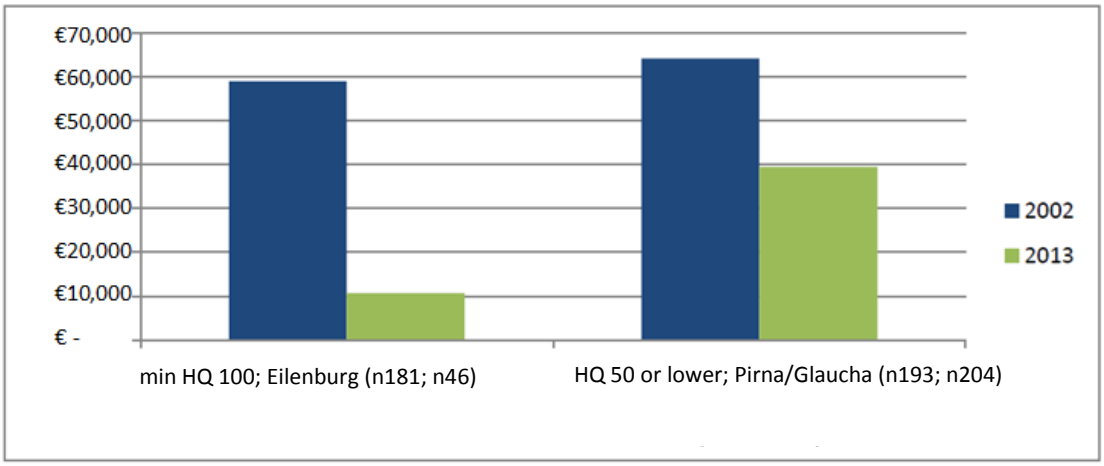
With regard to local stakeholder involvement, a representative of the state government explained that the prioritisation scheme was subject to the legally required participation process which includes consulting those possibly affected by the planned schemes as well as other administrative bodies representing public concerns (the so called "*Träger öffentlicher Belange*", TÖB). In addition, local stakeholders are provided with the opportunity to become involved in implementing the prioritised measures through the planning process. Although participation is required during the development of the prioritisation scheme, empirical examples of this involvement are lacking, apart from flood defence measures planned for major rivers. Then, a so-called "Planfeststellungsverfahren" (PFV; official approval of a plan) is organised (§ 72 VwVfG), which is, above all, an administrative process that regulates how public administrations interact with the public. The aim of the PFV is to develop a legally binding plan ("rechtsicher"). Within this formalised process, development plans have to be made publicly accessible to affected municipalities, exposed citizens, environmental associations, and other stakeholder groups. This process provides local stakeholders with the opportunity to communicate their interests and concerns in writing. These submissions must be considered and evaluated by the authorities (Kuhlicke, Callsen & Begg, 2016).

During the 2013 flood, there was a controversial public and media-driven debate about the role that participation should play in decision-making processes (Callsen, 2014; Kuhlicke et al. 2016). Local stakeholder input into the planning process was accused of favouring individual voices over the greater good which delayed the planning process and, therefore, led to the high damage experienced by some communities as a result of the floods (LVZ online, 13.06.2013). Yet in some cases, authorities are allowed to replace the PFV with a Plangenehmigungsverfahren (PGV), which aims at accelerating the approval process by excluding participation from the planning process altogether (Kuhlicke et al. 2016). This suggests that local stakeholder participation is acceptable as a way to legitimise decisions ex post, whereas allowing local stakeholders to influence the decision-making ex ante is seen as problematic, if not something to be avoided (Wiechmann & Terfrüchte, 2013).

The perceived lack of input and impact that local stakeholders can have on flood defence-related decisions has led to protests from community groups who are frustrated about the way in which floods are currently managed (e.g. Ökolöwe, 18.10.2013). As one member of a nature conservation organisation commented, "when they have already done everything and all is nice and finished; the potatoes are cooked, then they call us to the table and everything is supposed to be wonderful".

This situation poses the question of whether current participation in decisions related to flood defence suffices. Such a question is particularly relevant when considering financial damage experienced as a result of past floods. Damage from the 2013 flood estimated at €1.9 billion was much lower than damage in 2002 estimated at €8.7 billion (DKKV, 2015). It has been argued that the main reasons for this reduction in damage are due to the "improved inclusion of flood hazards in spatial planning and urban development, an increasing uptake of property-level mitigation, more effective flood warnings and improved coordination of disaster response as well as a more targeted maintenance and construction of flood defense systems" (Thieken et al. 2016, p. 1). Yet, a closer look reveals that a difference emerged in the financial damage experienced in cities with high priority in the prioritisation scheme and a higher structural protection level compared to low-priority cities with less, or even completely lacking, structural flood protection. Figure 5-2 compares Eilenburg, Pirna, and Glaucha. All cities experienced financial damage in 2002. As a result of the prioritisation scheme, Eilenburg received a score which meant that the city was given high priority and received state-provided flood defence measures in 2012. Although Pirna and Glaucha also received a high score, they remained without flood defence measures during the 2013 flood, as the planning and construction process did not proceed as quickly as in Eilenburg.

Figure 5-2 Average damage per household experienced in 2002 and 2013 in cities in Saxony with and without structural flood defence schemes – HQ 50 and HQ 100 refer to the 1% and 2% annual probability of flooding respectively (Kuhlicke, 2014, p. 23)



This suggests that although the overall damage caused by flooding has been reduced as a result of measures taken between 2002 and 2013 (keeping in mind that there might be other influences on vulnerability as well), small rural communities that are unable to receive effective flood protection measures are probably forced to bear the brunt of the future damage. Therefore, like England, communities and local stakeholders unable to obtain flood

defence schemes may experience a strengthening of existing inequalities and/or a shift towards non-structural FRM approaches. Furthermore, it was found that local stakeholders who are interested in being involved in decisions related to flood defence are largely people who have experienced flood-related damage in the past (Kuhlicke, 2014; Begg, Überham, Masson & Kuhlicke. 2016).

5.5 Discussion and conclusion

The current situation in England and Saxony, presented in this paper, shows the constraints of local stakeholder participation in regards to planning and implementing flood defence schemes. The findings from the two case studies depict that limited involvement of local stakeholders in decisions related to flood defence schemes is likely to lead to conflict and frustration as well as, potentially, a strengthening of inequalities, albeit different forms of inequalities in each case study. These findings contrast with the emerging discourse that suggests a trend towards greater openness and inclusion of stakeholders (Saurugger, 2010; Chilvers & Kearnes, 2016).

This section discusses the influence that local stakeholder participation can have on decisions related to flood defence-related decisions by answering the three research questions: To what extent do stakeholder participation processes 1) encourage deliberative processes, 2) provide input into decisions related to planning and implementation for flood defence and 3) lead to reductions in flood-related damage?

In response to question 1, the role of participation in decision-making processes related to planning and implementation of measures presented here is shaped by expert-led and economically rationalised decision-making processes. However, in England deliberation, in the sense of active involvement, is encouraged through Neighbourhood Planning and the prioritisation of funding of flood defence schemes. In contrast, in Saxony, local stakeholder involvement is restricted from the prioritisation of flood defence measures and, rather than deliberation, opportunities for consultation in the planning process are provided to local stakeholders.

As a result, and to answer question 2, stakeholder involvement has been moved from the end to the start of the planning process in England. Although deliberation is encouraged in decision-making processes, the ability of local stakeholders to influence decisions is limited. Moreover, whether planned defences are funded and, in turn, whether defence schemes are implemented, depends on whether local stakeholders are able to contribute funds to ensure the scheme is realised. Conversely in Saxony, institutions employ prioritisation methods that

are decided at the state level leaving little space for local stakeholders to challenge such decisions. While PFVs at the local level provide space for local stakeholder involvement in planning, such involvement is controversial and can be restricted altogether through the use of a PGV.

This leads to question 3. Although it is not possible, based on the results presented here, to draw conclusions regarding whether or not participation has directly led to a reduction in financial damage, the case studies show that employing participatory processes without providing opportunities for local stakeholders to influence either their role (in England), the outcome (in Saxony), or the decision-making starting point and criteria (both locations) may lead to further issues rather than improving the quality and acceptance of final decisions. We argue that the investigated participation processes related to flood defence planning and implementation may lead to increased and/or new inequalities.

Current involvement of local stakeholders in Partnership Funding in England encourages local stakeholders to deliver a service previously delivered by the state without being able to deliberatively shape the decision. This means that issues of power are not addressed through such participation. This has implications for the distribution of risk as communities able to contribute funds are more likely to receive defence schemes. Therefore, improvements to the delivery of flood defences in some communities may occur, but other communities might find they have fewer FRM options due to lack of resources and, therefore, inequalities may increase or be strengthened (Begg et al. 2015) because the most vulnerable still end up with the fewest options.

In Saxony, participatory processes do not prioritise measures. While informative and consultative processes are included in the PFV process, there is no possibility to challenge power relations. As our example shows, this can lead to conflict and frustration (see also Kuhlicke et al. 2016; Otto et al. 2016). While the theoretical aim may be the goal of seeking equal flood risk for everyone, inequalities arise when communities without access to flood defence experience higher financial damage than those that do have defence schemes (Kuhlicke, 2014), although the defence schemes themselves might have changed perceptions, behaviour, and the flood hazard experienced downstream of the measures (Tobin, 1995; Etkin, 1999; Fordham, 1999; Kelman, 2001). Interestingly, whether local stakeholder participation takes place at the start or the end of the planning process, problems arise when issues of power and inequality are not dealt with, as is demanded by the literature on participatory processes, including for FRM (Allmendinger & Haughton, 2010; Thaler & Priest 2014; Begg et al. 2015).

Despite extensive literature and European policy which support the use of local stakeholder participation in order to improve decisions, the two case study examples highlight the limitations of implementing participatory processes within pre-existing decision-making structures. The interplay of economic efficiency defined narrowly as an important criterion for flood defence related decisions and deliberative participation processes seem, to some extent, to be contradictory. When decisions are based on economic rationalism, opportunities for participation are automatically restricted. This situation becomes particularly problematic when conflict and inequalities arise.

In order to avoid conflict, frustration and increased inequality, it is important that the objectives and boundaries of participation are clear from the outset. Moreover, participation could be employed to deal with issues of power, risk distribution and inequality by creating opportunities to discuss issues of risk, responsibility and alternatives to flood defence such as private flood mitigation measures (Bubeck, Botzen, Kreibich & Aerts, 2012a). This way, decision-making processes could be understood and accepted by all parties and the limitations of and alternatives to flood defence could also be identified and discussed. More research is required to assess the influence of local stakeholder participation in the planning and implementation of non-structural FRM (e.g. spatial planning, emergency management, and individual household mitigation measures) (see Heintz et al. 2012; Kreibich, Bubeck, Van Vliet & De Moel, 2015; Mees et al. 2016; Otto et al. 2016). In addition, local stakeholder participation should also provide input in broader strategic decisions as it is encouraged in the EU Floods Directive.

As both case studies reveal interesting similarities but also differences which help identify the potential for and boundaries of local stakeholder participation, more research is needed to further understand and specify the actual driving forces of participation as well as the possible effects of participation and how these factors differ between various socio-political, cultural and institutional contexts in Europe and beyond in order to add to the lessons learnt here (see Wehn et al. 2015a; Mees et al. 2016). The results from this work and their connection to previous literature demonstrate that much more could be done to give opportunities for local stakeholder participation.

Postscript: In this chapter I investigated the question of the role of local stakeholders in decision-making processes in more detail by comparing the results of Chapters 3 and 4. It seems quite normative to argue that local stakeholders can improve such decisions and, in

the end, the state is responsible for the social implications of those decisions. In other words, without fully transferring power as well as responsibility to local stakeholders, decisions related to planning will always be implemented in the interests of the state. I began to ask myself if this is a problem for decisions related to structural measures. If the aim of FRM is to move away from structural measures then perhaps we should also move away from the illusion that local stakeholders can meaningful influence such decisions. The movement away from structural measures towards alternative and non-structural measures requires the involvement of a wide range of stakeholders (Walker et al. 2010). The question is, who decides what the alternative measures should be and who should implement them as well as whether current practices of participation are being used to their full potential.

Chapter 6

Interactions between citizen responsibilisation, flood experience and household resilience: insights from the 2013 flood in Germany

Chloe Begg, Maximilian Ueberham, Torsten Masson and Christian Kuhlicke

Abstract: As increasing emphasis is placed on the importance of citizens' taking responsibility for their own preparedness and protection against flooding, it is important to understand the relationship between responsibility and action and how current practices of responsibilisation influence household resilience. Based on a survey of 889 households affected by flooding in 2013 in the states of Saxony and Bavaria, Germany, this study investigates the relationship between action and flood experience and how this experience influences whether citizens feel responsible, and therefore the likelihood that they will take action in the future. These findings have implications for household resilience as well as future research.

6.1 Introduction

Floods are the most costly natural hazards in Europe (European Environment Agency [EEA], 2010). As a result of a number of large flood events throughout Europe over the past 20 years, ensuring that citizens play an active role in flood risk management by taking personal measures (i.e. measures taken to protect and prepare one's house before a flood event) is attracting increasing attention both in theory (Bubeck, Botzen, Kreibich, & Aerts, 2012a; Grothmann & Reusswig, 2006; Kreibich, Bubeck, Van Vliet, & De Moel, 2015; Thieken, Kreibich, Müller, & Merz, 2007) and in practice (e.g. the German Water Law, WHG (Waserhaushaltsgesetz), 2009, §5 Abs 2). Specifically, a movement away from focusing solely on state-provided structural protection measures (e.g. dikes and levees), which are funded, planned and implemented by governmental bodies, has resulted in an increasing emphasis on developing and implementing alternative measures (Johnson & Priest, 2008). These alternative measures include spatial planning, relocation, building codes, infrastructure design, insurance, forecasts, early warning, and communication (Bubeck, Botzen, & Aerts, 2012b; Heintz, Hagemeier-Klose, & Wagner, 2012). In order to achieve such a diversification

of the flood-management portfolio, the importance of the involvement of a range of actors in the management of floods has been emphasised (Johnson & Priest, 2008; Nye, Tapsell, & Twigger-Ross, 2011). In addition, individual citizens are expected to take more responsibility for their own preparedness and protection (Bubeck et al., 2012a, 2012b; Kreibich et al., 2015; Ueberham, Kabisch, & Kuhlicke, 2016). It has been argued that if citizens take personal measures, they are able to reduce flood-related damage, and therefore increase their own resilience (Bubeck et al., 2012a; Grothmann & Reusswig, 2006; International Commission for the Protection of the Rhine [ICPR], 2002; Kreibich, Thieken, Petrow, Müller, & Merz, 2005; Kreibich et al., 2015; Paton, 2003).

As a result of this trend, previous studies have focused on gaining a better understanding of the factors that motivate individuals to take responsibility and action in order to increase their resilience (Bubeck et al., 2012b; Grothmann & Reusswig, 2006; Thieken et al., 2007; Wachinger, Renn, Begg, & Kuhlicke, 2013; Zaalberg, Midden, Meijnders, & McCalley, 2009). These studies have suggested that experience, risk perception, response efficacy (i.e. the belief that personal actions can make a difference) and acceptance of responsibility can influence whether individuals are motivated to act. Moreover, these studies suggest that their findings can be used to support such action, by improving practices of communication and participation with citizens. In addition, some observers place great hope on more inclusive risk-governance processes as a way of effectively shifting responsibility, developing capacities and empowering citizens to take personal measures (Wachinger et al., 2013) and improve resilience (Demeritt, 2015; Kuhlicke, Scolobig, Tapsell, Steinführer, & De Marchi, 2011; Summerville, Adkins, & Kendall, 2008).

Despite the methodological and conceptual differences in these studies, there is a shared epistemological interest: to better understand whether people intend to act and actually act and how this process is shaped by individual appraisal processes (Bubeck et al., 2012a; Grothmann & Reusswig, 2006; Zaalberg et al., 2009), or whether action can be better supported by a more inclusive way of governing risks (Renn, 2008; Wachinger et al., 2013). What is usually neglected in these existing approaches, however, is the dynamic interconnection between action and experience.

Whilst it is well documented that flood experience plays an important role in motivating citizens to take personal measures (Bubeck et al., 2012a; Grothmann & Reusswig, 2006; Kreibich & Thieken, 2009; Siegrist & Gutscher, 2008; Weinstein, 1989), the dynamic interactions between personal measures and the subsequent experience of a flood event and how this experience feeds back on personal beliefs about efficacy, responsibility and

participation remain largely unexplored. Although such feedbacks and interactions are mentioned in some contributions, they are largely considered on an abstract and theoretical level (Bogard, 1994; Grothmann & Reusswig, 2006; Siegrist, 2013), not explored empirically.

Complementing previous studies which focus on the factors that motivate exposed individuals to take actions in order to increase their resilience, this article investigates how the experience of a flood event influences an individual's appraisal of citizen responsibilities and the effectiveness of their personal actions as well as their attitude towards the relevance of participation in the management of floods and what this might imply for their resilience with respect to future flood events.

Empirically, this article focuses on the 2013 flood which affected large parts of Germany. Citizens in Germany are required by law to take measures to prepare and protect themselves (WHG (Waserhaushaltsgesetz), 2009 §5 Abs 2). However, there have been limited attempts to support citizens in taking such actions (Kuhlicke, Callsen, & Begg, 2016). Instead of being involved in participatory planning, as is emphasised in the literature presented above, citizens are usually informed of their responsibilities or provided with information on how to take personal measures (BMUB, 2015). Nevertheless, regardless of the lack of support and participative activities, existing studies have shown a link between personal measures and experience, which suggests that the number of citizens who take personal measures increases after a flood event (Bubeck et al., 2012a; Kuhlicke, 2014; Thieken et al., 2007). Based on this current situation of citizen responsibilisation, this article is interested in whether people who took personal measures before the 2013 flood are resilient, understood here as whether they were able to withstand the consequences of the flood and whether they can be motivated to take personal measures in the future.

This article is structured in the following way. It first provides an overview of previous research on the relationships between personal measures and resilience, as well as the gaps that exist in regard to understanding the potential consequences of shifts in governance towards citizen responsibilisation for household resilience. A model and hypotheses are then presented which aim to provide findings that fill these gaps. The article concludes with a discussion of the findings, including suggestions for future avenues of research.

6.2 What makes exposed households act? The interrelation between motivation, personal measures and resilience

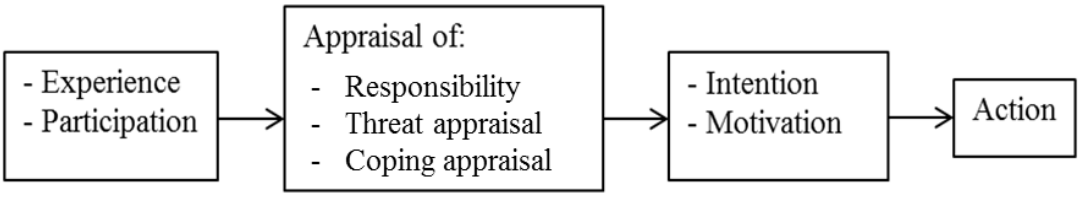
A rapidly growing body of research aims at better understanding what motivates people to protect themselves and their belongings against the threats of a range of environmental risks

by focusing on the factors that shape their action and/or non-action (Becker, Paton, Johnston, & Ronan, 2012; Lindell, Arlikatti, & Prater, 2009; Miceli, Sotgiu, & Settanni, 2008; Paton, 2003; Paton, Kelly, Burgelt, & Doherty, 2006; Terpstra, 2011; Zaalberg et al., 2009). While Grothmann and Reusswig (2006) claim that empirical research on flood preparedness has rarely been conducted in Germany (for exceptions see Felgentreff, 2000; Plapp, 2004), many studies have since contributed to better understanding this relationship by focusing on factors that influence whether citizens take personal measures to prepare and protect themselves from potential flood-related damages (Bubeck et al., 2012a, 2012b; Kreibich & Thieken, 2009; Thieken et al., 2007). Generally, survey-based studies have shown that individual responses to flood risk are influenced by factors including past flood experience (Bubeck et al., 2012a; Grothmann & Reusswig, 2006; Kreibich & Thieken, 2009), threat appraisal (i.e. perceived probability and perceived consequence) and coping appraisal (i.e. perceived self-efficacy, perceived response efficacy and perceived response costs – Bubeck et al., 2012b; Grothmann & Reusswig, 2006).

In this context, protection motivation theory has become increasingly popular (see also Kellens, Terpstra, & De Maeyer, 2013). This theory was originally developed for psychological research on health behaviour (Rogers, 1983; Rogers & Prentice-Dunn, 1997) and has been employed in flood-related research to better understand how factors such as threat and coping appraisal shape people's motivation to take action (Bubeck et al., 2012b; Grothmann & Reusswig, 2006; Zaalberg et al., 2009). These studies show that threat appraisal did not directly influence behaviour (Bubeck et al., 2012b; Grothmann & Reusswig, 2006; Zaalberg et al., 2009). Grothmann and Reusswig (2006) explain that in order to act, individuals require both high threat appraisal and high coping appraisal. Therefore, if they report high threat appraisal but low coping appraisal, they are unlikely to act. In other words, threat appraisal alone is not likely to lead to action, as individuals need to perceive the threat as being high, and believe that they can take action, and that that action can have an effect, before they are likely to take action. Therefore, has been argued that coping appraisals like self-efficacy (i.e. the level of confidence in one's ability to take action – Grothmann & Reusswig, 2006) and protective response efficacy (i.e. the belief that protective actions will be effective) play an important role in whether citizens take action in regard to flood risk (Grothmann & Reusswig, 2006; Zaalberg et al., 2009). There are some studies that did not find a relationship between self-efficacy and action (Zaalberg et al., 2009), which highlights the difficulties in operationalising the concept (Kellens et al., 2013).

Other studies have expanded the scope of analysis by also aiming at better understanding how respondents perceive the distribution of responsibility between the state and citizens and how this influences their motivation to act. Attitudes towards responsibility have been reported to influence action (Kellens et al., 2013). Feelings of responsibility have been found to correlate with individual responses to flood risk (Lindell & Perry, 2000; Paton, 2003; Soane et al., 2010; Terpstra & Gutteling, 2008). Research has also found that citizens who have experienced a flood might feel less responsible for taking action (Soane et al., 2010). Specifically, it has been found that if citizens trust in the effectiveness of state-provided protection measures they are unlikely to take personal action (Grothmann & Reusswig, 2006; Hung, 2009). It is also argued that participation could positively influence citizens to take personal measures (Bubeck et al., 2012a; Wachinger et al., 2013). However, although many scholars have suggested the relevance of their findings to the factors that influence personal measures in regard to improving risk communication and participation (Grothmann & Reusswig, 2006; Harvatt, Petts, & Chilvers, 2011; Siegrist & Gutscher, 2008; Terpstra, Gutteling, Geldof, & Kappe, 2006; Terpstra, Lindell, & Gutteling, 2009; Terpstra, 2011; Wachinger et al., 2013), the relationship between participation and personal measures remains largely unexplored (Buchecker, Menzel, & Home, 2013). Moreover, previous application of protection motivation theory has assumed a linear and causal relationship between experience, appraisal, motivation and action (Figure 6-1). This approach treats the appraisal of experience (i.e. threat appraisal) and the appraisal of response (i.e. coping appraisal) as factors influencing motivation rather than factors that influence each other. In addition, previous applications of this model were unable to provide an understanding of the impact that action has on experience, and therefore the impact that personal measures have on household resilience, as this link is not part of the analysis.

Figure 6-1 A simplified model of protection motivation theory based on the studies reviewed above.



Although recent studies of the interrelation of individual appraisal processes and actions have generated substantive empirical insights, the linear model of analysis underlying most of the studies previously mentioned was recently put to discussion. In a commentary on “the necessity of longitudinal studies in risk perception research”, Siegrist (2013) highlighted a

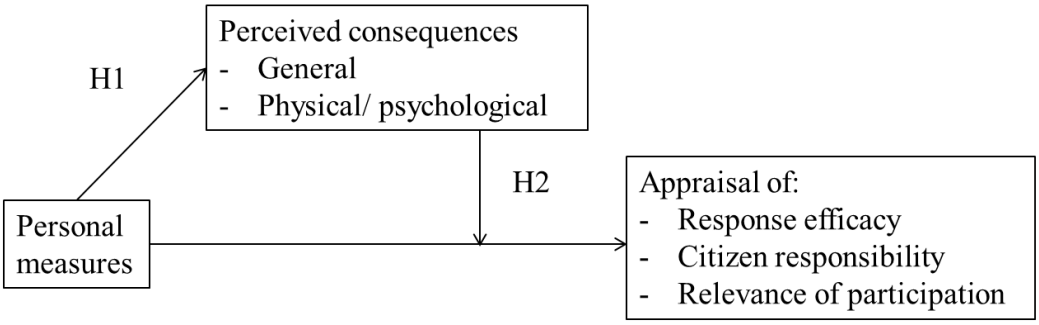
fundamental methodological challenge that has not been sufficiently addressed in previous studies and that might even result in misleading recommendations. By relying predominantly on cross-sectional survey results, many studies are not able to test causal relationships between factors, which "may mask important relationships" between factors, as they take into account neither the timing of the survey (before or after a flood event) nor how "mitigation behaviours may have an impact on people's risk perception" (p. 50).

Therefore, the interrelation between the perception of future risks, the actual experience of a threatening event, and action is highly dynamic, since they mutually influence each other (Siegrist, 2013). Similarly, Bogard (1994) argued that it would be misleading to frame action simply as a reaction or response to a potential future event, as action itself produces certain effects by changing both the perception of future risks and the characteristics of a future event. Therefore, a person who has implemented personal measures may be less affected by a flood and thus less concerned about future risks as a result of this very experience (Slovic, 1987; Wachinger et al., 2013). Others have highlighted similar interrelations with regard to self-efficacy and response efficacy. Schaefer and Moos (1998, p. 114), for instance, argue that "prior experience with a mastery of life crises can boost people's self-efficacy and enhance their coping resources" (see also Soane et al., 2010). Also, Grothmann and Reusswig (2006, p. 108) state that "response efficacy can be positively influenced by taking the protective response, since people want to justify their behavior". Yet, so far, such considerations remain hypothetical (Siegrist, 2013) or theoretical (Bogard, 1994) or are reflected upon, but for the sake of simplicity ignored in the analysis (Grothmann & Reusswig, 2006). What is lacking is more substantive empirical insight in regard to these interrelations.

6.3 The present research

This article aims to complement the insights gained by previous studies inspired by protection motivation theory and to develop a more dynamic model (Figure 6-2) which focuses on gaining a deeper understanding of the relationship between experience and action, particularly in regard to whether this interaction can lead to household resilience in terms of the ability of citizens to withstand flood-related consequences and be motivated to take future action after experiencing a flood. Specifically, we assess the relationship between personal measures, the perceived consequences of the 2013 flood event and the appraisal of individual response efficacy (citizens' responsibility and attitudes towards the relevance of participation in flood risk management). The research presented here is based on two overarching hypotheses (see Figure 6-2). These two hypotheses are discussed below in turn.

Figure 6-2 Hypothesised interaction between personal measures, perceived consequences and appraisal processes.



Hypothesis 1. Personal measures correlate negatively with the perception of severe consequences of the 2013 flood.

This hypothesis is based on the assumption that personal measures reduce the perceived negative consequences of a flood event and hence households are more resilient as they are better able to withstand the impacts of a flood event. Previous research has shown that personal measures (measures taken to protect and prepare one's house before a flood event) can have a positive influence, reducing flood-related financial damage (Bubeck et al., 2012a; Kreibich et al., 2015). For example, Kreibich et al. (2005) showed that personal precautionary measures can reduce flood damage by up to 50%. While economic analysis of flood-related damage is crucial, this study aimed at widening the scope of analysis by going beyond economic impact. Therefore, it included the general perceived severity of a flood event as well as the severity with regard to psychological and physical consequences; both are crucial to understand the wider consequence of flood events for exposed households (Sakdapolrak, 2007; Tapsell, Penning-Rowsell, Tunstall, & Wilson, 2002).

Hypothesis 2. The relationship between personal measures and the appraisal of response efficacy and citizen responsibility are negatively moderated by the severity of the perceived consequences, whereas the relationship between personal measures and the appraisal of the relevance of participation is positively moderated by the perceived consequences.

This hypothesis can be broken down into three parts. (H2a) Previous findings have suggested that negative flood experience undermines feelings of responsibility (Soane et al., 2010). Moreover (H2b), it was also found that negative flood experience can negatively influence the belief that personal actions can reduce flood damage (Soane et al., 2010), and that although severe flood experience can lead to high risk perception, high risk perception can only lead to action when coupled with high response efficacy (Grothmann & Reusswig, 2006).

However (H2c), previous findings have suggested that experience can motivate citizens to want to contribute to participative activities (Kuhlicke et al., 2016). In sum, it is assumed that if citizens have taken personal measures in the past, and experienced severe flood despite having taken those measures, the factors that have previously been found to influence action will be undermined, whilst appraisals of participation are likely to be positive.

6.4 Methods

Surveys of households that experienced repetitive flooding between 2002 and 2013 were conducted in the German states of Saxony and Bavaria. These states were the most affected in the country in terms of financial damage. Saxony experienced €1.9 billion and Bavaria €1.3 billion in damage (Deutsches Komitee Katastrophenvorsorge [DKKV], 2015). The towns and cities that were surveyed were chosen for their exposure to flood risk. All the towns surveyed experienced flooding in 2013, and some experienced a number of flood events between 2002 and 2013. Flood-risk maps from Zürs Public and others produced by the Saxon Government were used to identify the exposed areas in Saxony. For Bavaria, local councils were approached in towns and cities that experienced flooding in 2013. These councils provided detailed lists of the streets which had been affected by flooding. For statistical analysis, correlational and regression analysis (with interaction tests) were employed, as well as principal component analysis to test scale reliability.

6.5 Sample

A total of 6502 surveys were distributed, and 1380 completed surveys were returned, for an overall response rate of 21.2%. Of these 1380 surveys, 990 were completed by residents of Saxony (response rate of 21.7%), and 390 by residents of Bavaria (response rate of 20%). The surveys were coded and analysed using SPSS software. The households surveyed have experienced a number of flood events in the past 15 years (2002, 2010, 2012 and 2013). Respondents were asked detailed questions about single flood events experienced since 2002, in chronological order, to better understand the long-term resilience of their households. They were also asked general questions independent of the single flood events experienced which are likely to be influenced by the most recent (2013) flood event. These general questions include questions about the appraisal of individual response efficacy, citizen responsibility and participation. As this article is particularly interested in the relationship between these factors and experience, itfocuses on the responses from respondents who experienced the 2013 flood. Sixty-five per cent of respondents were affected by the 2013 flood (625 in Saxony, 264 in Bavaria, 889 total). This article is also

interested in whether the experienced severity of a flood influences the appraisal of response efficacy, citizen responsibility and participation and if these appraisals differ between respondents who took personal mitigation measures before the 2013 flood and respondents who did not. Twenty-seven per cent of homeowners took personal mitigation measures before 2013, in contrast to 3% of renters. The constructs used to describe the relationships between experience, action and resilience in this study are discussed in detail in the following subsection.

6.6 Factors selected for analysis

In a first step, all factors included in the survey related to the constructs presented in the model were analysed to test the validity of the model (see Figure 6-2). This section provides an overview of all the factors tested in the regression and correlation analysis and specifies which factors were included in the final analysis and which were not (Table 6-1). Factors that did not produce meaningful results were excluded from the results presented here. Based on the results of this initial analysis, this section presents detailed descriptions of the constructs in Figure 6-2.

Table 6-1 Overview of factors included and excluded from the results.

Personal measures	Included in the final analysis ▪ Did you undertake any measures to protect your property in the last years [yes; no; year; description of measure] ▪ Based on the description of measures structural or technical mitigation measures were identified (e.g. flood protection wall, check valves, installation of a pump, etc.) [yes; no] Not included in the final analysis ▪ Insured against natural hazards? [took out an insurance in (year); applied for insurance but claim was rejected; interested, but too expensive; terminated contract, because I was not satisfied with it; the insurance terminated the contract (year); I do not want to purchase insurance; I took other measures; others] – multiple answers possible ▪ During the flood, did you any actions undertaken to reduce damages from flooding? [yes; no; informed about flood, sandbags, put valuables upstairs, moved car/motor vehicle out of the flood zone, others] – multiple answers possible
Perceived consequences	Included in the final analysis ▪ Perception of the severity of consequences for the household in general; physical consequences; psychological consequences [Likert-scale for all items from 1-5] Not included in the final analysis ▪ Affected by a flood? [yes, no, year] ▪ How strongly affected? [Likert-scale from 1-5]
Response efficacy	Included in the final analysis ▪ How much influence can your actions and decisions have on the reduction of flood-related damages on your property? [Likert-scale from 1-5]

Responsibilities	Included in the final analysis ▪ Agreement with following statements [Likert-scale from 1-5] o Individual citizens cannot do anything about floods o Flood protection is the role of the state and not citizens o Private mitigation overwhelms many people Not included in the final analysis ▪ Knowledge of paragraph § 5 of the German Water Law requiring flood exposed households to mitigate flood damages individually [yes; no; don't know] ▪ Law considered as meaningful? [yes; no; don't know] ▪ Undertaking personal mitigation measures should be a matter of course [Likert-scale from 1-5] ▪ Everyone should take on more responsibility [Likert-scale from 1-5]
Participation	Included in the final analysis ▪ Agreement with following statements [Likert-scale from 1-5] o We live in a democracy, every citizen has the right to participation in decision-making processes o I am able to help improve decision-making processes by contributing my personal knowledge o If I am involved in a decision-making process, I can accept the outcomes o There are experts who take care of flood protection o Participation slows down the planning and implementation process o There is a risk that the interests of individuals dominate participative processes o I do not have the knowledge to contribute to flood related decisions Not included in the final analysis ▪ Participation is relevant to flood management [Liker-scale from 1-5] ▪ In principal, I am in favor of participation, but I personally do not have the time to participate [Liker-scale from 1-5] ▪ Did you participation in decision-making processes in flood management [yes; no, but would like to; no, no interest, other]

6.6.1 Personal mitigation measures

Based on the results of the initial analysis, the study focuses on households that reported taking personal mitigation measures (i.e. structural or technical measures) before the 2013 flood event. This item was measured as dichotomous (no/yes).

6.6.2 Perceived consequences of the 2013 flood

To provide a more holistic understanding of household resilience, beyond the ability of households to reduce financial damage, this article focuses on the ability of households to withstand a surprise event (Klein, Nicholls, & Thomalla, 2003; Tobin, 1999). To assess whether households are able to withstand the consequences of the flood, the initial analysis found that general perceived consequences and physical and psychological consequences provided meaningful results. General consequences as well as physical and psychological

consequences were each measured with two items ("the severity of the consequences of the 2013 flood for your household in general" and "the severity of the consequences for your physical and psychological well-being"). All of these questions were asked using a five-point scale (1 = not very severe, 5 = very severe). For general perceived consequences and physical and psychological consequences, the item-total correlations amounted to r(748) = .66 and r(748) = .72.

6.6.3 Appraisal of response efficacy

To understand how well households appraise their capacity to respond to flood risks, the survey focused on whether respondents believe that their actions can reduce flood-related damage (i.e. response efficacy) by asking whether they agree with the statement: "How much influence can your actions and decisions have on the reduction of flood-related damages on your property?" This question was asked using a five-point scale (1 = not at all influence, 5 = very strongly influence).

6.6.4 Appraisal of citizen responsibility

To gain an impression of whether respondents agree that citizens should be responsible for the management of floods, the survey assessed perceived citizen responsibility with three items. Each of the items was worded as a rejection of citizen responsibility – for example "Flood protection is the role of the state and not citizens" – and respondents were asked to what extent they agree with such statements (five-point scale, 1 = strongly disagree to 5 = strongly agree). The statements presented in the survey were derived from the analysis of answers obtained to an open question asked in a previous survey on the 2002 flood (Steinführer & Kuhlicke, 2007). Principal component analysis (Varimax rotation) indicated that all items loaded on a single factor (52.81% accounted variance).

6.6.5 Appraisal of the relevance of participation in flood risk management

Due to the small number of respondents who reported having participated in the past as well as having taken measures before the 2013 flood, this article is unable to contribute to knowledge in regard to the effectiveness of participation in encouraging action. However, it does show the influence that flood experience has on individual appraisals of the relevance of participation. To gain an impression of how respondents appraise participative activities in regard to their relevance, the perceived relevance of participation was measured with eight items. One item was excluded from the final scale because it had a low corrected item-total correlation of r(841) = .20. Example item: "I am able to help improve decision-making processes by contributing my personal knowledge" (five-point scale, 1 = strongly disagree to

5 = strongly agree). The principal component analysis (Varimax rotation) indicated two factors (56.40% accounted variance). The two factors clearly differentiated between positively and negatively formulated items (after recoding the negative statements) and did not allow further interpretation. The two factors are thus assumed to reflect a method artefact, which is also supported by the fact that both factors provide comparable results for the regression analysis (Hypothesis 2). Furthermore, due to sufficient scale reliability (Cronbach's $\alpha = .72$), all items were collapsed into a single scale.

6.7 Results

This section presents the findings in regard to the two hypotheses presented above.

Hypothesis 1: The relationship between personal mitigation measures and flood experience, based on inter-scale correlations

To test Hypothesis 1, non-parametric bivariate correlation analysis was employed (Spearman's rank correlation coefficient; see Table 6-1). The hypothesis that households that took personal mitigation measures before 2013 are likely to be more resilient, in the sense of being able to withstand the general as well as physical and psychological consequences of their flood experience, was not supported. In fact, the opposite seems to be the case. The correlations show a positive relationship between personal mitigation measures and severe flood-related consequences, both in general and in regard to physical and psychological consequences. A comparison of means (t-test) confirmed the findings of the correlation analysis. The perceived general consequences ($t(866) = 2.59$, $p = .01$) and physical and psychological consequences ($t(739) = 3.09$, $p < .01$) were significantly higher among those respondents who took personal mitigation measures (vs. no measures). Table 6-2 presents the means, standard deviations, Cronbach's alpha coefficients and interscale correlations for each of the factors. Total scales were calculated as mean scores across the scale items.

Table 6-2 Means, standard deviations, Cronbach's alpha coefficients (in parentheses) and inter-scale correlations between factors.

Measure	M	SD	1.	2.	3.	4.	5.	6.
1. personal mitigation measures	0.18	0.38	a	.09**	.11**	.14**	-.07*	.11**
2. general perceived consequences	3.33	1.34		(.79)	.56**	-.01	.16**	.06
3. perceived physical/ psychological consequences	3.11	1.36			(.81)	-.06	.22**	.08*
4. appraisal of response efficacy	2.33	1.12				a	-.28**	.04
5. appraisal of responsibility	3.72	0.99					(.53)	-.02
6. appraisal of relevance of participation	3.09	0.93						(.72)
Note. * p < .05; ** p < .01; a = Cronbachs alpha not computed, single item measured								

Hypothesis 2: Personal mitigation measures and appraisals of response efficacy, citizen responsibility and relevance of participation – moderator analysis

To test Hypotheses 2a, 2b and 2c, appraisal of response efficacy (Regression 1), rejection of citizen responsibility (Regression 2) and appraisal of relevance of participation (Regression 3) were submitted to multiple regression analysis, with interaction tests including personal mitigation measures and general as well as perceived physical and psychological consequences as well as their interaction term. Following Aiken, Reno, and West (1991), all interactions were probed at one standard deviation above and one standard deviation below the mean of the moderators. Furthermore, all continuous predictors were mean-centred prior to the calculation of the interaction terms. Although a significant effect was found for personal mitigation measures and perceived physical and psychological consequences, this interaction effect was not found for personal mitigation measures and general perceived consequences. These results are discussed in this section in turn. The results of the regression analysis for personal mitigation measures and perceived physical and psychological consequences are presented in Table 6-3.

Table 6-3 Regressions of response efficacy, denial of citizen responsibility and relevance of participation for flood management on personal measures and perceived physical and psychological consequences.

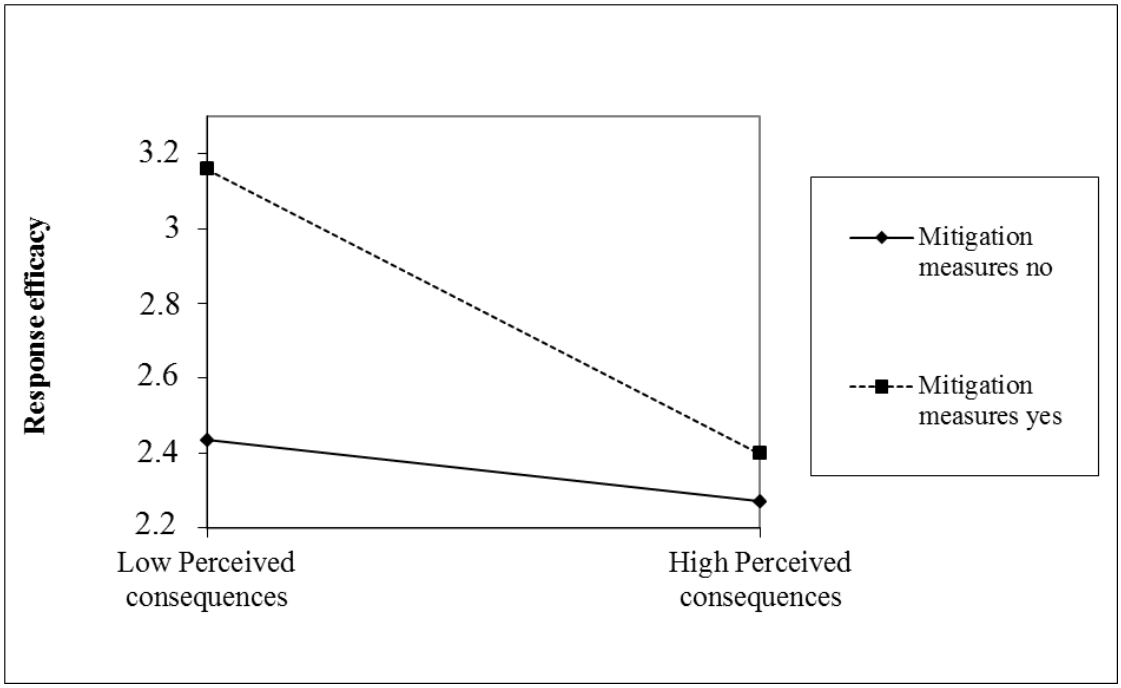
Model		ß	T	R^2	adj. R^2	F
1	DV: Appraisal of response efficacy			.03	.02	6.89***
	Personal mitigation measures (0 = no, 1 = yes)	.15	3.93***			
	Perceived physical and psychological consequences	-.02	-2.09			
	Mitigation measures x perceived consequences	-.10	-2.58**			
2	DV: Denial of citizen responsibility			.04	.04	11.12***
	Personal mitigation measures (0 = no, 1 = yes)	-.08	-2.04*			
	Perceived physical and psychological consequences	.16	3.95***			
	Mitigation measures x perceived consequences	.10	2.26*			
3	DV: Relevance of participation			.03	.02	6.09***
	Personal mitigation measures (0 = no, 1 = yes)	.08	2.08*			
	Perceived physical and psychological consequences	.03	0.75			
	Mitigation measures x perceived consequences	.11	2.56**			

Note. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

The results showed significant interaction effects of mitigation measures and perceived physical and psychological consequences across all three regression models, thus supporting the assumptions. Regression 1 showed a negative interaction effect between personal mitigation measures and perceived consequences, b = –.12, t(730) = –2.58, p = .01 (see Figure 6-3). Ordinal regression analysis (logit model) was also conducted, including appraisal of response efficacy (criterion variable), personal mitigation measures and perceived physical and psychological consequences. The results of the logit model replicate the results of the linear model. However, the data indicated no severe violations of normality (i.e. skewness and kurtosis of appraisal of response efficacy less than 1). For reasons of simplicity, only the results of the multiple regression analyses are reported. A simple slope analysis revealed that

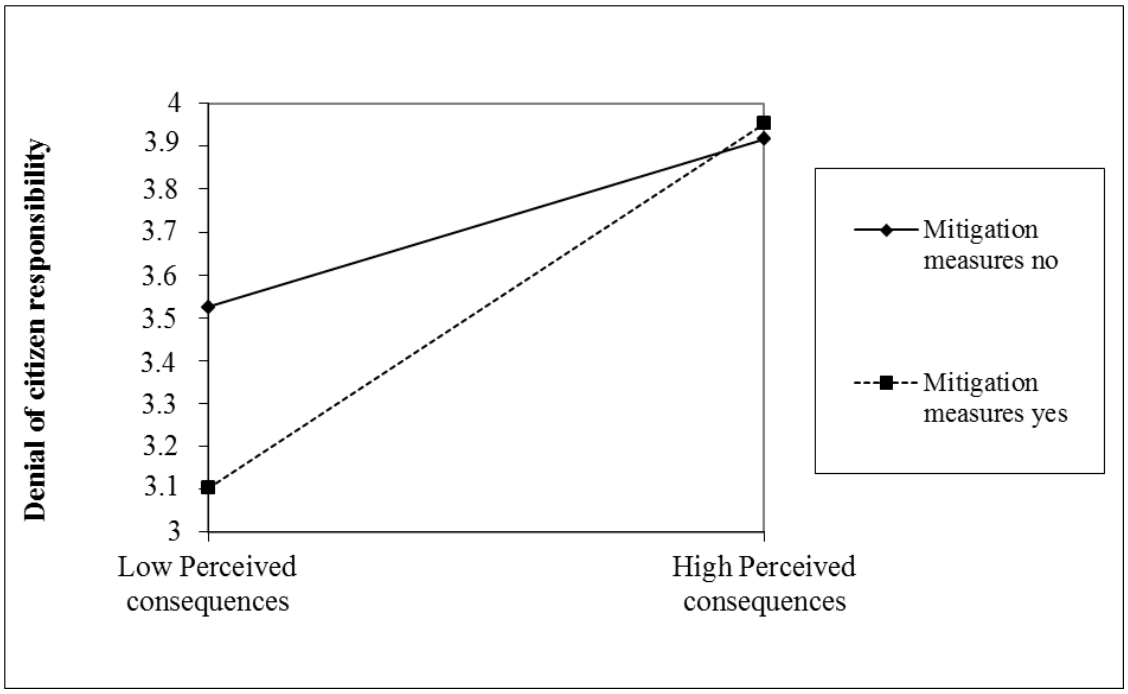
personal mitigation measures were positively associated with appraisal of response efficacy when perceived consequences were low, b = .30, t(730) = –4.17, p < .01, but not when consequences were high, b = .05, t(730) = 0.90, p = .37.

Figure 6-3 Appraisal of response efficacy in flood management (from 1 to 5) as a function of personal measures and perceived physical and psychological consequences.



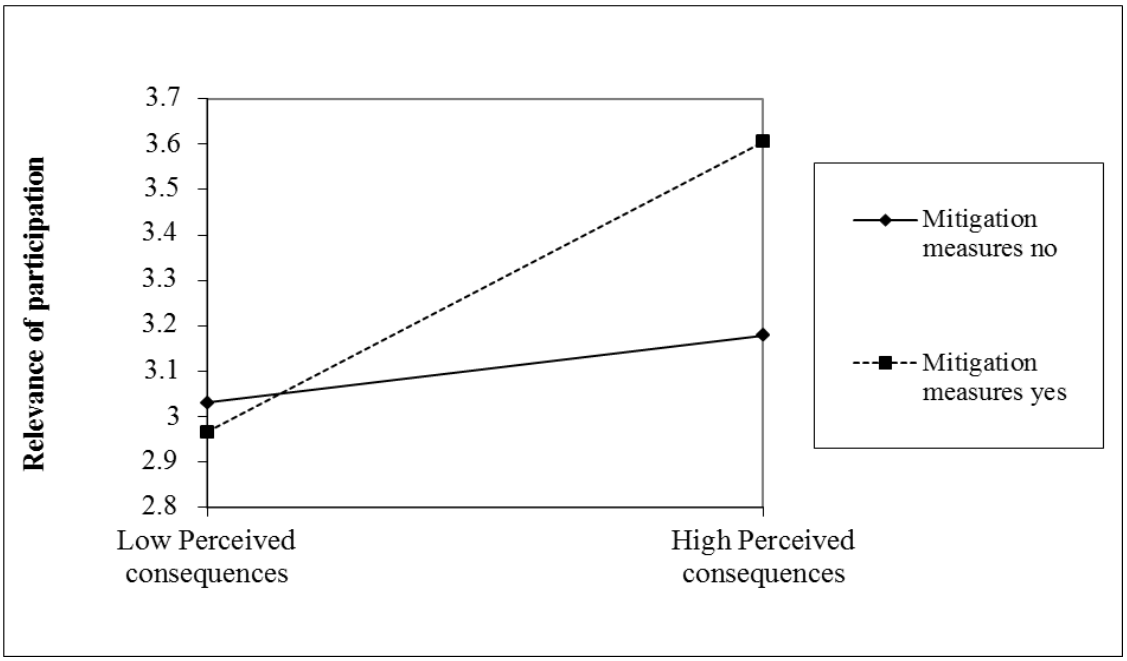
Regression 2, as expected, showed a positive interaction effect between personal mitigation measures and perceived consequences, b = .10, t(716) = 2.26, p < .05 (see Figure 6-4). A simple slope analysis revealed that personal mitigation measures were negatively associated with a rejection of citizen responsibility when perceived consequences were low, b = –.17, t(716) = –2.78, p = .01, but not when consequences were high, b = .01, t(716) = 0.29, p = .77.

Figure 6-4 Rejection of citizen responsibility in flood management (from 1 to 5) as a function of personal measures and perceived physical and psychological consequences.



Regression 3 showed the expected positive interaction effect between mitigation measures and perceived consequences, b = .10, t(717) = 2.56, p = .01 (see Figure 6-5). Simple slope analysis revealed that personal mitigation measures were positively associated with relevance of participation for flood management when perceived consequences were high, b = .18, t(717) = 3.66, p < .01, but not when consequences were low, b = –.03, t(717) = –0.45, p = .65.

Figure 6-5 Appraisal of relevance of participation in flood management (from 1 to 5) as a function of personal measures and perceived physical and psychological consequences.



On a more exploratory level, the moderator analysis was rerun, replacing perceived physical and psychological consequences with perceived general consequences as the moderator. The results did not show any significant interaction effect of personal mitigation measures and general consequences ($p > .29$), indicating that general consequences did not moderate the relationship between personal mitigation measures and, respectively, appraisal of response efficacy, rejection of citizen responsibility and (appraisal of) relevance of participation for flood management.

In sum, the findings of the moderator analysis supported Hypotheses 2a, 2b and 2c. Furthermore, perceived general consequences did not emerge as a moderator of the relation between mitigation measures and our three criterion factors.

6.8 Discussion

This study is interested in whether the experience of a flood influences the resilience of citizens who have taken measures in the past and whether this experience influences the factors found to lead to personal mitigation measures, and therefore the likelihood that such measures will be taken in the future. Therefore, this section focuses on the impact personal mitigation measures can have on perceived flood experience as well as the influence perceived flood experience can have on the appraisal of factors that have previously been found to influence personal mitigation measures, and therefore whether citizens are likely to take such measures in the future.

First, previous studies have found that personal measures can lead to a reduction in financial damage (Bubeck et al., 2012a; Kreibich et al., 2015; Thieken et al., 2007). The present study complements previous findings by broadening the focus of household resilience to include the ability of citizens to withstand the general as well as the perceived physical and psychological consequences of a flood. The results show that there is a weak but positive correlation between personal mitigation measures and perceived consequences, which implies that households that decided to take personal mitigation measures prior to the 2013 flood experienced the consequences of the 2013 flood as severe. This finding is in contrast to common-sense assumptions about the interrelation of actions and consequences that underlie many perception-related studies based on protection motivation theory, usually assuming that actions taken automatically contribute to increased resilience (e.g. Bubeck et al., 2012b; Grothmann & Reusswig, 2006), and is also in contrast to previous studies focusing on economic damage (Bubeck et al., 2012a; Kreibich et al., 2015; Thieken et al., 2007). The findings highlight a need for additional research on how actions and perceived consequences related to flood experience are interrelated and what drives the interlinkages between both concepts.

Second, previous studies have focused on a linear and causal relationship between experience, appraisal and action without taking the timing of the flood experience into account (Siegrist, 2013). The study presented here has been able to gain a more dynamic understanding of the relationship between action, experience, and appraisals of response efficacy, responsibility and participation. By focusing on the influence that flood experience can have on citizens who took personal mitigation measures before the occurrence of a flood and how their experience of the flood influences factors that have been previously found to influence the motivation to take action, this study is able to provide assumptions in relation to the likelihood that citizens will take action in the future. However, additional research is needed to test these assumptions. Moreover, the effect sizes of the interaction terms as well as the explained variance in the appraisals of response efficacy, responsibility and participation are rather small. However, as the moderated regression analysis sought primarily not to maximise explained variance but to investigate cognitive processes, the results provide an entry point for future studies that should employ more detailed measures of the dynamic relationship between action, experience, appraisal and action.

Although the consequences of taking action on the factors that influence future action have been discussed – e.g. citizens who have taken action might no longer perceive themselves as being at risk and therefore might not take action in the future (Siegrist, 2013) – such an

interaction has yet to be empirically tested. This study shows that flood experience and the perceived consequences of that experience play a role in how citizens perceive or appraise their response efficacy, citizen responsibility and the relevance of participation.

Specifically, the present study finds that if the physical and psychological consequences are perceived as small, respondents tend to accept the attribution of responsibility towards individual citizens and also report higher response efficacy if they took personal mitigation measures prior to the 2013 flood. Moreover, there is a significant difference between respondents who did and respondents who did not take action in the past. Respondents who took personal mitigation measures are more likely than those who did not to report higher response efficacy and also agree with citizen responsibility. In other words, if respondents took personal mitigation measures before the flood and did not experience severe consequences as a result of the flood, they are likely to agree with statements which support citizen responsibility and to report high response efficacy. This finding supports assumptions made in existing studies (Slovic, 1987; Soane et al., 2010). In regard to the implications that these findings have for future action, studies have shown that to be motivated to take action, individuals need to perceive the risk as high and also feel responsible and believe that their actions can make a difference. The present results show that perceiving the consequences of an actual flood risk as low leads to higher response efficacy and acceptance of responsibility among individuals who took personal mitigation measures. As a result, respondents who took measures and did not experience severe flooding in 2013 might not perceive the risk as high, and therefore may not be motivated to take action in the future. However, they may also feel able to reduce damage through their own actions and therefore feel empowered to take action in the future (Grothmann & Reusswig, 2006). Based on these assumptions, more research is required to understand whether citizens actually took personal measures again based on their experience and appraisals.

Alternatively, if consequences are perceived as severe, the relationship between actions and appraisal processes does not change significantly. In other words, in regard to response efficacy and citizen responsibility, there are no significant differences between those who took action and those who did not when respondents report severe perceived physical and psychological consequences. Instead, both groups report low mean values of response efficacy and citizen responsibility, which implies that the experience of a severe flood undermines response efficacy and the acceptance of citizen responsibility, regardless of whether a household has taken action. In regard to the implications that these findings have for future action, the results show that experiencing a flood risk as very severe has a negative

influence on appraisals related to responsibility and response efficacy, regardless of whether they have taken personal mitigation measures in the past. Therefore, based on previous research it could be assumed that individuals who experienced severe consequences as a result of the 2013 flood may be unlikely to be motivated to take personal measures in the future. However, a follow-up survey is required to see whether citizens did in fact take personal mitigation measures based on their new appraisals of response efficacy, responsibility and participation, or whether the appraisal of these factors changed as more time passed since the 2013 event.

In regard to the perceived relevance of participation, if respondents took personal mitigation measures prior to the 2013 flood and perceive the consequences of the flood as severe, they are likely to consider participation relevant. One interpretation of this result could be that citizens who are not satisfied with the current flood protection situation perceive participation as an opportunity to change their situation. This implies that citizens believe that there is a need for discussions about new ways forward in regard to the future of flood risk management.

Therefore, participative activities could play an important role in trying to ensure that people who have experienced severe flooding are engaged and involved in conversations about responsibility. In other words, when taking the current practices of citizen responsibilisation in Germany into account, the results suggest that personal mitigation measures should not be seen as a substitute for state support. Rather than delegating responsibility and disengaging, the state could play the role of moderator to help improve household resilience together with citizens. The results show that respondents perceive participative processes as relevant, and therefore may be interested in taking part in such activities in the future. Once participative activities have taken place, studies which investigate the correlations between participation and personal mitigation measures are required. Moreover, more research is required to understand why some households that took personal mitigation measures did not experience severe flooding in 2013, while others did. This information is crucial for developing a more balanced approach between the responsibility of citizens and the state as well as the reduction of flood-related hazards in the future.

Postscript: As a result of an increasing focus on non-structural measures, I became increasing interested in the motivation and ability of local stakeholders to become involved in the implementation of alternative measures. Although, it is clear from the literature on risk

communication that local stakeholder preparedness is desirable, the relationship between multiple flood experience and action is less clear. This paper helped me to understand that multiple experiences of flooding and the effect that this experience has on action is dependent on the perceived severity of the event and whether or not personal mitigation measures are taken before an event was believed to have helped to reduce damage. My co-authors and I found that those who had experienced severe flooding in 2013 were unlikely to perceive their personal actions as being able to reduce damage; therefore, they did not feel responsible. However, they were interested in taking part in participative activities. These results suggest that participation could provide an important approach to assisting the most vulnerable in the management of flood risk.

Chapter 7

Power, Responsibility and Justice: A Review of Local Stakeholder Participation in European Flood Risk Management

Chloe Begg

Abstract: Over the past few decades there has been an increasing interest in the active involvement of local stakeholders in the management of floods in Europe. Such involvement is seen as necessary as the management of floods becomes more complex. Management approaches now seek to include a range of potential measures to reduce risk (e.g. structural defence, spatial planning, property-level protection measures, etc.). Local stakeholder involvement is seen to be important because governments lack the capacities such as knowledge and funding required to deliver all these measures alone.

This paper focuses on the implications that participative approaches have on the fairness of European flood risk management. Studies of environmental justice are well placed to address this question because they are interested in who is included and excluded from decisions related to the distribution of environmental goods (resources) and bads (risks). Existing literature suggests that fair decision-making processes (procedural justice) can lead to fair distribution or resources and risks (distributive justice).

This literature review of 30 peer-reviewed papers provides an analysis of justice and FRM by assessing practices of participation which are presented in the recent literature on local stakeholder involvement in flood risk management in England and Germany. It was found that participation in practice generally focuses on transferring responsibility to the local level at the expense of power. This paper discusses the implications that this finding has for justice and synthesises potential ways forward based on recommendations of the reviewed literature.

7.1 Introduction

Drawing on philosophical traditions of social justice, studies of environmental justice focus on who is involved in the development of policies and decision-making processes that distribute

resources and risk (procedural justice) and evaluate whether the resources and risks are fairly distributed (distributional justice) (Walker 2012).

Flooding threatens millions of people worldwide, causes massive disruptions to lives and livelihoods and does so in an uneven way (Walker 2012). Therefore, it is a suitable candidate for discussions about justice. Although the advent of Hurricane Katrina can be seen to have stimulated a discussion about justice in regards to flooding in the context of the USA (e.g. Walker 2012, Bullard and Wright 2009, Sanchez and Brenman 2008, Morse 2008, Cutter 2006, van Gigch 2008, Maantay and Maroko 2009, Collins and Grineski 2017, Montgomery and Chakraborty 2015, Shiverly 2017, just to list a few), literature that evaluates justice in relation to FRM in the European context is comparatively sparse (Johnson *et al*. 2007, Walker and Burningham 2011, Lindley *et al.* 2011, Walker 2012, Thaler and Hartmann 2016, Adger *et al.* 2016). This paper aims to contribute to discussions about justice and FRM by discussing the relationship between procedural and distributive justice. It does so by drawing on a broader literature related to local stakeholder participation in European FRM.

A number of pressures including climate change and reductions in public funding mean that there has been an increasing move by the state towards sharing responsibility for the management of floods across different levels of society (Thaler and Priest 2014). Participation in the management of floods in Europe has become a legal requirement as a result of the European Floods Directive (2007/60/EC). The Floods Directive has been implemented into national law by each of the European member states. It aims to achieve a movement away from trying to manage floods through controlling nature by employing reactive approaches which focus on structural measures such as dikes and water storage, towards a more proactive and holistic approach referred to as flood risk management (FRM) (Nye *et al.* 2011). This approach broadens the scope of management options by including 'non-structural measures' such as spatial planning, emergency management, and encouraging citizens to take measures to inform, prepare and protect themselves in addition to structural measures. The implementation of such a breadth of measures requires the involvement of a wide range of stakeholders (Walker *et al.* 2010) and provides the potential for the improvement of FRM through additional funding and knowledge (Thaler and Priest 2014).

The literature on local stakeholder participation in European FRM refers to the involvement of a number of actors located at the local level that can affect or who are likely to be affected by the effects of flooding. This includes local authorities, NGOs, community groups, knowledge institutions, businesses and residents. I am interested in local stakeholder

participation in both decisions related to the selection of measures, and in the implementation of the measures that are selected. By discussing the implications that the opportunities for local stakeholder participation have on the way that resources and risks are distributed, it is possible to map out the interrelationship between procedural and distributional justice across a range of geographical contexts. Based on the findings from a review of 30 studies which focus on England, Germany and the Netherlands, I argue that FRM as practiced to-date in Europe is reproducing and potentially deepening patterns of injustice. The findings provide a basis for a discussion about how participation could be employed to improve the fairness of FRM.

In order to describe the way in which I intend to evaluate justice in relation to FRM, the following section provides an overview of the conceptual framework. I then provide an overview of the method used for conducting the literature review before presenting the findings in regards to examples of how participation is employed in practices of FRM in three European contexts. Based on these results, I discuss the implications that these examples of local stakeholder participation have on justice before discussing how local stakeholder participation could be used in order to improve justice.

7.2 Conceptual Framework

This section presents an overview of the study's conceptual framework used to discuss procedural justice and distributional justice.

There are no agreed upon definitions of justice (Walker 2012). Often the terms justice, fairness and equality are used interchangeably in the literature (Johnson *et al.* 2007). In this paper I make the distinction been the terms as follows: on the one hand, the terms unequal and uneven describe distributions of decision-making power, resources and risk, whilst on the other hand, the terms fairness and justice provide a language for evaluating these distributions.

There are a number of influential philosophical traditions of social justice which can be drawn upon when discussing whether flood management is fair or not (i.e. utilitarianism, liberalism, and egalitarianism). Utilitarians aim at maximising the aggregate happiness of individuals (Mill 2010; Johnson *et al.* 2007). For flood management this means that the benefits offer the greatest gain for the society (Thaler and Hartmann 2016). Liberals place their faith in the free market (Hayak 1991). This promotes individual responsibility instead of state intervention in the management of floods (Thaler and Hartmann 2016). Egalitarians focus on the equal distribution of resources across individuals (Rawls 1971, Sen 1992). In

regards to flood management this means that resources should be targeted at the most vulnerable individuals in society (Johnson *et al.* 2007).

Vulnerability has been described as a human induced situation caused by the availability of resources as well as policies that marginalise some groups (Blaikie, Cannon, Davis and Wisner, 1994). Those who are most vulnerable are those who do not have access to funding for structural measures and/or those who do not have the resources or motivation to take measures to prepare and protect themselves.

It may not be possible to ensure that the exposure to flood risk is distributed evenly as floods are natural and unpredictable events which occur in some places rather than others rather than being intentionally spreadable across space (Walker 2012). However, it is possible to ensure that resources, such as government support and finances, for managing risk are fairly distributed. Decision-makers are faced with the challenge of having to decide which factors to take into account when distributing tax payer's money to improve FRM. Studies of social vulnerability have made a strong case for the need to not just take exposure and the broad impacts of floods (e.g. financial damage and death – although these factors are also important) into account when developing adaptation policy but also how people at risk perceive, cope with and adapt to those impacts (Tapsell *et al.* 2010, Kuhlicke *et al.* 2011, Lindley *et al.* 2011). Studies of flood justice and vulnerability have found that flood exposure does not always result in flood vulnerability (Lindley *et al.* 2011, Walker and Burningham 2011). Instead, it is the communities that are exposed and deprived that were found to be most vulnerable due to limited capabilities to prepare, respond and recover to flooding (Tapsell and Tunstall 2008 Lindley *et al.* 2011, Walker and Burningham 2011, Collins and Grineski 2017). Therefore, existing studies of flood justice and vulnerability provide a strong argument for the need for risk mitigation policies which make sure that the most vulnerable are not disadvantaged by the decisions being made. This line of argumentation reflects an *egalitarian* approach to risk management. Based on this approach, this paper assesses the extent to which attempts to distribute resources for flood management prioritise those who are most vulnerable (Rawls 1971) and whether the most vulnerable have the capabilities required to cope with and adapt to flood-related impacts (Sen 1992).

In order to ensure that those who are most vulnerable are prioritised in decisions related to the distribution of risk and resources, there is a strong argument for the involvement of those at risk. In the environmental justice literature procedural justice is linked to power, authority and influence (Green and Penning-Rowsell 2010, Walker 2012, Bell and Carrick 2017) and the right of those, who can effect or who are affected by a decision, to be involved

in that decision (Lake 1996, Shrader-Frechetter 2002, Johnson *et al.* 2007). The basic argument behind procedural justice is that environmental decision-making procedure is fair only when power is shared equally among (potential) participants (Bell and Carrick 2017). Moreover, it is argued that an unfair decision-making process is unlikely to promote the fair distribution of environmental benefits and burdens (Walker 2012, Bell and Carrick 2017). Furthermore, the way that resources are distributed differentiates the capacities to participate (Schlosberg 2007).

Hunold and Young (1998) put forward five principles of procedural justice which promote (1) inclusive and (2) fair processes which involve participants at each stage of the decision-making process with the aim to (3) eliminate disparities and (4) promote joint decision-making between participants which also (5) acts as the final decision. Similar versions of such inclusive and deliberative participation are also promoted in the wider literature on participation in European FRM. The literature on local stakeholder participation in FRM emphasises the importance of co-producing solutions at an early stage of decision-making processes (Rouillard *et al.* 2014, Nye *et al.* 2011, Doorn 2016), which actively involves both decision-makers and local stakeholders to ensure roles and responsibilities are meaningfully discussed and agreed upon by all parties (Doorn 2016, Geaves and Penning-Rowsell 2015). However, as I will show, empirical evidence which supports the normative beliefs that local stakeholder participation leads to benefits such as improved decision outcomes and legitimacy in practice, is lacking. The ability of local stakeholders to become involved is argued to be an important factor which affects the influence that they can have on decision-making processes (Renn *et al*. 1995). As this paper will show, perceptions of responsibility and the capacities available to local stakeholders to become involved influence both procedural and distributive justice. Moreover, lack of procedural justice is unlikely to lead to distributive justice for those who are most vulnerable.

7.3 Methods

There are a number of examples of participative activities in a range of European countries. This paper draws on a review of 25 papers which focus specifically on decision-making processes in relation to FRM rather than tools or theoretical discussions about participation in general, in order to gain an understanding of how participation is currently practiced in FRM-related decisions. A broad literature search was conducted using the Web of Science database. Search terms used included “flood* stakeholder participat*”, “flood* stakeholder engage*”, “flood stakeholder involve*”, “flood* responsib*”, and “flood* governance”. This

approach returned 335 peer-reviewed journal articles which were initially selected based on the relevance of their title and abstract. After going through this process, articles were selected based on their specific focus on examples of local stakeholder participation in current decision-making processes in regards to European FRM. They were then refined again based on their geographical context (i.e. only studies that provided empirical examples from England and Germany were selected.[7] For this reason, this article focuses on England, Germany and the Netherlands, as the literature reviewed provided the most examples in these countries (17 focused on England and 10 on Germany). The following section provides some examples of how local stakeholder participation is taking place in three European countries and drawing out similarities across the three contexts.

7.4 Results

This section presents the results of the literature review by mapping out the opportunities and experiences of local stakeholder participation in regards to the selection and implementation of FRM measures (see Table 1). These results provide the basis for discussions about justice and FRM.

7.4.1 England

The review highlighted that, in England the state's resilience agenda promotes participation so that communities have the capacity to "absorb, recover and adapt" and live with floods (Mees *et al.* 2016, p.7). Thaler and Priest (2014) argued that this way of managing floods has become desirable due to repetitive flooding and austerity measures. As a result, Wehn *et al.* (2015a) describe a situation where the state is actively trying to change the way that citizens perceive their responsibility; aiming for a culture of responsibility for FRM rather than "service receivers" (also see Butler and Pidgeon 2011). For example, shifts in the planning of structural flood-defence measures from a "design-defend-implement" approach to a "discuss-design-implement" approach is said to reflect this change (Wehn *et al.* 2015a).

Decisions related to funding allocation for structural flood-defence measures, for example, are conducted in a participatory setting. Regional Flood and Coastal Committees (RFCCs) which are organised by the Environment Agency and made up of expert appointees (including conservation, farming, and landowning interests) and local authority representatives are required to allocate funding "according to both Government priorities,

[7] The published version of this paper focused on England, Germany and the Netherlands as these were the case study areas that were most prevalent in the literature. However, for the purposes of this thesis, the Netherlands has been excluded from the study.

based on criteria contained in an 'outcome measure' (OM) scoring system, and local priorities" (Benson *et al.* 2016, p. 329). This scoring system is employed through the use of a cost-benefit analysis (Begg *et al.* 2015, Begg *et al.* 2018). Local stakeholders can become involved as long as they adhere to decision-making structures defined by the state (Watson *et al.* 2009; Lorenzoni *et al.* 2016). Lorenzoni *et al.* (2016) argue that such state-led decision-making processes are said to be restrictive due to the general lack of funding for flood defence projects (Lorenzoni *et al.* 2016). However, actors involved in the RFCC process argued that although potentially difficult to fund, they were able to present their proposals for local projects, therefore raising their profile locally and therefore potentially attracting additional funding (ibid).

For a number of the articles reviewed, changes in flood defence funding means that rather than being reliant on state funding, local stakeholders are being encouraged to play a more active role in the funding for flood defence projects (Nye *et al.* 2011, Thaler and Priest 2014, Thaler and Levin-Keitel 2016, Begg *et al.* 2015, Geaves and Penning-Roswell 2014, 2016). This responsibility is seen to be transferred to local stakeholders whilst the power to take decisions remains in the hands of the state (Penning-Rowsell and Johnson, 2015). Although the deprivation of areas at risk is taken into account within the funding methodology, Begg *et al.* (2015) argue that this approach has the potential of strengthening or creating new vulnerabilities for small communities in rural areas that do not have the assets to attract state funding or the resources to contribute funding (also see Begg *et al.* 2018).

Some studies found that organised groups also have the opportunity to influence decisions related to alternative non-structural measures (Begg *et al.* 2015, Wehn *et al.* 2015b, Ping *et al.* 2016). For example, organised groups can become involved in spatial planning through Neighbourhood Planning (Begg *et al.* 2015). However, Neighbourhood Plans will only be implemented if they fit within Local Plans and therefore the influence that organised groups can have on the decision-making processes is questionable (Begg *et al.* 2015). In addition, Flood Wardens (i.e. volunteers who support the Environment Agency and local authorities by ensuring that flood warning measures reach the local community) are also seen to exert influence by distributing information from the state to the community and presenting local interests to the state (Wehn *et al.* 2015b, Ping *et al.* 2016). However, these studies did not discuss the influence that such involvement on planning-related decisions can have.

In addition, Wehn *et al.* (2015a) point out that considerable efforts have been made to improve preparedness and encourage engagement in FRM through communication in order to change perceptions of responsibility. For example, Nye *et al.* (2011) argue that attempts

have been made by the Environment Agency – the Government Agency responsible for FRM implementation – to empower citizens and communities to take responsibility for preparing and protecting themselves by undertaking activities such as "interactive forums, flooding road shows and targeted awareness-raising" (p.292). However, Ping *et al.* (2016) show that although local stakeholders were aware of how to become involved in preparedness and response activities, they were less certain about flood mitigation and recovery efforts. Additionally, Mees *et al.* (2016) show that between 2009 and 2011 the Department for Environment, Food and Rural Affairs (Defra) – the lead Government Department responsible for FRM – provided £5.2 million in funding to support a property-level protection pilot scheme. In 2012 the Flood Resilience Community Pathfinder scheme was introduced. £5 million was made available to authorities in 13 communities to encourage local responsiveness and ownership of flood risk (Mees *et al.* 2016). Despite such support, it was found that these measures resulted in limited success in regards to uptake of personal measures (Mees *et al.* 2016). This suggests that the way responsibilities are communicated by the state and perceived by local stakeholders needs to be addressed in order to see improvements in the uptake of local stakeholder responsibility (see Adger *et al.* 2016).

In sum, based on the findings of existing research, decisions related to the selection of FRM-related measures in England are taken at the local level but are based on decision-making processes defined at the national level. The goal of participation is stated as resilience, which sees authorities actively attempting to involve local stakeholders in decisions related to the selection of FRM measures and encouraging local stakeholders to take responsibility for the delivery of structural flood-defence measures as well as for their own individual preparedness and protection. The rationale behind the prioritisation of structural flood-defence measures is both *utilitarian*, as the cost benefit analysis aims to achieve maximum utility of taxpayers' money, as well as *egalitarian*, as it aims to prioritise areas that are most deprived (Thaler and Hartmann 2016). In addition, encouraging local stakeholders to contribute funding for structural flood-defence measures as well as take responsibility for their own preparedness and protection highlights a shift towards *liberal* notions of social justice. As a result of these management practices, the examples show that local stakeholder influence in the selection of measures is limited and uptake of responsibility, particularly in regards to personal mitigation measures at the property level, is lacking.

7.4.2 Germany

The articles reviewed highlighted that the institutional response to participation is quite different to that seen in England. Floods have traditionally been managed in Germany

through a focus on structural flood-defence measures and based on a principle of ensuring that all residents have the same protection level (protection against a flood with the statistically return period of 100 years) at the same time as prioritising funding for structural flood-defence measures is distributed in such a way that ensures the greatest benefits to all (Krieger, 2012).

The introduction of FRM has resulted in a broader palate of potential measures to reduce flood risk. Becker *et al.* (2015) explain that FRM is the responsibility of the states (*Länder*) and a strict division of responsibilities across functional domains within the *Länder* have resulted in top-down decision-making structures, which means that it is difficult to resolve conflicts between differing interests (e.g. flood defence and land use). Despite emphasis placed on the subsidiary principle (i.e. placing decision-making power at the lowest competent level of society possible), local administrative involvement in decisions was found to be only largely present at the implementation stage of the decision-making process (Becker *et al.* 2015). However, Becker et al. (2015) also note that the institutional setting allows each of the *Länder* to develop individual policies which are tailored to their political configurations, problem structures and local interests – this creates room for experimentation.

Heintz *et al.* (2012) recommend that both local government and NGOs should be included in FRM planning in order to avoid conflict by creating space for discussions and encouraging the development of long-term rather than short-term solutions. The authors argue, however, that the public should not be included in planning but that intense communication is required between decision-makers and the public about the measures that they wish to implement (ibid). Although it could be argued that decision-makers wish to follow this recommendation in practice by communicating the legally required information to the public at the final stages of the approval process for structural flood-defence measures (Becker *et al.* 2015, Kuhlicke *et al.* 2016), formally, in some *Länder*, local stakeholders, including the public are invited to comment on plans for structural measures through written consultation (Kuhlicke *et al.* 2016, Pahl-Wostl *et al.* 2013).

Decisions related to the prioritisation of structural flood-defence measures are made using a cost-benefit analysis which takes four categories into account: expected damage, cost-benefit ratio of a scheme, effects on water management, and vulnerability (Socher *et al.* 2006). Kuhlicke *et al.* (2016) found in a study of participation in the planning of structural flood-defence measures in Saxony that although local stakeholders are limited in their ability to influence decision-making, rather than improving local stakeholder vulnerability to flood risk,

opportunities to participate provide the opportunity to transfer accountability to local stakeholders when things go wrong (also see Begg *et al.* 2018). Pahl-Wostl *et al.* (2013) also found that some FRM plans in Baden-Württemberg have been met with conflict from local stakeholders (i.e. those effected by the polder construction) who were only involved in the later stages of the decision-making process during the legally prescribed consultation processes (Pahl-Wostl *et al.* 2013). As a result, it has been argued that public participation and awareness raising should take place at an early stage of the decision-making process (Pahl-Wostl *et al.* 2013). However, Kuhlicke *et al.* (2016) also found that although decision makers in Saxony argued that the early stages of planning should be more inclusive, it was also believed that final decisions should remain in the hands of the state. Decision makers argued that individuals are not capable of making decisions based on facts and in the interests of the "common good" (ibid).

Despite these findings, there are examples of local stakeholder involvement in planning decisions. Based on a case study of the Rhine River, which provided an example of decision-makers actively involving a range of stakeholders, including the public, it was found that "transparent planning and communication from the very beginning with all affected stakeholders sped up the implementation processes significantly and gained the first local agreement without court proceedings" (Becker *et al.* 2015, p. 8). Specifically, Becker *et al.* (2015) found that after the approval of two sites for retention polders failed due to strong local opposition in Rhineland-Palatinate, a new approach was trialled which involved environmental NGOs, and investigated several potential retention sites. After an open planning process which included extensive dialogue with the public, particularly farmers, 10 retention sites were designated by the state (Becker *et al.* 2015).

Therefore, in addition to being seen as something to avoid to ensure that state priorities are met, conflict is also something that necessitates participation; particularly when it requires approval from land owners. Participation with local stakeholders was also found in regards to the development of nature-based solutions. For example, Pahl-Wostl *et al.* (2013) discuss a positive example of the involvement of the NGO World Wildlife Fund (WWF) in decision-making processes in Baden-Württemberg which led to the combination of flood polders and nature restoration.

In addition, similar to England, in Germany local stakeholders, particularly businesses and residents are encouraged and required to take action to protect and prepare themselves (Pahl-Wostl *et al.* 2013, Mees *et al.* 2014). For example, residents are seen as being responsible for their own preparedness and protection by law (The German Federal Water

Act - WHG 2009). Becker *et al.* (2015) provide a positive example of efforts to improve preparedness through communication. In Cologne, North Rhine-Westphalia, for example, the city flood authority organised risk awareness programs and emergency exercises. It is argued that as a result of these efforts, within a few years, "additional retention areas, mobile flood protection, private mitigation measures, and a flood competence center, Hochwasser-Kompetenz-Centrum (HKC), became operational" (Becker et al. 2015:9). Bubeck *et al.* (2012) make a case for the effectiveness and importance of encouraging residents to take personal measures. Begg *et al.* (2016) found that there is evidence that residents have taken action to protect themselves in the states of Saxony and Bavaria but these measures were not always successful in avoiding flood damage (Begg *et al.* 2016).

In sum, the examples from the literature on German FRM discussed here suggest that the state continues to see itself as being responsible for planning of structural flood-defence measures. The rationale behind such decision-making structures is *utilitarian* in the sense that structural flood-defence measures are prioritised using cost-benefit analyses in order to gain the maximum utility for taxpayer money (Thaler and Hartmann 2016). However, space for participation is provided for such measures when conflicts make planning otherwise impossible. Participation is also found in regards to other FRM measures such as nature-based solutions. In addition, local stakeholders such as businesses and residents are increasingly seen by the state as responsible for their own preparedness and protection. The rationale behind this responsibilisation shows the limits of the *utilitarian* approach to social justice. The state acknowledges that structural defence cannot provide 100% protection against flood damage and that more needs to be done to ensure that local stakeholders are able to cope with and adapt to flood-related impacts. A *liberal* approach is adopted to mark the boundaries of state-provided defence measures.

This section has provided some examples from the review of literature of the opportunities for local stakeholder participation in decisions related to the selection and implementation of measures in the three countries. The following section discusses the implications that these opportunities have for justice and FRM.

7.5 Justice and Flood Risk Management

This section assesses the findings by employing Hunold and Young's (1998) five principles of procedural justice (see Table 1). Based on this assessment the effect that FRM based on the rationales of *utilitarian* and *liberal* notions of social justice has on those who are most vulnerable to flooding will be discussed.

Table 7-1 Overview of the findings based on Hunold and Young's (1998) principles of procedural justice.

Principle of Procedural Justice	England	Germany
1. Inclusive processes	Local stakeholders are encouraged to take responsibility for flood preparedness and protection.	Opportunities for local stakeholder involvement in planning-related decisions are provided. All those at risk are required by law to take measures to protect and prepare themselves.
2. Fair processes which involve participants at each stage of the decision-making process	Local stakeholder involvement is encouraged at the planning stage (e.g. Neighbourhood Plans) and required at the implementation stage (e.g. Partnership Funding, personal protection and preparedness measures).	The extent of local stakeholder involvement depends on the specific project and the power that the local stakeholder has to influence decision-making.
3. Elimination of disparities	Whether or not communities receive structural flood-defence is decided using a cost-benefit analysis. Partnership Funding takes deprived areas into account when calculating funding.	Whether or not communities receive structural flood-defence is decided using a cost-benefit analysis. Local stakeholders who do not have access to structural measures are required to take measures to prepare and protect themselves.
4. Promotion of joint decision-making between participants	Local stakeholders can become involved as long as they adhere to decision-making structures defined by the state.	Whether or not joint decision-making takes place depends on the individual project. Conflict and the requirement for external expertise; particularly in regards to nature-based solutions, were often found to lead to joint decision-making.
5. Influence the final decision	Top-down planning processes limit the power that some local stakeholders have to influence the decision-making process (e.g. local interest groups and individuals).	Top-down planning process restricts the power of local stakeholders to influence the final decision. However, when conflict arises, which makes state plans impossible or local expertise is required, local stakeholders have the opportunity influence the final decision.

Although the way in which local stakeholders are involved in decisions related to FRM differs across the three contexts, a number of commonalities can also be seen. In most cases, the research concludes that local stakeholder involvement is being sought in order to gain approval for decisions and assist in the implementation of state-defined solutions, rather than providing inclusive and fair opportunities to participate in the definition of the solution. This highlights issues related to scale. Decisions taken at the national (i.e. England and the

Netherlands) or state level (i.e. Germany) limit the influence that stakeholders at the local level can have on the outcome. One reason for this may be because rather than striving to be *egalitarian*, the rationale behind the structures of decision-making that are available to local stakeholders are based on *utilitarian* and *liberal* principles of social justice. A *utilitarian* approach to the fair distribution of taxpayer funds is based on an "objective" and economically rationalised decision-making tool (i.e. a cost-benefit analysis). This approach limits the influence that local stakeholders can have on decisions related to the selection of FRM measures. Additionally, a *liberal* approach places emphasis on local stakeholders taking responsibility for their own preparedness and protection by highlighting the limitations in regards to state capacity to assist those at risk and their responsibility to do so. As a result of these approaches, local stakeholders are made responsible for the implementation of state-defined decisions. The remainder of this section will show that placing responsibility in the hands of local stakeholders regardless of whether they have the capacities required to take up that responsibility has an effect on the way that risks are distributed.

Inclusive processes and fairness at each stage of the decision-making process

The findings of the review showed that local stakeholder involvement depends on how responsibilities are perceived by both the state and local stakeholders. Local stakeholder involvement also depends on whether they have the capacities required to take part in decision-making processes.

It is argued that if changes in responsibility are going to occur, dialogue between the state and local stakeholders is required in order to change their perceptions of responsibility (Geaves and Penning-Rowsell 2015). When local stakeholders are made responsible without having the opportunity to discuss their role it assumes that local stakeholders have the desire and agency to deliver state-defined goals (Butler and Pidgeon 2011). Studies of local stakeholder perceptions also emphasise the importance of participation for dealing with perceptions of responsibility (Adger *et al.* 2016, Begg *et al.* 2016). Adger *et al*. (2016) found that if local stakeholders have a positive relationship with the state, they are more likely to accept state interventions and take action to prepare and protect themselves. In addition, Begg *et al.* (2016) found that vulnerable citizens, who have recently experienced severe flood damage in Germany, did not feel responsible for FRM. They also did not believe that their actions can make a difference in regards to the reduction of flood damage (ibid). However, they perceive participation in FRM-related decision-making processes to be relevant (ibid).

There are examples of communication with local stakeholders about and support for taking responsibility for personal preparedness and protection in England and Germany (Becker *et al.* 2015, Ping *et al.* 2016, Mees *et al.* 2016). Becker *et al.* (2015) highlight positive outcomes in regards to implementing non-structural measures as a result of communication between the state and local stakeholders in Germany. However, Ping *et al*. (2015) show that despite communication in England, residents are unsure of how to mitigate their risk and Mees *et al.* (2016) show that despite financial support, there is a lack of uptake in responsibility. The difference between these two examples may be related to the opportunities for participation as well as the relationship between the state and local stakeholders and the way that responsibilities are perceived. These findings highlight the importance of developing trust and ensuring a shared understanding of responsibility between the state and local stakeholders early on at the planning and policy-making stage (also see Geaves and Penning-Roswell 2016).

In addition to the acceptance of responsibility and the motivation to act, it is argued for local stakeholders to be able to take up responsibility for FRM access to resources (e.g. knowledge, funding and networks) is also necessary (Thaler and Priest 2014, Begg *et al.* 2015, Thaler and Levin-Keitel 2016). Although local stakeholder responsibility, self-organisation and action is seen to be an important part of FRM, it is also often argued in the literature that it should not substitute state action and support (Mees *et al.* 2016Begg *et al.* 2015). In cases where social capacities are lacking, it is argued that state support is required (Begg *et al.* 2015). Without support for the development of social capacities, there is the risk that inequalities will occur; particularly, if all communities are expected to take responsibility regardless of their capacity to do so. Thaler and Priest (2014) argue that "communities with higher socio-economic status are more likely to guarantee their interests…because of their high social and cultural capital" (p.423). Similarly, Begg *et al*. (2015) argue that without resources and motivation, shifts in responsibility to the local level are unlikely to be taken up by local stakeholders. In sum, as Nye *et al*. (2011) conclude: "[w]ithout 'engaged' and 'empowered' communities' living with floods simply will not work" (p. 292 original emphasis).

Thus, participation in the selection of FRM-related measures is a key part of developing shared understandings of responsibility as we all ensuring that local stakeholders are motivated and have the resources required to take responsibility for FRM.

Elimination of disparities

Ensuring that local stakeholders have the capacities required to take up responsibility is particularly relevant when shifts in responsibility result in an uneven distribution. Research on social-vulnerability shows that the most deprived areas tend to be most vulnerable to flood impacts due to limited capabilities to prepare for, respond to and recover from flooding (Tapsell and Tunstall 2008, Lindley *et al*. 2011, Walker and Burningham 2011, Collins and Grineski 2017). Although the cost-benefit analyses employed in each context differs in terms of the factors that it takes into account, they all effectively distribute funds in a way that produces winners and losers in terms of who receives structural flood-defence. In England, Thaler and Priest (2014) argue that placing responsibility for funding in the hands of local stakeholders may improve the efficiency of FRM but does little to deal with fair risk distribution as communities that have the resources and networks are likely to receive protection, while communities that do not have such capacities will be left out (see also Begg *et al.* 2015, 2018). Interestingly, this finding is consistent in each country despite the differences in opportunities to become involved in FRM.

Begg *et al.* (2015) argue that rural communities in England may be unfairly disadvantaged by decision-making processes. In Germany, Begg *et al.* (2018) showed that small rural communities that have not received structural flood defence measures also may experience a strengthening of vulnerabilities. Therefore, state support for the uptake of responsibility is required to address inequality.

Joint decision-making and influence

Although formal opportunities for participation are included in national policies in England, the examples provided by the review show that the ability of local stakeholders to influence decisions is limited. Whereas, although local stakeholder participation is almost completely restricted in terms of opportunities in formal planning in Germany at the project-level, local stakeholders are seen to have power, where external expertise is deemed to be required, for example, in regards to nature-based solutions such as nature restoration (Pahl-Wostl *et al.* 2013). One reason for this distinction between England and the other examples is argued to be because providing a formal space for local stakeholder participation effectively shuts down opportunities for conflict (Swyngedouw 2009, Welsh 2014). As a result, top-down decision-making places responsibility in the hands of local stakeholders at the expense of providing them with the power to influence the final decision. Therefore, flexibility and context-specific solutions defined at the project level may be more desirable than rigid and prescriptive opportunities for participation defined at the national or state level.

Summary[8]

This section has shown that *utilitarian* rationales for the prioritisation of structural flood-defence measures and *liberal* rationales for the responsibilisation of local stakeholders often promote responsibility at the expense of power. When local stakeholders are made responsible without effectively gaining power and agency to fulfil these responsibilities, vulnerabilities arise or are strengthened. This is because not everyone has the same ability to cope with and adapt to flood-related impacts. In other words, procedural justice influences distributive justice.

Thus, if procedural justice does not take place then distributional justice which prioritises the most vulnerable will also not occur. This is because for the most vulnerable to be able to take responsibility and effectively reduce their risk of flooding, they need understand, discuss, debate and accept their responsibility for FRM. Moreover, once responsibility has been agreed upon, resources need to be identified and distributed and motivation needs to be encouraged in order to ensure that responsibilities can be acted upon. This means that distributive justice (i.e. resources for local stakeholder involvement) influences procedural justice and procedural justice influences distributional justice (i.e. the identification of resources to assist in the implementation of FRM measures and the way that risks are distributed as a result). In other words, the procedural quality of decisions related to the identification of solutions, may lead to fairer solutions and the more effective implementation of those solutions. Fairer involvement in decisions related to implementation of solutions will help to identify resources and capacities as well as gaps that need to be filled in order to distribute risk in a way that those who are most vulnerable have the ability to mitigate and prepare themselves against potential flood damage. Such a process may require time and financial investment but it may also save time and taxpayer money by leading to more effective and therefore efficient solutions (see Kuhlicke et al. 2016). The next section discusses how these shifts might take place in practice.

7.6 Towards Justice in Flood Risk Management

Based on the findings of the literature review, local stakeholder participation in FRM does not reflect the five principles of procedural justice put forward by Hunold and Young (1998). However, the existence of opportunities for inclusive decision-making is a first step in the

[8] The summary in this version of this paper differs to the summary in the published version. The changes are a result of the improvements to the chapter based on comments from the examiners.

right direction. To move towards a more *egalitarian* approach to FRM by ensuring those who are most vulnerable are able to prepare for and protect themselves against flood impacts, four general principles can be drawn out of the FRM literature to provide a rough road map for dealing with issues of power, responsibility and justice.

First, efforts should be made to involve local stakeholders in discussions about responsibility. These discussionsshould embrace conflict and aim at creating a shared understanding and acceptance of responsibilities, rather than attempts at convincing local stakeholders to accept state-defined definitions of their responsibility (Rouillard *et al.* 2014). The uptake of local stakeholder responsibility is likely to be limited if the state is perceived to guarantee safety against flooding (Geaves and Penning-Roswell 2016). Therefore, local stakeholder participation in discussions about responsibility not only promote procedural justice but also improve the likelihood that changes in perceptions about responsibility by both the state and local stakeholders can take place (Geaves and Penning-Roswell 2016).

Second, the best place to discuss responsibilities, challenge the status quo and promote a shift towards the selection and implementation of non-structural measures is at the beginning of the planning process (Geaves & Penning-Roswell 2016). Discussions which foster shared understandings, deliberation and learning are recommended so that local stakeholder inputs can effect change (Benson *et al.* 2016, Rouillard *et al.* 2014).

Third, it is argued that there is a need to find a balance between top-down and bottom-up approaches to improve FRM (Pahl-Wostl *et al.* 2013,). It is generally accepted that although the state should be responsible for distributing funding, support which allows for flexibility and context specific solutions are recommended (Nye *et al.* 2011, Pahl-Wostl *et al.* 2013).

Finally, in order to ensure that local stakeholders are able to contribute to FRM, state-support for those who do not have the social capacities to become involved is required (Thaler and Priest 2014, Begg *et al.* 2015, Thaler and Levin-Keitel 2016, Mees *et al.* 2016). State empowerment and support is essential if everyone is to have the ability to cope with and adapt to flood-related impacts.

In sum, ensuring shared understandings of responsibility are created through early participation and support may require state investment but without such an investment, responsibility is unlikely to be taken up and FRM is unlikely to benefit those who are most vulnerable. In other words, without distributive justice, which prioritises resources for participation, procedural justice, which equally involves (potential) stakeholders is unlikely to take place. In addition, without procedural justice, changes in FRM are unlikely to take place

and the distribution of resources and risk are likely to unfairly exclude tose who are most vulnerable to flood risk.

7.7 Conclusions

This paper adds to existing discussions about justice in relation to FRM by drawing on 30 empirical examples of local stakeholder involvement in FRM-related decisions in practice. It explores the interrelation between procedural and distributive justice and argues for an *egalitarian* approach to FRM. Whilst acknowledging that funds are finite and shifts in responsibility to the local level could result in the opening up of additional resources and knowledge, such benefits are not likely to be seen in all communities. Risk distribution may become unequal as only local stakeholders with existing capacities will be interested in becoming involved and those without capacities may be disadvantaged. To ensure that FRM does not disadvantage those who are most vulnerable, funding should be organised in such a way as to provide opportunities for local stakeholders to participate in FRM in the selection of FRM-related measures as well as opportunities to receive assistance when local stakeholders take responsibility for the implementation of FRM measures. In addition, support is only going to be effective if the way that responsibilities are perceived is dealt with. This means that the state needs to be open to the discussion of alternatives to structural measures and local stakeholders need to accept their responsibility for the implementation of FRM measures.

Postscript: As I revisited the first four papers included in this thesis, I became increasingly interested in the possibility that participation which provides space for discussion about responsibility and the identification of solutions as well as resources improve FRM for those who are most vulnerable. However, the empirical examples that I had available to me through my research did not provide examples of such participative processes with local stakeholders. Therefore, I turned to the wider literature in the search for potential empirical examples of just that. However, I found such examples to be lacking not just in my research but also more generally. This means that although I am unable to evaluate the effectiveness of existing deliberative processes, I am able to point out the deficiencies of current practices of participation as well as provide a strong argument for the utility of participation as an approach for improving justice by assisting those who are most vulnerable to be able to reduce their flood risk. In the following chapter I take the findings of this review and provide a recommendation for how justice can be achieved in practice.

Chapter 8

Discussion and Conclusions

This final chapter discusses the findings of the thesis as a whole. This includes a summary and a discussion of tools for understanding justice developed within this thesis. It also provides reflections on the limits to the research, recommendations for future research as well as policy implications. The Chapter concludes with a summary of my main argument.

8.1 Thesis Summary

This thesis identifies and evaluates the implications that attempts to involve local stakeholders in the planning and implementation of FRM measures (procedural justice) have on whether resources are distributed in such a way as to ensure that the most vulnerable have the ability to prepare for and protect themselves against flood impacts (distributive justice). The five original papers included in this thesis provide evidence which suggests that FRM, in regards to mitigation and preparedness as practiced to-date in Europe, is reproducing and potentially deepening patterns of injustice.

The reason for this potential increase and strengthening of vulnerability is a reaction to an increasing focus on the need to actively involve a range of stakeholders in the management of risks and how this involvement is carried out in the examples discussed in this thesis. The active involvement of local stakeholders in FRM is supported by international frameworks (Agenda 21, Hyogo Framework, and Sendai Framework) and European Directives (2000/60/EC; 2007/60/EC). While in some countries, this focus is relatively new, in other countries these wider trends reinforce participative approaches that already exist. This thesis focuses on two European countries that have a history of local stakeholder involvement in the management of flood risk. England, UK and Germany were selected because of the long history of local stakeholder involvement in the management of risks. Interestingly, these countries have different political histories and therefore, differing motivations for local stakeholder involvement. However, I also found that, despite these differences, the inequalities that arose in both examples were similar. Specifically, I found that inequalities arise because not all communities in England can be expected to have the motivation and resources required so as to take up state-prescribed responsibilities (Chapter 3). In addition, inequalities arise when opportunities to participate are used to shift blame rather than assist those most vulnerable to flood impacts in Germany (Chapter 4). Moreover, attempts at

involving local stakeholders in FRM, specifically in decisions related to structural measures, may lead to the institutionalisation of inequalities; that is only communities that can afford flood defence (in England) or those who are assessed by the state as being most worthy of tax-payer spending (in Saxony) will receive flood defence. To ensure that these inequalities are dealt with and that FRM is able to provide space for non-structural measures, state efforts need to ensure that alternatives to structural measures are identified and implemented (Chapter 5). However, support and participation are also necessary if alternative non-structural measures such as personal preparedness and protection measures are to be taken by local stakeholders. This is because residents, particularly those who have experienced severe flooding in the past in Germany, do not feel responsible, or that their actions can make a difference, but they are interested in becoming involved in FRM-related decision-making (Chapter 6). Therefore, without dealing with issues related to responsibility and developing the capacity for local stakeholders to act through participation, flood damage is likely to continue to unfairly effect vulnerable populations, cause conflict and produce flood risk injustices (Chapter 7).

To discuss the above findings in regards to their implication for justice, the remainder of this section will provide answers to the three research questions posed at the beginning of the thesis:

1) What *is* the role of local stakeholders in FRM processes, in principle and in practice (procedural justice)?
2) How are resources and risks distributed as a result of FRM decision-making processes, particularly in relation to patterns of vulnerability and equality (distributive justice)?
3) What role *should* local stakeholder participation play in the reduction of flood risk?

In regards to ***question 1***, I define procedural justice as the right of those who can effect or who are affected by a decision to be involved in that decision (Shrader-Frechetter, 2002), as well as have power to influence that decision (Bell & Carrick, 2017; Hunold & Young, 1998). New forms of governance require the involvement of a wide range of actors in FRM. However, ***I found that there is seen to be a lack of empirical evidence of inclusive and fair decision-making processes***.

The results show an emphasis on the importance of involving local stakeholders in the definition of the problem and solution from the beginning of the decision-making process. This emphasis is supported by European law (2007/60/EC). However, participation in practice

in both England and Germany is largely limited to the implementation of state-defined solutions. Interestingly, this result is common to both countries despite differences in social policy. In England there is a general trend towards decentralisation as a result of neo-liberal policy agendas in combination with austerity (Thaler & Priest, 2014). As a result, local stakeholder involvement is seen to play a key role in attempts to improve the efficiency of the delivery of FRM measures. However, although space is provided for participation, the power to influence decisions is not (Chapter 3 and 7). In other words, in England, formal opportunities to participate effectively stifle conflict and therefore the ability to change the status quo (Chapter 7). In Germany, on the other hand, rather than decentralisation, as seen in England, the examples presented in this thesis show that participation in FRM planning is restricted because of the perception that decision-making should be the responsibility of the state to ensure the common good (Chapter 4). Participation is believed to prioritise single voices rather than 'objectively' distribute finite funds to the management of risk. As a result, participation in planning is restricted in regards to the influence that local stakeholders can have on the final decision (Chapter 5). This has been found to lead to conflict and frustration (Chapters 4). However, although formal opportunities are lacking, local stakeholders can influence decisions when external expertise is deemed necessary to develop a state-defined solution (Chapter 7).

It is also interesting to highlight the difference between the two countries in regards to the motivation for encouraging local stakeholders to take personal measures to prepare and protect themselves. In England, such a focus on individual preparedness can be found across the society in regards to a range of issues (GOV.UK, 2006). This reflects a general trend towards self-help and self-reliance (Mees et al. 2016). In Germany, on the other hand, those at risk of flooding are required to take measures to prepare and protect themselves by law (WHG, 2009). This reflects a perceived delegation of responsibility between the state and local stakeholders and the boundaries of state action. The state perceives itself as being responsible for structural measures, whilst it sees local stakeholders as being responsible for the residual risk.

As a result, local stakeholder participation is restricted to narrow opportunities to engage which provide little chance to change the status quo (e.g. through state-defined decision-making processes such as Neighbourhood Planning and Partnership Funding in England or written consultation in Germany) or in the implementation of state-defined solutions (e.g. through funding flood defence schemes in England and taking personal preparedness and protection measures in both countries).

In other words, participation is employed as an approach for achieving goals and delivering plans which have been pre-defined by the state (Watson, Deeming & Treffeny, 2009), rather than genuinely involving local stakeholders in the co-production of democratic definitions of the problem and solution (Swyngedouw, 2009). Therefore, in regards to procedural justice, local stakeholders generally lack power in decision-making processes.

Therefore, I found that although the opportunities for local stakeholder participation in England and Germany are different, the ability for local stakeholders to influence decisions are lacking in both countries. In addition, the impact that these opportunities have on inequalities is similar. This leads me to ***question 2***, which asks ***how resources and risks are distributed as a result of FRM decision-making processes***. I argue that attempts to distribute resources for flood management should prioritise those who are most vulnerable (Rawls, 1971). This means that those who are most vulnerable should have the capabilities required to mitigate and prepare themselves for flood impacts (Sen, 1992).

Studies of social vulnerability have made a strong case for the need to not just take exposure and the impacts of floods (e.g. financial damage and death – although these factors are also important) into account when developing adaptation policy but also how people at risk perceive, cope with and adapt to those impacts (Tapsell, McCarthy, Faulkner & Alexander, 2010; Kuhlicke, Scolobig, Tapsell, Steinführer & De Marchi, 2011; Lindley et al. 2011). It is the communities that are exposed and deprived that were found to be most vulnerable due to limited capabilities to prepare, respond and recover to flooding (Tapsell & Tunstall, 2008; Lindley et al. 2011; Walker & Burningham, 2011; Collins & Grineski, 2017). Johnson et al. (2007) found that a focus on the use of cost-benefit analyses and nationally determined standards to distribute resources neglects those who are most vulnerable to flood risk. This thesis builds upon these findings by arguing that opportunities to participate in FRM not only neglect to include those who are most vulnerable in decisions related to funding, they also require local stakeholders, including those most vulnerable, to take responsibility. Moreover, whether or not local stakeholders are likely to benefit from this responsibilisation is reliant on the power, resources and motivation that local stakeholders have available to them.

In England, I found that the responsibilisation of local stakeholders may require state support for communities that do not have the motivation and resources to be able to take part in Neighbourhood Planning, contribute funds to flood defence schemes and participate in emergency management (Chapter 3 and 5). In Germany, I found that shifts in responsibility to local stakeholders may increase vulnerabilities when local stakeholders are held accountable and blamed in the event of a flood rather than assisted in managing their risk (Chapter 4).

Additionally, inequalities arise when those who do not receive flood defence schemes experience high levels of flood damage (Chapter 5) or when household that have taken measures to protect themselves in the past still experience severe flood damage (Chapter 6). These examples of local stakeholder responsibilisation are unfair because not all members of the community have the equal opportunity to participate in decision-making processes or the capacities (i.e. knowledge, resources and motivation) to prepare for and protect themselves against flood-related impacts. In addition, it is those who are most vulnerable (i.e. those least likely to have the resources to take up responsibility – in both countries small rural communities were found likely to be the most vulnerable), who are least likely to benefit from local stakeholder responsibilisation and therefore, those who should be particularly, but not exclusively, the focus of procedural and distributive justice.

This leads me to ***question 3***, which asks ***what role local stakeholder participation should play in the reduction of flood risk***. This thesis shows that much more could be done to provide opportunities for participation. Flood-related justice is framed at the national level may have a negative impact on vulnerable members of the public at the local level. Chapter 7 presented a number of recommendations in regards to how flood risk management can become more just at the local level by improving both procedural and distributive justice:

1. Efforts should be made to involve local stakeholders in discussions about responsibility. These discussions should embrace conflict and aim at creating a shared understanding and acceptance of responsibilities, rather than attempts at convincing local stakeholders to accept state-defined definitions of their responsibility. I argue that without participation which focuses on creating shared understandings of responsibility, so that local stakeholders have the motivation to take up responsibility, state support in the form of resources is likely to be ineffective.
2. Participation should take place from the beginning to the end of the decision-making process. Discussions which foster shared understandings, deliberation and learning are recommended so that local stakeholder inputs can effect change. For example, rather than trying to involve local stakeholders in strict processes which do not allow for change, involvement of local stakeholders in planning could provide the opportunity to discuss alternatives to structural measures.
3. Although the state should be responsible for distributing state funding, support for local solutions which allow for flexibility and context specific solutions are recommended. This includes using locally raised finances to develop and implement

local solutions which are discussed, debated and identified by the state together with local stakeholders.

4. In order to ensure that local stakeholders are able to contribute to FRM, state-support for those who do not have the social capacities to become involved is required. State empowerment and support is essential if those who are most vulnerable are to have the opportunity to reduce flood risk.

In sum, current attempts at participation, as presented in this thesis, attempt to transfer responsibility by requiring local stakeholders to deliver state-defined solutions. The approach to participation put forward by this thesis recommends that local stakeholders should rather be involved in the definition of problems and solutions as well as he identification of resources (both human and financial) to increase the likelihood responsibility will be taken up by local stakeholders. The former option reflects a desire to transfer responsibility and accountability to local stakeholders and/or assumes that local stakeholders have the capacities such as motivation and resources to take up responsibility. I have shown this to be flawed and unfair. Moreover, rather than resulting in local stakeholders taking responsibility, the former option has resulted in the risk that no one takes responsibility for FRM at the local level. The state has drawn a line in the sand in regards to what they can provide local stakeholders with to reduce flood risk. They have communicated the need for those at risk to take action. The examples discussed in this thesis show that little has been done to support this action. As a result, there is a gap in responsibility which is likely to lead to increased and strengthened vulnerabilities, which is, in turn, likely to lead to future flood-related damage and a decrease in resilience. The latter approach, on the other hand, requires a change in the way that resources are distributed by the state. I have shown this to be necessary if local stakeholders are to take up responsibility and vulnerabilities as well as inequalities are to be addressed. The findings suggest that in addition to cost-benefit analyses and national standards, discussions between the state and local stakeholders about responsibility are important to meet the challenge of employing a range of solutions beyond structural measures to manage flood risk. To achieve these recommendations in practice, those who are most vulnerable must have the ability to prepare and protect themselves. This could be achieved through the prioritisation of funding for structural measures at the national level (e.g. partnership funding in England). However, as this thesis shows, despite attempts to prioritise deprived areas, vulnerable areas still exist (e.g. small rural communities). This example shows that there is a need for a range of different measures which can be drawn upon by different stakeholders at different levels of society in order to ensure that all local

stakeholders, and in particular, those who are most vulnerable have the ability to prepare and protect themselves.

Currently, FRM decision-making processes can be seen to be made up of three steps, 1) prioritisation of structural and non-structural measures, 2) planning of structural and non-structural measures, 3) and implementation of structural and non-structural measures. While, the prioritisation of funds is and should be the responsibility of the state, more could be done to ensure that resources are distributed towards non-structural measures related to local stakeholder responsibility. An increased focus on the importance of non-structural in addition to structural measures in the management of flood risk has been emphasised by European Directives (2000/60/EC; 2007/60/EC). Moreover, although austerity measures in the UK and general budget constraints in Germany make it difficult for local stakeholders to gain access to resources (both human and financial), the continuing destruction that floods visit on European communities as well as predicted increase in frequency and severity of flooding as a result of climate change, means that continuing with the status quo is not an option if local stakeholder vulnerabilities are to be addressed.

I argue that in order to reduce flood-related damage and address local stakeholder vulnerabilities, local stakeholders, particularly those who are most vulnerable, can and should be involved in and take responsibility for FRM. This means that, rather than defining the role of local stakeholders at the national level and expecting them to implement state-defined solutions at the local level, I recommended an approach which transfers power to local stakeholders by allowing them and providing support (e.g. communication campaigns and local participatory events) to co-define their responsibilities at the planning stage and assist in the identification of resources for the implementation of FRM measures at the local level.

I acknowledge that austerity in England and budget constraints in Germany may create a barrier for the creation of deliberative and co-productive participation processes. It is also important to note that despite the existence of much literature that supports such participation, empirical examples are lacking. Therefore, I argue that although the active engagement of the most vulnerable is important, in a first step, to test the effectiveness of deliberative and co-productive participation, existing platforms for participation could be utilised as spaces for such processes to take place. This approach does not necessary require more funds. Instead, it could be achieved through a redistribution of funds. For example, a greater share of funding could be transferred from the prioritisation, planning and implementation of structural measures to the planning and implementation of non-structural

measures at the local level. A transparent discussion could develop a joint understanding between the state and local stakeholders of the limitations of structural measures as well as acceptability and applicability of non-structural measures. In addition, such a discussion should aim to deliberate and co-produce an understanding of the problem (i.e. repetitive flooding due to extreme rain events and insufficient structural flood protection) and solution (e.g. relocation, personal mitigation measures such as private flood wall, check valves, etc.) as well as assisting in the identification of funds for implementation as well as the information needed to implement of co-defined solutions (e.g. state funded incentives for personal mitigation measures, setting up community fundraisers, provision of information about the types of personal mitigation measures that could be taken, the effectiveness and funding options, etc.).

In regards to how local stakeholders might be involved in such discussions, I have shown that local stakeholders are already interested in becoming involved in decisions related to the planning of structural measures in Germany and Neighbourhood Planning as well as Partnership Funding in England. These existing decision-making platforms could be used as a space for deliberative and co-productive participation processes.

This approach focuses on interacting with those who are already interested in influencing FRM-related decisions to start a more meaningful discussion about the future of FRM. Although it has been argued that those who are already interested in participation often represent the already motivated, more educated and wealthier local stakeholder (Campbell, 2005), these discussions could be treated as a starting point for assessing the effectiveness of deliberative and co-productive participation as well as encouraging a wider range of local stakeholders to become involved in such processes. This approach may have a number of benefits. It may help to address conflict at the planning stage by allowing all interested parties to discuss and agree upon solutions and identify resources (both human and financial) as well as ensuring that roles and responsibilities are understood and shared by those who are present.

Because the effectiveness of such deliberative and co-productive participation is yet to be empirically proven, it is possible to start small by improving opportunities for participation in already existing decision-making platforms. Based on the results of these processes, the effectiveness of participation for the improvement of FRM can be assessed, which can provide support for the investment in deliberative and co-productive participation in the future. Therefore, the evaluation of deliberative and co-productive participation processes as well as approaches for the effective engagement and participation with those who are most

vulnerable, which ensures that those who are most vulnerable have the ability to prepare and protect themselves are important areas of future research.

In sum, 'just' FRM can be promoted procedural processes that involve those who are already interested in becoming involved. If this process is successful, the state will have gained the trust and support of local stakeholders and these local stakeholders could become community leaders and help to communicate information about flood risk and management measures to other members of the community. Importantly, this exercise is not about convincing local stakeholders to approve of state-defined solutions. Instead, it is about developing shared understanding and viable solutions that best suit the given community.

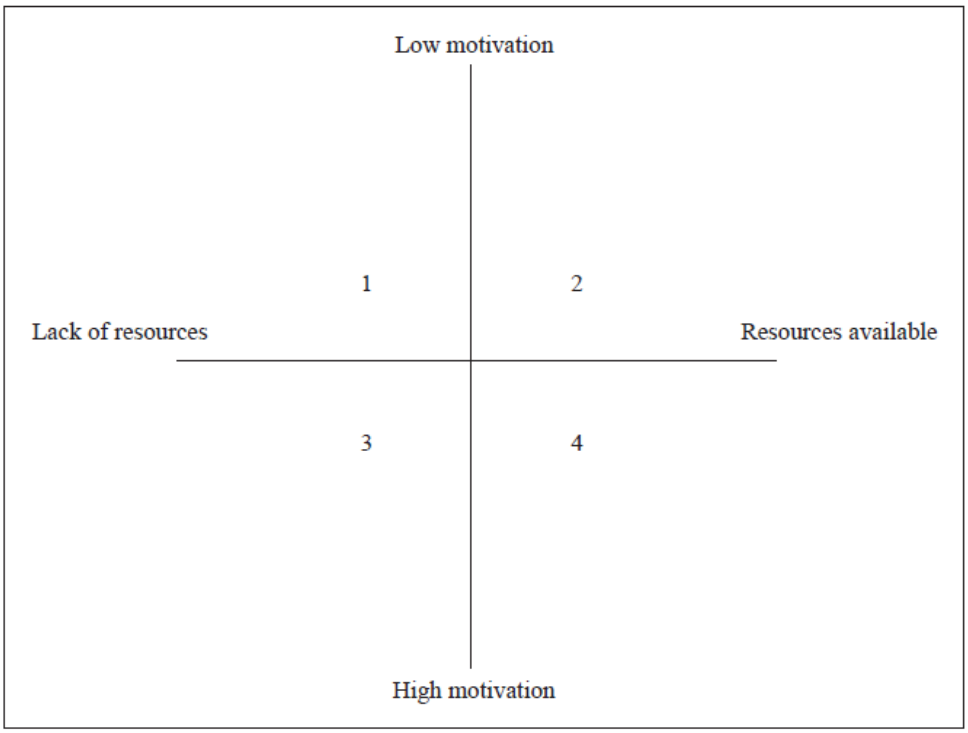
This sub-section has provided an overview of the overall findings of the thesis. The following sub-sections provide a more detailed discussion of the thesis contributions to broader discussions about justice and the management of floods.

8.2 Tools for understanding justice, reflections, contributions and further research

This thesis presents a number of tools which aim to help understand the role that local stakeholders can play in European FRM as well as contribute to assessments of justice. The methods employed in this thesis to investigate justice and resilience can be employed in other countries in order to understand the effectiveness of local stakeholder responsibilisation. In addition, the lessons learnt from the case studies investigated in this thesis can be used to improve participation, fairness and resilience in countries that may not have a strong history of local stakeholder involvement but which are likely to become increasingly confronted with it as a result of International Frameworks and European Directives.

Chapter 3 focused on the potential take up of responsibilities by local stakeholders as a result of shifts towards localism in England. I found that the way in which localism is likely to be implemented across different 'at-risk' communities in England results in outcomes that will depend significantly on the types of capacities available to communities; in particular resources (i.e. government support and finances) and motivation to become involved in flood-related governance activities. Based on this, four scenarios were developed. These scenarios were structured along four combinations of axes of 'motivation' and 'available resources' across scales that extend from high to low in each case, and which reflect potential future scenarios of particular localities (See Figure 8-1).

Figure 8-1 Future localism scenarios



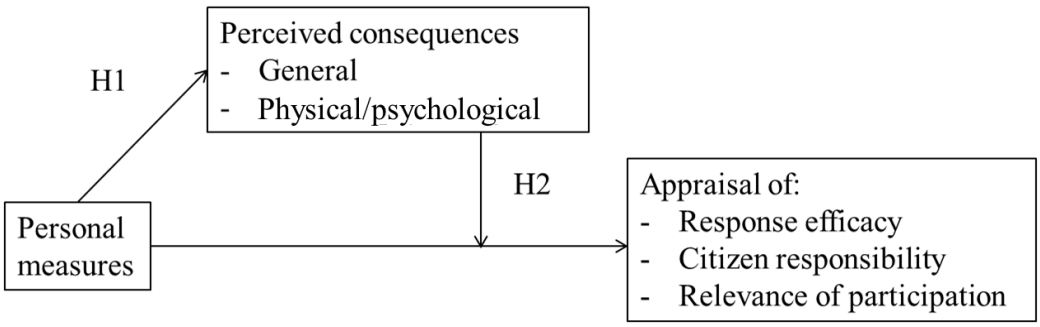
These simple scenarios provide an illustrative way of understanding the importance that both motivation and resources play in ensuring that any attempts at shifting responsibility to local stakeholders are successful in the sense that these responsibilities can be taken up and acted upon.

Chapter 3 focused on how to ensure that local stakeholders take responsibility. However, as the thesis progressed, I started to question the fairness of requiring local stakeholders to take responsibility in the first place. I have come to the conclusion that in order to build motivation, responsibilities must be discussed and agreed upon by all those affected by the decision being made. However, it is still unclear, based on my results, whether participation is actually able to reduce conflicts (Chapter 4), increase motivation (Chapter 3 and 6), or improve the management, in terms of efficient planning processes and a reduction in flood damage for everyone (Chapter 5 and 7). What is clear is that new structures of governance, which encourage a number of measures to be employed to achieve FRM and for local stakeholders to take personal measures to prepare and protect themselves, requires efforts from both the state and local stakeholders. More research is required once participative practices are identified or take place to assess their impact on conflicts, motivation and improvements to FRM in general.

Therefore, an important question to ask when assessing the motivation of local stakeholders to take responsibility is: were local stakeholders involved in the definition of their responsibility for FRM? The scenarios developed in Chapter 3 could therefore be used in a number of ways: 1) they could be used to assess the impact of participative processes on motivation and resources for a range of hazards and contexts, 2) they could also be used as a tool for discussions between the state and local stakeholders, and 3) they could be used to assess other contexts of European FRM in order to predict or evaluate the fairness of shifts in responsibility to the local level in different geographical locations either as a result of participation or in areas where participation does not exist.

In addition, if local stakeholders are to take measures to prepare and protect themselves, it is important to understand what motivates them to act in order to develop participative activities that address their needs. There is a large body of literature which aims to understand what motivates people to protect themselves and their belongings against the threats of a range of environmental risks (Becker, Paton, Johnston, & Ronan, 2012; Lindell, Arlikatti, & Prater, 2009; Miceli, Sotgiu, & Settanni, 2008; Paton, 2003; Paton, Kelly, Burgelt, & Doherty, 2006; Terpstra, 2011; Zaalberg, Midden, Meijnders & McCalley, 2009). In order to do so, protection motivation theory has been employed in the past (Grothmann & Reusswig, 2006; Kellens, Terpstra, & De Maeyer, 2013). However, previous application of this theory has assumed a linear and causal relationship between experience, appraisal, motivation and action. Chapter 6 aimed to compliment previous studies inspired by protection motivation theory and develop a more dynamic model that is able to gain a deeper understanding of the relationship between experience and action, particularly in regards to whether this interaction leads to household resilience (i.e. the ability of citizens to withstand flood-related consequences) and to be motivated to take future action after experiencing a flood. To do so, a model which assesses the relationship between personal measures (i.e. measures taken to protect and prepare one's house before a flood event), the perceived consequences of the 2013 floods in Saxony and Bavaria and the appraisal of individual response efficacy, citizens' responsibility and attitudes towards the relevance of participation in FRM (see Figure 8-2).

Figure 8-2 Hypothesised interaction between personal measures, perceived consequences and appraisal processes.



This model aims to contribute to the discussion about the relationship between experience and action. Such a model is able to gain an understanding of relationships between factors that until now were largely hypothetical (Siegrist, 2013) or theoretical (Bogard, 1994).

In regards to the study of justice, such a study is able to highlight the impact of personal measures on the ability of local stakeholders to protect themselves against flood impacts. The study shows that the more people experience flooding, the less able they are to recover quickly. This suggests that more needs to be done to assist those who are most vulnerable to flood risk. It also shows that those who experienced severe flooding whether they took measures to protect themselves or not, do not feel responsible or believe that their actions can make a difference (self-efficacy). However, they are interested in participating in decision-making processes related to FRM. Future research could investigate the impact that participation has on appraisals of responsibility and self-efficacy as well as whether local stakeholders take action. The findings of the study also show that further research is needed to understand why some households that took measures prior to the 2013 flood experienced severe flooding whilst others did not. This information is important for the development of participative activities which are able to provide the appropriate capacity-building support needed to ensure that local stakeholders have the ability to prepare for and protect themselves against flood impacts.

8.3 Policy implications

Shifts in the governance of floods emphasise the limits of state-provided flood protection and, therefore, the need to involve a wide range of stakeholders in the management of flood risk. As a result, management efforts aim to go beyond structural measures (i.e. dikes and polders) to include non-structural measures (i.e. spatial planning and encouraging local

stakeholders to prepare and protect themselves). Such an approach is able to benefit from additional knowledge and resources and, therefore, can potentially lead to improvements in flood risk reduction.

In times of climate change and austerity, such an approach to the management of flood risk is very convincing. However, it also has the potential of leading to injustice. I found that without participation and improvements to local stakeholder support, the state may have achieved a shift in responsibility and with it, accountability. However, this situation was found to lead to conflicts, which can hinder state plans to reduce flood risk and produce inequalities in regards to who is able to reduce their own flood risk. FRM becomes unfair when those who are most vulnerable are those who are exposed to flood risks but who do not receive state-provided structural measures or other resources to assist in the reduction of flood risk and due to this gap are expected to take measures to prepare and protect themselves. However, the most vulnerable do not have the capacities (i.e. motivation or resources) to mitigate and prepare themselves against flood impacts.

In other words, those who are most vulnerable are also likely to be expected to take responsibility for FRM. This is because national risk-based assessments which are employed to distribute finite funds aim to prioritise the greatest number rather than the most vulnerable. This is not necessarily a problem in regards to distributing funding for structural measures, but it is unfair when those who do not have access to structural measures or support for any other measures (e.g. non-structural) are expected to take responsibility regardless of their capacity to do so. This is because these people are likely to continue to experience damage as a result of flooding which continues to erode their resilience and increase inequalities between those who can prepare and protect themselves and those who cannot. In order to reduce flood risk for the most vulnerable, I argue that the most vulnerable should be involved in the definition of their responsibility for FRM as well as in the identification of resources (both human and financial) which are required for local stakeholders to take responsibility.

I argue that more can be done to involve local stakeholders in FRM-related decision-making processes to improve the capacities of those most vulnerable. In order to ensure that conflicts are minimised and the most vulnerable can take responsibility for managing their own risk, it is important that they are not just expected to implement of FRM measures but also have the power to take part in and influence discussions about what that involvement should look like.

While a communications strategy and local opportunities for participating in decision-making processes are ideal approaches for reaching those who are most vulnerable but potentially unmotivated to become involved in FRM, I acknowledge that austerity may cause barriers in regards to the amount of funding available to engage with individuals who are not already motivated to become involved. Also, because the effectiveness of deliberative and co-produced decision-making is largely theoretical, one way to test the effectiveness of deliberative and co-productive participative processes is to create a process which aim to discuss responsibility with those who are already interested in becoming involved in FRM (e.g. in planning processes in Germany and Partnership Funding and Neighbourhood Planning in England). Not only could this approach test the effectiveness of participative processes, which are currently lacking in the empirical literature, these processes could also help to promote local stakeholder participation in the wider community. Therefore, these processes could be achieved on a project basis, rather than defined formally by law. Project-specific participation allows for flexibility and a context-specific approach. By allocating resources for participation at the planning and policy stage, the capacities (i.e. resources and motivation) and needs of local stakeholders can be identified and built upon to ensure that responsibilities can be acted upon and flood-related impacts can be reduced.

For England and Germany, climate change threatens to further strengthen the vulnerabilities of those already most vulnerable. Coastal communities in the UK, which are often deprived, are particularly at risk of flood impacts as a result of climate change (Walker and Burningham, 2011). Moreover, the increase of summer floods in Germany (Kundzewicz et al. 2005), place more pressure on communities that have already experienced repetitive flooding which has undermined their ability to recover in the past. If flood events are to become more frequent and severe and if such events are likely to increasingly affect those who are most vulnerable, questions of justice become increasingly relevant.

8.4 Conclusion

In this thesis I used an alternative format to bring together quantitative and qualitative data as well as a range of concepts and discourses related to local stakeholder participation in FRM. The result is a number of empirical understandings of current practices of local stakeholder participation, which taken together provide a contribution to discussions about justice and FRM.

I argue that procedural and distributional justices are closely interlinked. This is because only communities and individuals who have access to power, resources and motivation are likely

to benefit from local stakeholder responsibilisation by having access to resources to prepare and protect themselves and therefore, experience a reduction in flood risk.

The practices of participation analysed in this thesis are seen to lead to conflict and the potential for increasing or creating inequalities. The results show that until now, participation, in relation to European FRM has missed opportunities to profit from the involvement of local stakeholders. However, the potential for participation to address inequalities has also been shown.

Resources (human and financial) are required to ensure that local stakeholders can become involved not just in discussions about responsibility to ensure that the motivation to take responsibility exists but also to ensure that they have the ability to prepare and protect themselves. Examples of such participation should then be subject to future research to assess the impact that discussions about responsibility and support for implementation of selected measures have on flood-related justice.

I have argued for the importance of discussions about justice in FRM in two European contexts. However, such discussions are equally important for other natural hazards, such as fire, heat waves, and drought as well as other geographical contexts (see White-Newsome, O'Neill, Gronlund, Sunbury, Brines, Parker, Brown, Rood & Rivera, 2009). Moreover, discussions related to justice and natural hazards are likely to become increasingly important due to current climate change predictions. As those who are already vulnerable face the potential of disasters of increasing frequency and magnitude, questions of who should take responsibility are unavoidable. Therefore, ensuring that responsibilities are fairly distributed and capacities to fulfil responsibilities exist, is a great challenge for future theory, policy and practice.

References

Adelekan, I. O. (2016). Flood risk management in the coastal city of Lagos, Nigeria. *Journal of Flood Risk Management*, 9(3), 255-264.

Adger, W. N., Quinn, T., Lorenzoni, I., & Murphy, C. (2016). Sharing the pain: perceptions of fairness affect private and public response to hazards. *Annals of the American Association of Geographers*, 106(5), 1079-1096.

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

Aiken, L. S., Reno, R. R., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions* (1st ed.). Newbury Park, CA: Sage Publications.

Allmendinger, P., & Haughton, G. (2010) Spatial planning, devolution, and new planning spaces. *Environment and Planning C: Government and Policy,* 28, 803–818

Bailey, N., & Pill, M. (2011). The continuing popularity of the neighbourhood and neighbourhood governance in the transition from the 'big state' to the 'big society' paradigm. *Environment and Planning C: Government and Policy*, 29, 927–942

Beck, U. (1992). *Risk society: Towards a new modernity* (Vol. 17). London: Sage.

Becker, J. S., Paton, D., Johnston, D. M., & Ronan, K. R. (2012). A model of household preparedness for earthquakes: How individuals make meaning of earthquake information and how this influences preparedness. *Natural Hazards*, 64, 107–137.

Becker, G., Huitema, D., & Aerts, J. C. J. H. (2015). Prescriptions for adaptive comanagement: the case of flood management in the German Rhine basin. *Ecology and Society*, 20(3), 1.

Begg, C., Luther, J., Kuhlicke, C., & Steinführer, A. (2011). *3rd CapHaz-Net Regional Hazard Workshop: Social Capacity Building for River Floods*, WP9, CapHaz-Net, Leipzig: Helmholtz Centre for Environmental Research.

Begg, C., Walker, G., & Kuhlicke, C. (2015). Localism and flood risk management in England: the creation of new inequalities?. Environment and Planning C: Government and Policy, 33(4), pp.685-702.

Begg, C., Ueberham, M., Masson, T., & Kuhlicke, C. (2016). Interactions between citizen responsibilization, flood experience and household resilience: insights from the 2013

flood in Germany. *International Journal of Water Resources Development*, 33(4), 591-608.

Begg, C., Callsen, I., Kuhlicke, C., & Kelman, I. (2018). The role of local stakeholder participation in flood defence decisions in the United Kingdom and Germany. Journal of Flood Risk Management, 11(2), 180-190.

Bell, D., & Carrick, C. (2017). Procedural environmental justice. In R. Holifield, J. Chakraborty &G. Walker. (Eds.), *The Routledge Handbook of Environmental Justice*, Abingdon: Routledge.

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

Bild Dresden. (2013, June 8). *Der Flut-Trottel von Gohlis* [Flood trouble in Gohlis]. 131/23, p.3.

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (1994): *At risk: Natural hazards, people's vulnerability, and disasters*. London: Routledge.

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2014). *At risk: natural hazards, people's vulnerability and disasters*. London: Routledge.

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2014). *At risk: natural hazards, people's vulnerability and disasters*. London: Routledge.

Bogard, W. C. (1994). Bringing social theory to hazard research. In S. L. Cutter (Ed.), *Environmental risks and hazards* (pp. 124–136). Upper Saddle River: Prentice Hall.

Bovens, M., Schillemans, T., & Hart, P.T. (2008). Does public accountability work? An assessment tool. *Public Admistration,* 86(1), 225–242.

Boyle, D. (2009) *Localism: Unravelling the Supplement State.* London: New Economics Foundation.

Bubeck, P., Botzen, W. J. W., Kreibich, H., & Aerts, J. C. J. H. (2012a). Long-term development and effectiveness of private flood mitigation measures: An analysis for the German part of the river Rhine. *Natural Hazards and Earth System Science,* 12, 3507–3518.

Bubeck, P., Botzen, W. J. W., & Aerts, J. C. J. H. (2012b). A review of risk perceptions and other factors that influence flood mitigation behavior. *Risk Analysis*, 32, 1481–1495.

Bubeck, P., Botzen, W. J. W., Kreibich, H., & Aerts, J. C. J. H. (2012c). Long-term development and effectiveness of private flood mitigation measures: an analysis for the German part of the river Rhine. *Natural Hazards and Earth System Sciences*, 12(11), 3507-3518.

Buchecker, M., Menzel, S., & Home, R. (2013). How much does participatory flood management contribute to stakeholders' capacity building? Empirical findings based on a triangulation of three evaluation approaches. *Natural Hazards and Earth Systems Science (NHESS),* 13, 1427–1444.

Buchecker, M., Salvini, G., Baldassarre, G. D., Semenzin, E., Maidl, E., & Marcomini, A. (2013). The role of risk perception in making flood risk management more effective. *Natural Hazards and Earth System Sciences*, *13*(11), 3013-3030.

Buček. J., & Smith, B. (2000). New approaches to local democracy: direct democracy, participation and the 'third sector'. *Environment and Planning C: Government and Policy,* 18, 3–16.

Bullard, R. D., & Wright, B. (2010). *Race, Place, and Environmental Justice After Hurricane Katrina: Struggles to Reclaim, Rebuild, and Revitalize New Orleans and the Gulf Coast*. Boulder, CO: Westview.

BMUB (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit). (2015). *Hochwasserschutzfibel* [The flood handbook]. Retrieved from http://www.fib-bund.de/Inhalt/Themen/Hochwasser/2015-03_Hochwasserschutzfibel_final_bf_CPS_red_Onlinefassung.pdf

Bundesministeriums der Justiz und für Verbraucherschutz. (1976). Verwaltungsverfahrensgesetz (VwVfg) (BGBI. IS. 1253). Retrieved from http://www.gesetze-im-internet.de/vwvfg/

Burby, R. J., Deyle, R. E., Godschalk, D. R., & Olshansky, R. B. (2000). Creating hazard resilient communities through land-use planning. *Natural Hazards Review*, 1, 99–106

Butler. C., & Pidgeon, N. (2011). From 'flood defence' to 'flood risk management': exploring governance, responsibility, and blame. *Environment and Planning C: Government and Policy*, 29 533–547

Cabinet Office. (no date). *Big Society: overview*. Retrieved from http://www.cabinetoffice.gov.uk/content/big-society-overview

Cabinet Office. (2011). *Strategic national framework on community resilience*. Retrieved from http://www.cabinetoffice.gov.uk/sites/default/files/resources/Strategic-National-Framework-on- Community-Resilience_0.pdf

Cabinet Office. (2012). *Emergency response and recovery: non statutory guidance accompanying the Civil Contingencies Act 2004*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61047/Emergency- Response-Recovery-24-7-12.pdf

Cabinet Office. (2013). *Resilience in society: infrastructure, communities and businesses*. Retrieved from https://www.gov.uk/resilience-in-society-infrastructure-communities-and-businesses

Callsen, I. (2014). *Gratwanderung zwischen Legitimität und Exklusion – Zur konfliktreichen Gestalt von Beteiligundprozessen im risikobasierten Hochwassermanagement des Freistaates Sachsen* [The struggle between legitimacy and exclusion - the conflict-rich form of participatory processes in the flood risk management of the Free State of Saxony], Unpublished master's thesis, Department of Geography, University of Leipzig, Germany.

Cameron, D. (2010). *Big Society Speech*. Retrived from https://www.gov.uk/government/speeches/big-society-speech

Campbell, H., & Marshall, R. (2000). Public involvement and planning: looking beyond the one to the many. *International Planning Studies*, 5, 321–344

Carrington, D. (2010, December 9). Flood defences: not waving but drowning. *The Guardian*, Retrieved from http://www.guardian.co.uk/environment/damian-carrington-blog/2010/dec/09/flooding-defences-budget-cuts

CFAG (Cockermouth Flood Action Group). (2012). *Flood defence funding*. Retrieved from http://www.cockermouthfloodactiongroup.org.uk/

Cheetham, N. (2002). Community participation: what is it?. *Transitions: Community Participation*, 14(3), 3–6.

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, 275–280.

Chambers, R. (2002). *Participatory Workshops: A Sourcebook of 21 Sets of Ideas and Activities*, Brighton: Institute of Development Studies.

Chilvers, J., & Kearnes, M. (2016). *Remaking participation. Science, environment and emergent publics*. Oxford: Routledge

Civil Contingencies Act. (2004). *Public General Acts*—Elizabeth II chapter 36. London: The Stationery Office.

Clarke, N. & Cochrane, A. (2013). The geographies and politics of localism: reflections on the localism of Britain's Coalition Government. *Political Geography*, 34, 10–23.

Coaffee, J. (2005). New Localism and the management of regeneration. *International Journal of Public Sector Management*, 18, 108–113.

Coaffee, J., & Johnston, L. (2005). The management of local government modernization: area decentralization and pragmatic localism. *International Journal of Public Sector Management*, 18, 164–177

Colbourne, L. (2009). *Collaboration with civil contingency partners and communities for improved FCERM outcomes. Science report: SC060019 improving institutional and social responses to flooding*. Work package 3 report, Bristol: Environment Agency.

Collins, T. W., & Grineski, S. E. (2017). In R. Holifield, J. Chakraborty, & G. Walker. (Eds.) *The Routledge Handbook of Environmental Justice.* Abingdon: Routledge

Coninx, I. (2008). Tackling climate change risks: stakeholder participation in flood risk management. Paper for the ECPR Summer School on Environmental Politics and Policy, Keele University, 7–18 July, Retrieved from https://lirias.kuleuven.be/handle/123456789/257454

Cooke, B. ,& Kothari, U. (2001). *Participation: The New Tyranny*. London: Zed Books.

Council of European Communities. (1985). Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (85/337/EEC). *Official Journal of the European Communities*, L 175.

Council of European Communities. (2001). Council Directive of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (2001/42/EC). *Official Journal of the European Communities*, L 197.

Council of European Communities (2003). Directive of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with

regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC (2003/35/EC). *Official Journal of the European Communities*, L156/17.

Council of European Communities (2007). Directive of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (Floods Directive) (2007/60/EC). *Official Journal of the European Communities*, L288/27.

Council of European Communities. (2009). Directive of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006. (2009/31/EC). *Official Journal of the European Communities*, L140/114.

Council of European Communities. (2014). Directive of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (2014/52/EU). *Official Journal of the European Communities*, L124/57.

CPRE (Campaign to Protect Rural England). (2012). *How to shape where you live: a guide to neighbourhood planning*. Retrieved from http://www.cpre.org.uk/resources/housing-and-planning/planning/item/2689-how-to-shape-where-you-live-a-guide-to-neighbourhood-planning

Cutter, S. L. (2006). *The geography of social vulnerability: race, class, and catastrophe, understanding Katrina. Perspectives from the Social Sciences*. Retrieved from http://understandingkatrina.ssrc.org/Cutter/

Cutter, S. L., & Emrich, C. T. (2006). Moral hazard, social catastrophe: The changing face of vulnerability along the hurricane coasts. *The Annals of the American Academy of Political and Social Science*, 604(1), 102-112.

DCLG (Department for Communities and Local Government). (2008). *Communities in control: real people, real power*. Retrieved from http://www.communities.gov.uk/publications/communities/communitiesincontrol

DCLG (Department for Communities and Local Government). (2009). *Development and flood risk practice guide: planning policy statement 25*. Retrieved from https://www.gov.uk/government/publications/development-and-flood-risk-practice-guide-planning-policy-statement-25

DCLG (Department for Communities and Local Government). (2011a). *Localism Bill: abolition of the regional planning tier and introduction of the Duty to Cooperate—impact assessment*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6046/1829659.pdf

DCLG (Department for Communities and Local Government). (2011b). *An introduction to neighbourhood planning*. Retrieved from http://www.southoxon.gov/node/7557

DCLG (Department for Communities and Local Government). (2012). *National Planning Policy Framework*. Retrieved from http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf

DCLG (Department of Communities and Local Government). (2010). The English Indices of Deprivation 2010. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf

Deeming, H., Whittle, R., & Medd, W. (2012). Investigating resilience, through 'before and after' perspectives on residual risk. In S. Bennett (Ed.). *Innovative Thinking in Risk, Crisis and Disaster Management* (pp 173–200). Ashgate: Farnham, Hants.

DEFRA (Department for Environment, Food and Rural Affairs). (2005). *Making space for water: Taking forward a new Government strategy for flood and coastal risk management in England*. Retrieved from http://archive.DEFRA.gov.uk/environment/flooding/documents/policy/strategy/strategy-response1.pdf

DEFRA (Department for Environment, Food and Rural Affairs). (2009). *Appraisal of Flood and Coastal Erosion Risk Management: A DEFRA Policy Statement*. Retrieved from http://www.DEFRA.gov.uk/publications/files/pb13278-erosion-manage-090619.pdf

DEFRA (Department for Environment, Food and Rural Affairs). (2011a). *Funding*. Retrieved from http://www.defra.gov.uk/environment/flooding/funding-outcomes-insurance/funding/

DEFRA(Department for Environment, Food and Rural Affairs). (2011b). Flood and coastal resilience partnership funding: an introductory guide. Retrieved from http://archive.defra.gov.uk/environment/flooding/funding/documents/flood-coastal-resilience-intro-guide.pdf

DEFRA (Department for Environment, Food and Rural Affairs). (2011c). *Flood and Coastal Resilience Partnership Funding: Defra policy statement on an outcome-focused, partnership approach to funding flood and coastal erosion risk management*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221094/pb13896-flood-coastal-resilience-policy.pdf

Demeritt, D. (2015). The promises of participation in science and political ecology. In T. Perreault, G. Bridge, & J. McCarthy (Eds.), *Handbook of political ecology* (pp. 224–234). London: Routledge.

Derkzen, P., & Bock, B. (2009). Partnership and role perception, three case studies on the meaning of being a representative in rural partnerships. *Environment and Planning C: Government and Policy*, 27, 75–89.

de Vries, D. H., & Fraser, J. (2012). Citizenship rights and voluntary decision-making in post-disaster US floodplain buyout mitigation programmes. *International Journal of Mass Emergencies and Disasters*, 30 1–33.

DKKV (Deutsches Komitee Katastrophenvorsorge). (2015). *Das Hochwasser im Juni 2013. Bewährungsprobe für das Hochwasserrisikomanagement in Deutschland*. [The June 2013 flood: The performance test for flood risk management in Germany]. Retrieved from http://www.dkkv.org/

DKKV (Deutsches Komitee Katastrophenvorsorge). (2015). *Bewährungsprobe für das Hochwasserrisikomanagement in Deutschland* [The flood risk management test in Germany]. Retrieved from http://www.dkkv.org/fileadmin/user_upload/Veroeffentlichungen/Publikationen/DKKV_53_Hochwasser_Juni_2013.pdf

DTLR (Department of Transport, Local Government and the Regions). (1998) *Modern local government: in touch with the people*. Retrieved from http://www.politicsresources.net/docs/DETR1998.pdf

EA (Environment Agency). (2009). *Investing for the future – flood and coastal risk management in England: A long-term investment strategy*. Retrieved from https://khub.net/c/document_library/get_file?uuid=1c4bc827-43f9-4d21-bfde-9d752675039b&groupId=6084608

EA (Environment Agency). (2011). *25,000 homes to be better protected from flooding*. Retrieved from http://www.environment-agency.gov.uk/news/137106.aspx

EA (Environment Agency). (2012). *Morpeth scheme given final funding approval*. Retrieved from http://www.environment-agency.gov.uk/news/137118.aspx

EA (Environment Agency). (2013). *Development and flood risk*. Retrieved from http://www.environment-agency.gov.uk/research/planning/33698.aspx

Etkin, D. (1999) Risk transference and related trends: driving forces towards more mega-disasters. *Environmental Hazards,* 1(2), 69–75.

European Environment Agency. (2010). *Mapping the impacts of natural hazards and technological accidents in Europe. An overview of the last decade*. EEA Technical report No 13/2010. Copenhagen. Retrieved from http://www.eea.europa.eu

Featherstone, D., Ince, A., Mackinnon, D., Strauss, K., & Cumbers, A. (2012). Progressive localism and the construction of political alternatives. *Transactions of the Institute of British Geographers*, New Series, 37, 177–182.

Felgentreff, C. (2000). Impact of the 1997 Odra flood on flood protection in Brandenburg (FRG): The Dyke broke, but the local people's trust in technical solutions remained unbroken. In A. Bronstert, C. Bismuth, & L. Menzel (Eds.), *European Conference on Advances in Flood Research* (pp. 614–626). (PIK-Report 65), Potsdam 2000, S.

Few, R., Brown, K., & Tompkins, E. L. (2007). Public participation and climate change adaptation: avoiding the illusion of inclusion. *Climate policy*, 7(1), 46-59.

Fischhoff, B., Lichtenstein, S., Slovic, P., Derby, S. L. & Keeney, R. (1984). *Acceptable risk*. Cambridge University Press.

Flood Risk Regulations. (2009) *Statutory Instruments* No. 3042. London: The Stationery Office.

Fombrun, C., & Rindova, V. (2000). The road to transparency: reputation management at Royal Dutch/Shell. In: Schultz, M., Hatch, M.J., Holten Larsen, M. (Eds.), *The expressive Organization* (pp. 77–98). New York: Oxford University Press.

Fordham, M. (1999). Participatory planning for flood mitigation: models and approaches. *Australian Journal of Emergency Management*, Summer 1998/99.

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*, Boston: Pitman.

FWMA (Flood and Water Management Act). (2010). *Public General Acts*—Elizabeth II chapter 26. London: The Stationery Office.

Garland, D. (1996). The limits of the sovereign state: strategies of crime control in contemporary society. *British Journal of Criminology*, 36, 445–471.

Geaves, L. H., & Penning-Rowsell, E. C. (2016). Flood risk management as a public or a private good, and the implications for stakeholder engagement. *Environmental Science & Policy*, 55, 281-291.

German Federal Water Act (Wasserhaushaltsgesetzt - WHG). (2009). *Federal Law Gazette 2009* No. 51, pp. 2585 et seq. (BGBI, I S. 2585).

Giddens, A. (1998*). The Third Way: The Renewal of Social Democracy,* Cambridge: Polity.

Godschalk, D. R. (2002). *Urban hazard mitigation: creating resilient cities*. Paper for the Urban Hazards Forum, John Jay College, City University of New York, 22–24 January.

GOV.UK (2006): Emergency preparedness. Retrieved from https://www.gov.uk/government/publications/emergency-preparedness

Green, C., & Penning-Rowsell, E. C. (2010). Stakeholder engagement in flood risk management. In G. Pender & H. Faulkner (Eds.), *Flood risk science and management* (pp. 372-385). John Wiley & Sons.

Griffin, L. (2011). *Making communities resilient to crisis: exploring the tensions and dilemmas*. Paper for Politics of the Brain Workshop, Universty of Westminster, London, May. Retrieved from http://academia.edu/1563640/Making_Communities_Resilient_To_Crisis_Exploring_the_Tensions_and_Dilemmas

Grothmann, T., & Reusswig, F. (2006). People at risk of flooding: Why some residents take precautionary action while others do not. *Natural Hazards*, 38, 101–120.

Grünewald, U. (2005). Vorsorge gegenüber Naturrisiken: nach den Augustfluten 2002 in Mittel- und Zentraleuropa Hochwasservorsorge in Deutschland [Protection from natural risks: After the flood of August 2002 in Middle- and Central-Europe flood protection in Germany]. In: H. Karl. Pohl J. & Zimmermann H. (Hg.): *Risiken in Umwelt und Technik: Vorsorge durch Raumplanung* [Risks in the environment and technology: protection through spatial planning] (pp. 78–85). Forschungs- und Sitzungsberichte der ARL 223. Hannover, Germany: Verlag d. ARL.

Hamilton, C. (2001). The Third Way and the end of politics. *The Drawing Board: An Australian Review of Public Affairs*, 2, 89–102. Harvatt, J., Petts, J., & Chilvers, J. (2011). Understanding householder responses to natural hazards: Flooding and sea-level rise comparisons. *Journal of Risk Research*, 14, 63–83.

Hayek, F. A. (1991). *The road to serfdom*. London: Routledge.

HC (House of Commons). (2011). *The strategic defence and security review and the national security strategy: government response to the committee's sixth report of session 2010–12*. Retrieved from http://www.publications.parliament.uk/pa/cm201012/cmselect/cmdfence/1639/1639.pdf

Heintz, M. D., Hagemeier-Klose, M., & Wagner, K. (2012). Towards a risk governance culture in flood policy – findings from the implementation of the "Floods Directive" in Germany, *Water*, 4 (1):135-156.

Herbert, S. (2005). The trapdoor of community. *Annals of Association of American Geographers*, 95, 850–865.

Hickey, S., &Mohan, G. (2004). *Participation: from Tyranny to Transformation*, London: Zed Books.

Hood, C. (2002). The risk game and the blame game. *Gov. Oppos*, 37(1), 15–37.

Hood, C. (2007). What happens when transparency meets blame-avoidance? *Public Management Review*. 9(2), 191–210.

Holub, M., & Fuchs, S. (2009). Mitigating mountain hazards in Austria: legislation, risk transfer, and awareness building. *Natural Hazards and Earth System Sciences*, 9, 523–537

Hung, H. C. (2009). The attitude towards flood insurance purchase when respondents' preferences are uncertain: A fuzzy approach. *Journal of Risk Research*, 12, 239–258.

Hunold, C., & Young, I. M. (1998). Justice, democracy, and hazardous siting. *Political Studies*, 46(1), 82-95.

International Commission for the Protection of the Rhine. (2002). *Non structural flood plain management – measures and their effectiveness*. Retrieved from http://www.iksr.org/pdf/RZ_iksr_engl.pdf

Johnson, C., Penning-Rowsell, E. D., & Parker, D. (2007). Natural and imposed injustices: the challenges in implementing 'fair' flood risk management policy in England. *The Geographical Journal*. 1;173(4):374-90.

Johnson, C. L., &Priest, S. J. (2008). Flood risk management in England: A changing landscape of risk responsibility?. *International Journal of Water Resources Development*, 24(4), 513-525.

Kates, R. W. (1971). Natural hazard in human ecological perspective: hypotheses and models. *Economic Geography*, *47*(3), 438-451.

Kellens, W., Terpstra, T., & De Maeyer, P. (2013). Perception and communication of flood risks: A systematic review of empirical research. *Risk Analysis*, 33, 24–49.

Kelman, I. (2001). The autumn 2000 floods in England and flood management. *Weather*, 56(10), 346-360.

Kisby, B. (2010). The Big Society: power to the people?. *The political quarterly*, *81*(4), 484-491.

Klein, R. J., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Environmental Hazards*, 5, 35–45.

Klinke, A., & Renn, O., (2002). A new approach to risk evaluation and management: risk-based, precautionary-based, and discourse-based strategies. *Risk Analysis*, 22(6), 1071–1094.

Kokx, A., & van Kempen, R. (2010). A fact is a fact, but perception is reality: stakeholders' perceptions and urban policies in the process of urban restructuring. *Environment and Planning C: Government and Policy*, 28, 335–348.

Kreibich, H., Thieken, A. H., Petrow, T., Müller, M., & Merz, B. (2005). Flood loss reduction of private households due to building retrofitting – lessons learned from the Elbe floods in August 2002. *Natural Hazards and Earth System Science*, 5, 117–126.

Kreibich, H., & Thieken, A. H. (2009). Coping with floods in the city of Dresden, Germany. *Natural Hazards*, 51, 423–436.

Kreibich, H., Bubeck, P., Van Vliet, M., & De Moel, H. (2015). A review of damage-reducing measures to manage fluvial flood risks in a changing climate. *Mitigation and adaptation strategies for global change*, 20(6), 967-989.

Krieger, K. (2013). The limits and variety of risk-based governance: The case of flood management in Germany and England. *Regulation & Governance*, 7(2), 236-257.

Kuhlicke, C., & Steinführer, A. (2010). *Social capacity building for natural hazards: a conceptual frame*, WP 1, CapHaz-Net, Leipzig: Helmholtz Centre for Environmental Research.

Kuhlicke, C., Scolobig, A., Tapsell, S., Steinführer, A., & De Marchi, B. (2011). Contextualizing social vulnerability: findings from case studies across Europe. *Natural Hazards*, 58(2), 789-810.

Kuhlicke, C., Steinführer, A., Begg, C., & Luther, L. (2012). Toward more resilient societies in the field of natural hazards: CapHaz-Net's lessons learnt, WP 10, final report, CapHaz-Net, Leipzig: Helmholtz Centre for Environmental Research.

Kuhlicke, C., Steinführer, A., & Meyer, V. (2013). Jeseits der Leitdifferenz von 'Beton contra Natur': Neue Paradoxien und Ungleicheiten im Hochwasserrisikomanagement [The difference between 'concrete versus nature': new paradoxes and inequalities in flood risk management] *Hydrologie und Wasserbewirtschaftung*, 57(2), 70-74.

Kuhlicke, C. (2014). *Hochwasservorsorge und Schutzgerechtigkeit. Erste Ergebnisse einer Haushaltsbefragung zur Hochwassersituation in Sachsen* [Flood protection and justice: First results from a household questionnaire on the flood situation in Saxony]. Helmholtz Zentrum für Umweltforschung – UFZ, UFZ Discussion Papers, 15/2014, Leipzig, Germany. Retrieved from http://www.ufz.de/export/data/global/59629_DP_15_2014_Kuhlicke_Hochwasservorsorge.pdf

Kuhlicke, C., Callsen, I., & Begg, C. (2016). Reputational risks and participation in flood risk management and the public debate about the 2013 flood in Germany. *Environmental Science and Policy,* 55, 318-325.

Kundzewicz, Z. W., Pińskwar, I., & Brakenridge, G. R. (2017). Changes in river flood hazard in Europe: a review. *Hydrology Research*, nh2017016.

Kundzewicz, Z.W., Ulbrich, U., Brücher, T., Graczyk, D., Krüger, A., Leckebusch, G.C., Menzel, L., Pińskwar, I., Radziejewski, M. & Szwed, M. (2005). Summer floods in Central Europe–climate change track?. *Natural Hazards*, 36(1), 165-189.

Lake, R. W. (1996). Volunteers, Nimbys, and Environmental Justice: Dilemmas of Democratic Practice. *Antipode*, 28(2), 160-174.

Lawton, A., & Macaulay, M. (2014). Localism in practice: investigating citizen participation and good governance in local government standards of conduct. *Public Administration Review* 74(1), 75–83.

Lindell, M. K., Arlikatti, S., & Prater, C. S. (2009). Why people do what they do to protect against earthquake risk: Perceptions of hazard adjustment attributes. *Risk Analysis*, 29, 1072–1088.

Lindell, M. K., & Perry, R. W. (2000). Household adjustment to earthquake hazard: A review of research. *Environment and Behavior*, 32, 461–501.

Lindley, S., O'Neill, J., Kandeh, J., Lawson, N., Christian, R., & O'Neill, M. (2011). *Climate change, justice and vulnerability*. York: Joseph Rowntree Foundation.

Local Government Act. (2000). *General Public Acts*—Elizabeth II chapter 22. London: The Stationery Office.

Localism Act. (2011). *General Public Acts*—Elizabeth II chapter 20. London: The Stationery Office.

Localism Bill. (2010). *House of Commons Session 2010–11*. London: The Stationery Office.

Lorenzoni, I., Benson, D., & Cook, H. (2016). Regional rescaling in adaptation governance: from agency to collaborative control in flood management in England. In J. Knieling (Ed.), *Climate adaptation governance in cities and regions: theoretical fundamentals and practical evidence*. Chichester: John Wiley & Sons.

Lundgren, R.E., McMakin, A.H. (2013). *Risk Communication: A Handbook for Communicating Environmental, Safety, and Health Risks*. Chichester: John Wiley & Sons.

Malatesta, S. (2013). Floodscapes? A Reading of Space-Making and Place-Making Processes in Regions Affected by Flood Hazard. *Geographical Review*, *103*(4), 537-555.

Merz, G., Heintz, M.D. (2013). Participation of municipalities in flood risk management planning in Bavaria. *Wasserwirtschaft,* 11, 21.ff.

Montz, B. E., & Tobin, G. A. (2011). Natural hazards: An evolving tradition in applied geography. *Applied Geography*, *31*(1), 1-4.

Leipziger Volkszeitung. (2013, June 27). *Der Verhinderer* [The preventer]. p.3.

LVZ online (2013, July 2). *Hochwasserschutz: Bayern und Sachsen wollen Deiche schneller planen und bauen* [Flood protect: Bavaria and Saxony want to plan and build dikes faster]. Retrieved from http://www.lvz-online.de/nachrichten/

aktuell_themen/hochwasser-in-sachsen/hochwasserschutz-bayern-und-sachsen-wollen-deiche-schneller-planen-und-bauen/r-hochwasser-in-sachsen-a-195656.html

LVZ online (13.06.2013) *In Grimma haben uns einzelne Stammeskrieger aufgehalten. Axel Bobbe im Interview*. [In Grimma, some individual tribesmen have stopped us. An interview with Axel Bobbe]. Retrieved from http://www.lvz-online.de/nachrichten/aktuell_themen/hochwasser-in-sachsen/in-grimma-haben-uns-einzelne-stammeskrieger-aufgehalten--axel-bobbe-im-interview/r-hochwasser-in-sachsen-a-192913.html

Maantay, J., & Maroko, A. (2009). Mapping urban risk: Flood hazards, race, & environmental justice in New York. *Applied Geography*, 29(1), 111-124.

Maidl, E., & Buchecker, M. (2015). Raising risk preparedness by flood risk communication. *Natural Hazards and Earth System Sciences*, *15*(7), 1577-1595.

Marks, G., & Hooghe, L. (2004). Contrasting visions of multi-level governance. In I. Bache., & M. Fliners (Eds.), *Multi-Level Governance: Interdisciplinary Perspectives* (pp 15–30) Oxford: Oxford University Press.

Mees, H. L., Driessen, P. P., & Runhaar, H. A. (2014). Legitimate adaptive flood risk governance beyond the dikes: the cases of Hamburg, Helsinki and Rotterdam. *Regional Environmental Change*, 14(2), 671-682.

Mees, H., Crabbé, A., Alexander, M., Kaufmann, M., Bruzzone, S., Lévy, L., & Lewandowski, J. (2016). Coproducing flood risk management through citizen involvement: insights from cross-country comparison in Europe. *Ecology and Society*, 21 (3), 7–21.

Meijerink, S. &, Dicke, W. (2008). Shifts in the public–private divide in flood management. *Water Resources Development*, 24, 499–512

Meyer, V., Kuhlicke, C., Luther, J., Fuchs, S., Priest, S., Dorner, W., Serrhini, K., Pardoe, J., McCarthy, S., Seidel, J., Palka, G., Unnerstall, H., Viavattene, C., & Scheuer, S. (2012). Recommendations for the user-specific enhancement of flood maps. *Natural Hazards Earth System Sciences*, 12, 1701-1716.

Miceli, R., Sotgiu, I., & Settanni, M. (2008). Disaster preparedness and perception of flood risk: A study in an Alpine valley in Italy. *Journal of Environmental Psychology*, 28, 164–173.

Mileti, D. S. (1999). *Disaster by Design: A Reassessment of Natural Hazards in the United States*. Washington, DC: Joseph Henry Press.

Mill, J. S. (2010). *Utilitarianism, liberty and representative government*. Milton Keynes: Wildside Press.

Miraftab, F. (2004). Making neo-liberal governance: the disempowering work of empowerment. *International Planning Studies*, 9, 239–259

Morgenpost am Sonntag Sachsen. (2013, June 9). *Wutwelle gegen 'Verhinderer'. Deich-Gegner sind jetzt Sündenböcke* [Anger against 'preventers'. Those against dikes are now scapegoats]. p.11.

Morse, R. (2008). *Environmental justice through the eye of Hurricane Katrina.* Washington, DC: Joint Center for Political and Economic Studies, Health Policy Institute. Retrieved from http://70.32.93.32/sites/default/files/EnvironMorse_1.pdf

Montgomery, M. C., & Chakraborty, J. (2015). Assessing the environmental justice consequences of flood risk: a case study in Miami, Florida. *Environmental Research Letters*, 10(9), 095010.

Müller, U. (2010). *Hochwasserrisikomanagement. Theorie und Praxis* [Flood Risk Management. Theory and Practice]. Wiesbaden, Germany: Vieweg und Teubner Verlag.

Munich Re (2014). *After the floods*, Topics GEO, Natural catastrophes 2013: Analyses, assessments and positions. Munich, Germany: Münchener Rückversicherungs-Gesellschaft.

Newig, J., Challies, E., Jager, N., & Kochskämper, E. (2014). What role for public participation in implementing the EU floods directive? A comparison with the water framework directive, early evidence from Germany and a research agenda. *Environmental Policy and Governance*, 24 (4), 275–288.

NAO (National Audit Office). (2014). *Strategic flood risk management*. Retrieved from https://www.nao.org.uk/wp-content/uploads/2014/11/Strategic-flood-risk-management.pdf

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

Ökolöwe. (2013, September 18). *Ungeschickter Hochwasserschutz im NSG "Lehmlache Lauer". Wir fordern eine Alternativvariante und ein ordentliches Planungsverfahren* [Improper flood protection in the NSG "Lehmlache Lauer". We demand an alternative

variant and a proper planning procedure. Retrieved from http://www.oekoloewe.de/text,2638,hochwasser.html

Otto, A., Hornberg, A., & Thieken, A. (2014). Auseinandersetzungen um Hochwasservorsorge und Hochwasserschutz in Deutschland [Concerns about flood preparedness and protection in Germany]. In: Poster presented at the 14. Forum Disaster Prevention of the German Committee for Disaster Reduction, 04/05.11.2014, Leipzig. Pahl-Wostl, C., 2006. The importance of social learning in restoring the multifunctionality of rivers and floodplains. *Ecol. Soc*., 11(1), 10.

Otto, A., Hornberg, A., & Thieken, A. (2016). Local controversies of flood risk reduction measures in Germany. An explorative overview and recent insights. *Journal of Flood Risk Management*. [online first].

Pahl-Wostl, C., Becker, G., Knieper, C., & Sendzimir, J. (2013). How multilevel societal learning processes facilitate transformative change: A comparative case study analysis on flood management. *Ecology and Society*, 18(4), 58.

Painter, J., Orton, A., MacLeod, G., Dominelli, L., & Pande, R. (2011). *Connecting localism and community empowerment: research review and critical synthesis for the AHRC Connected Community Programme*, Durham University. Retrieved from http://www.dur.ac.uk/resources/sass/research/ConnectingLocalismandCommunityEmpowermentFullReport.pdf

Pardoe, J., Penning-Rowsell, E., & Tunstall, S. (2011). Floodplain conflicts: regulation and negotiation. *Natural Hazards and Earth Systems Sciences*, 11, 2889–2902

Paton, D. (2003). Disaster preparedness: A social-cognitive perspective. *Disaster Prevention and Management*, 12, 210–216.

Paton, D., Kelly, G., Burgelt, P. T., & Doherty, M. (2006). Preparing for bushfires: Understanding intentions. *Disaster Prevention and Management*, 15, 566–575.

Paton, D. (2007). Preparing for natural hazards: the role of community trust. *Disaster Prevention and Management*, 16, 370-379.

Penning-Rowsell, E., Parker, D., & Harding, D. (1986). *Floods and Drainage: British Policies for Hazard Reduction, Agricultural Improvement and Wetland Conversation*. London: Allen and Unwin.

Penning-Rowsell, E., Johnson, C., & Tunstall, S. (2006). 'Signals' from pre-crisis discourse: lessons from UK flooding for global environmental policy change?. *Global Environmental Change*, 16, 323–339

Penning-Rowsell, E. C., & Johnson, C. (2015). The ebb and flow of power: British flood risk management and the politics of scale. *Geoforum*, 62, 131-142.

Ping, N. S., Wehn, U., Zevenbergen, C., & van der Zaag, P. (2016). Towards two-way flood risk communication: current practice in a community in the UK. *Journal of Water and Climate Change*, 7(4), 651-664.

Pitt, M. (2008). *Learning lessons from the 2007 floods: and independent review by Sir Michael Pitt (The Pitt Review)*. London: Cabinet Office.

PKRR (Planologische Kernbeslissing Ruimte voor de Rivier). (2006). *Spatial planning key decision: Room for the River. Explanatory memorandum.* Retrieved from http://www.ruimtevoorderivier.nl/media/21966/pkb%204%20nota%20totaal%20eng-22.pdf

Plapp, T. (2004). *Wahrnehmung von Risiken aus Naturkatastrophen: eine empirische Untersuchung in sechs gefährdeten Gebieten Süd-und Westdeutschlands* [The perception of risk and natural hazards: A empirical assessment of six areas at risk in south and west Germany] (Vol. 2). Karlsruhe: Verlag Versicherungswirtsch.

Power, M., 2007. Corporate governance, reputation, and environmental risk. *Environmental Planning C: Government and Policy,* 25 (1), 90–97.

Power, M. (2010). *Organized Uncertainty: Designing a World of Risk Management*. Oxford: Oxford University Press.

Raco, M., Parker, G., & Doak, J. (2006). Reshaping spaces of local governance? Community strategies and the modernisation of local government in England. *Environment and Planning C: Government and Policy*, 24, 475–496.

Randle, A. (2005). Councils embracing localism: lessons in decentralisation from Birmingham, Wakefield and West Sussex. London: New Local Government Network. Retrieved from http://www.nlgn.org.uk/public/2005/councils-embracing-localism-lessons-in-decentralisation-from-birmingham-wakefield-and-west-sussex/

Rawls, J. (1971). *A theory of justice*. Cambridge, MA: Harvard University Press.

Renn, O. (2008). *Risk governance: coping with uncertainty in a complex world*. Oxon, UK/New York: Earthscan.

Richards, J., White, I., & Cater, J. (2008). Local planning practice and flood risk management in England: is there a collective implementation deficit?. *Urban Environment*, 2, 11–20.

Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In J. Cacioppo, & R. Petty (Eds.), *Social psychophysiology* (pp. 95–120). New York, NY: Guilford Press.

Rogers, R. W., & Prentice-Dunn, S. (1997). Protection motivation theory. In D. S. Gochman (Ed.), *Handbook of health behavior research I: Personal and social determination* (pp. 113–132). New York: Plenum Press.

Rothstein, H. (2006). The institutional origins of risk: a new agenda for risk research. *Health Risk Soc.*, 8(3), 215–222.

Rothstein, H., & Downer, J. (2012). Renewing DEFRA: exploring the emergence of risk-based policymaking in UK Central Government. *Public Administration*, 90(3), 781–799.

Rothstein, H., Huber, M., & Gaskell, G. (2006). A theory of risk colonisation: the spiralling regulatory logics of societal and institutional risk. *Economy and Society*, 35, 91–112.

Rouillard, J. J., Reeves, A. D., Heal, K. V., & Ball, T. (2014). The role of public participation in encouraging changes in rural land use to reduce flood risk. *Land Use Policy*, 38, 637-645

Sächsische Zeitung. (2013, June 3). *Die gleichen Bilder* [The same pictures]. p.2.

Sächsische Zeitung. (2013, June 6). *Die Elbe greift nach Radebeul* [The Elbe grabs at Radebeul]. p.1.

Sächsische Zeitung. (2013, June 8). *Die Flut 2013. Einfachere Regeln für Hochwasserschutz* [The 2013 flood. Easier rules for flood protection]. p.6.

Sächsische Zeitung. (2013, June 10). *Nicht endlos weiter über Flutschutz diskutieren* [Don't talk about flood protection forever]. p.14.

Sächsische Zeitung. (2013, June 13). *Bloß weg hier* [Just out of here], p.3.

Sächsische Zeitung. (2013, June 13). *Wer Flutschutz will, sollte das auch sagen* [Whoever wants flood protection should say so]. p.13.

Sächsische Zeitung. (2013, June 15). *Sündenböcke* [Scapegoats]. p.3.

Sakdapolrak, P. (2007). Water related health risk, social vulnerability and Pierre Bourdieu. In K. Warner (Ed.), *Perspectives on social vulnerability* (pp. 51–59). Bonn: UNU Institute for Environment and Human Security.

Samuels, P., Klijn, F., & Dijkman, J. (2006). An analysis of the current practice of policies on river flood risk management in different countries. *Irrigation and Drainage*, 55, S141–S150

Sanderson, D. (2000). Cities, disasters and livelihoods. *Environment and Urbanization*, 12, 93–102.

Sanchez, T. W., & Brenman, M. (2008). Transportation equity and environmental justice: Lessons from hurricane Katrina. *Environmental Justice*, 1(2), 73-80.

Saurugger, S. (2010). The social construction of the participatory turn: The emergence of a norm in the European Union. *European Journal of Political Research,* 49, 471-495.

Schaefer, J. A.,& Moos, R. H. (1998). The context for posttraumatic growth: Life crises, individual and social resources, and coping. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic Growth: Positive Changes in the Aftermath of Crisis* (pp. 99–126). Mahwah, NJ: Lawrence Erlbaum.

Schanze, J. (2006). Flood risk management–a basic framework. In J. Schanze, E. Zeman, & J.Marsalek (Eds.), *Flood Risk Management: Hazards, Vulnerability and Mitigation Measures*. *NATO Science Series, vol 67*. (pp. 1-20). Dordrecht: Springer.

Schanze, J., Hutter, G., Penning-Rowsell, E., Nachtnebel, H-P., Meyer, V., Werritty, A., Harries, T., Holzmann, H., Jessel, B., Koeniger, P., Kuhlicke, C., Neuhold, C., Olfert, A., Parker, D., and Schildt, A. (2008), *Systematisation, evaluation and context conditions of structural andnon-structural measures for flood risk reduction*. FLOOD-ERA Joint Report, published by ERA-NET CRUE. Retrieved from http://www.crue-eranet.net.

Schlosberg, D. (2007). *Defining Environmental Justice: Theories, Movements, and Nature*. Oxford: Oxford University Press.

Scott, M. (2013). Living with flood risk, Planning. *Theory and Practice*, 14(1), 130-140.

Sen, A. (1992). *Inequality re-examined*. Oxford: Clarendon Press.

Shively, D. (2017). Flood risk management in the USA: implications of National Flood Insurance Program changes for social justice. *Regional Environmental Change*, 1-10.

Shrader-Frechette, K. S. (2002). Environmental justice: creating equality, reclaiming democracy. Oxford: Oxford University Press.

Siegrist, M. (2013). The necessity for longitudinal studies in risk perception research. *Risk Analysis*, 33, 50–51.

Siegrist, M., & Gutscher, H. (2008). Natural hazards and motivation for mitigation behavior: People cannot predict the affect evoked by a severe flood. *Risk Analysis*, 28, 771–778.

Slovic, P. (1987). Perception of risk. *Science*, 236, 280–285.

Soane, E., Schubert, I., Challenor, P., Lunn, R., Narendran, S., & Pollard, S. (2010). Flood perception and mitigation: The role of severity, agency, and experience in the purchase of flood protection, and the communication of flood information. *Environment and Planning A*, 42, 3023–3038.

Socher, M., Sieber, H.-U., Müller, G. & Wundrak, P. (2006). Verfahren zur landesweiten Priorisierung von Hochwasserschutzmaßnahmen in Sachsen[Procedures for the nationwide prioritization of flood protection measures in Saxony], *Hydrologie und Wasserbewirtschaftung*, 50(3), 123-130.

Steinführer, A., & Kuhlicke, C. (2007). *Social vulnerability and the 2002 flood. Country report Germany (Mulde River)*, Deliverable of FLOODsite Integrated Project. Retrieved March 10, 2015. Retrieved from http://www.floodsite.net

Steinführer, A., Kuhlicke, C., De Marchi, B., Scolobig, A., Tapsell, S., & Tunstall, S. (2008). Towards flood risk management with the people at risk: from scientific analysis to practice recommendations (and back). In P. Samuels, S. Huntington, W. Allsop, & J. Harrop (Eds.), *Flood Risk Management: Research and Practice* (pp 945–955). Leiden: Balkema, Leiden.

Stott, N., & Longhurst, N. (2011). Big Society and poor places. In M. Stott (Ed.), *The Big Society Challenge* (pp 100–113). Tretford: Keystone Development Trust.

Summerville, J. A., Adkins, B. A., & Kendall, G. (2008). Community participation, rights, and responsibilities: The governmentality of sustainable development policy in Australia. *Environment and Planning C: Government and Policy*, 26, 696–711.

Sustainable Communities Act. (2007). *General Public Acts*—Elizabeth II chapter 23. London: The Stationery Office.

Swyngedouw, E., 2009. The antinomies of the postpolitical city: in search of a democratic politics of environmental production. *International Journal of Urban and Regional Research*, 33 (3), 601–620.

Tapsell, S. M., Penning-Rowsell, E. C., Tunstall, S. M., & Wilson, T. L. (2002). Vulnerability to flooding: Health and social dimensions. *Philosophical Transactions of the Royal Society of London Series A: Mathematical, Physical and Engineering Sciences*, 360, 1511–1525.

Tapsell, S. M., & Tunstall, S. M. (2008). "I wish I'd never heard of Banbury": The relationship between 'place'and the health impacts from flooding. *Health & place*, 14(2), 133-154.

Tapsell, S., McCarthy, S., Faulkner, H., & Alexander, M. (2010). *Social vulnerability to natural hazards*. State of the art report from CapHaz-Net's WP4. London: Middlesex University.

Terpstra, T. (2011). Emotions, trust, and perceived risk: Affective and cognitive routes to flood preparedness behavior. *Risk Analysis*, 31, 1658–1675.

Terpstra, T., & Gutteling, J. M. (2008). Households' perceived responsibilities in flood risk management in The Netherlands. *International Journal of Water Resources Development*, 24, 555–565.

Terpstra, T., Gutteling, J. M., Geldof, G. D., & Kappe, L. J. (2006). The perception of flood risk and water nuisance. *Water Science & Technology*, 54, 431–439.

Terpstra, T., Lindell, M. K., & Gutteling, J. M. (2009). Does communicating (flood) risk affect (flood) risk perceptions? Results of a Quasi-experimental study. *Risk Analysis*, 29, 1141–1155.

Thaler, T., & Priest, S. (2014). Partnership funding in flood risk management: new localism debate and policy in England. *Area*, 46(4), 418-425.

Thaler, T., & Hartmann, T. (2016). Justice and flood risk management: reflecting on different approaches to distribute and allocate flood risk management in Europe. *Natural Hazards*, 83(1), 129-147.

Thaler, T., & Levin-Keitel, M. (2016). Multi-level stakeholder engagement in flood risk management—A question of roles and power: Lessons from England. *Environmental Science & Policy*, *55*, 292-301.

Thieken, A. H., Kreibich, H., Müller, M., & Merz, B. (2007). Coping with floods: Preparedness, response and recovery of flood-affected residents in Germany in 2002. *Hydrological Sciences Journal*, 52, 1016–1037.

Thieken, A.H., Kienzler, S., Kreibich, H., Kuhlicke, C., Kunz, M., Mühr, B., Müller, M., Otto, A., Petrow, T., Pisi, S., Schröter, K. (2016). Review of the flood risk management system in Germany after the major flood in 2013. *Ecology and Society,* 21(2), 51.

Tobin, G. A. (1995). The Levee love affair: a stormy relationship. *Water Resources Bulletin*, 31(3), 359–367.

Tobin, G. A. (1999). Sustainability and community resilience: The holy grail of hazards planning? *Global Environmental Change Part B: Environmental Hazards*, 1, 13–25.

Ueberham, M., Kabisch, S., & Kuhlicke, C. (2016). Resilienz, Risikokommunikation und Verantwortung in der Hochwasservorsorge – Zum Verhältnis zwischen öffentlichem Schutz und privater Eigenvorsorge in überschwemmungsgefährdeten Gebieten [The relationship between public protection and private preparedness in areas at flood risk]. *Hydrologie und Wasserbewirtschaftung*, 60, 135–145.

UN (United Nations). (2003). *The Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context*. Retrieved from https://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/protocolenglish.pdf

UNDP (United Nations Development Programme). (1992). *Report of the United Nations conference on environment and development*. Rio de Janeiro: United Nations. Retrieved from http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm

UNISDR (The United Nations Office for Disaster Risk Reduction) (2007a). *The Hyogo Framework*. Retrieved from http://www.unisdr.org/we/coordinate/hfa

UNISDR (The United Nations Office for Disaster Risk Reduction) (2007b). *Terminology*. Retrieved from http://www.unisdr.org/we/inform/terminology

van Buuren, A., Klijn, E. H., & Edelenbos, J. (2012). Democratic legitimacy of new forms of water management in the Netherlands. *International Journal of Water Resources Development*, 28(4), 629-645.

van Gigch, J. P. (2008). The ethics of governance projects: ethics in personal and public lives. *Systems Research and Behavioral Science*, 25(2), 151-156.

Wachinger, G., & Renn, O. (2010). *Risk perception and natural hazards*, WP 3, CapHaz-Net. Stuttgrat: DIALOGIK.

Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The risk perception paradox: implications for governance and communication of natural hazards. *Risk Analysis*, 33, 1049–1065.

Walker, G. (2012). *Environmental Justice: Concepts, Evidence and Politics*. Abingdon, Oxon: Routledge.

Walker, G., & Burningham, K. (2011). Flood risk, vulnerability and environmental justice: evidence and evaluation of inequality in a UK context. *Critical Social Policy*, 31, 216–240.

Walker, G., Whittle, R., Medd, W., & Watson, N. (2010). *Risk governance and natural hazards*, WP 2, CapHaz-Net, Lancaster: Lancaster Environment Centre, Lancaster University.

Walker, G., Tweed, F., & Whittle, R. (2014). A framework for profiling the characteristics of risk governance in natural hazard contexts. *Natural Hazards and Earth Systems Science (NHESS)* 14(1), 155–164.

Watson, N., Deeming, H., & Treffeny, R. (2009). Beyond bureaucracy? Assessing institutional change in the governance of water in England. *Water Alternatives*, 2, 448-460.

Webler, T., Kastenholz, H. & Renn, O. (1995). Public participation in impact assessment: a social learning perspective. *Environmental impact assessment review*, 15(5), 443-463.

Wehn, U., Rusca, M., Evers, J., & Lanfranchi, V. (2015a). Participation in flood risk management and the potential of citizen observatories: A governance analysis. *Environmental Science & Policy*, 48, 225-236.

Wehn, U., McCarthy, S., Lanfranchi, V., & Tapsell, S. (2015b). Citizen observatories as facilitators of change in water governance? Experiences from three European cases *Environmental Engineering & Management Journal (EEMJ)*, 14(9).

Welsh, M. (2014). Resilience and responsibility: governing uncertainty in a complex world. *The Geographical Journal*, 180(1), 15-26.

Weinstein, N. D. (1989). Effects of personal experience on self-protective behavior. *Psychological Bulletin*, 105, 31.

White, G. F., & University of Chicago. (1945). *Human adjustment to floods: A geographical approach to the flood problem in the United States*. Chicago, Ill: University of Chicago.

White-Newsome, J., O'Neill, M.S., Gronlund, C., Sunbury, T.M., Brines, S.J., Parker, E., Brown, D.G., Rood, R.B. & Rivera, Z., (2009). Climate change, heat waves, and environmental justice: Advancing knowledge and action. *Environmental Justice*, *2*(4), 197-205.

Wiechmann, T. and Terfrüchte, T. (2013). Akzeptanz regionaler Planungsprozesse und –ergebnisse [The aceptance of regional planning processes and outcomes]. In S. Baumgart, & T. Terfrüchte (Eds.), (Hrsg.): *Zukunft der Regionalplanung in Nordrhein-Westfalen* [The future of regional planning in North Rhein-Westfalen]. Hannover, Germany: Arbeitsberichte der ARL 6.

Wisner, B. (1995). Bridging “expert” and “local” knowledge for counter-disaster planning in urban South Africa. *Geojournal*, 37, 335–348.

Woltjer, J., & Kranen, F. (2011). Articulating resilience in flood risk management and spatial planning. Paper for the International Conference on Interaction Design, Hong Kong, 9–11 November. Retrieved from http://academia.edu/1124841/ARTICULATING_RESILIENCE_IN_FLOOD_RISK_MANAGEMENT_AND_SPATIAL_PLANNING

Zaalberg, R., Midden, C., Meijnders, A., & McCalley, T. (2009). Prevention, adaptation, and threat denial: Flooding experiences in The Netherlands. *Risk Analysis*, 29, 1759–1778.

Žižek, S. (2002): *Revolution at the gates —Žižek on Lenin — the 1917 writings*, Verso.

Appendices

Appendix I

Interview Schedule for Chapter 3

Example for interview with employee of the Environment Agency (EA)

The Big Society promises to be the change that will remedy what Prime Minister David Cameron sees as a broken society. The idea has been put into practice through the Localism Act. The Act seeks not to totally repeal state control but to make decision-making processes more democratic. This includes less bureaucracy for local government to deal with and more space for innovation when dealing with local issues and support for volunteers, mutuals, co-ops, charities and social enterprises to get involved in decision-making and provision of services. But how is this shift going to be everything that it promises to be? And, what does this shift mean for flood risk management?

Public engagement and participation are seen to being core components of successful flood risk management. But, is the Big Society and its governance shifts likely to help or hinder this cause? Moreover, how are local people engaged to become involved in shaping the decisions that affect them?

I have decided to focus on land-use planning rather than delivery of public services as it seems to relate more to FRM.

General Background

- You mentioned that although you have changed roles that you are still involved in community engagement and FRM. Could you explain to me a little bit about what you current role at the EA involves?

Status Quo

- How does the EA work together with Lead Local Flood Authorities/Local Planning Authorities in terms of developing plans?
- How effective has this partnership been thus far?
    - What have been the benefits/pit falls?
- Who else are involved in the development of plans?
    - E.g. Developers, social services, insurers, environmental organisations, etc.

Impact of the Localism Act

- How do you think that the Localism Act likely to affect the way in which different actors work together on planning?
    - The Localism Act provides a space for public participation (neighbourhood planning). How will this affect the EA?

Capacities

- What capacities do LLFA's have or need to deliver local flood risk management?
- How do you think the community should be involved in planning?

Appendix II

Questionnaire

HELMHOLTZ
ZENTRUM FÜR
UMWELTFORSCHUNG
UFZ

Questionnaire:

Flooding in Saxony

Helmholtz Centre for Environmental Research – UFZ

Department of Urban and Environmental Sociology

Permoserstraße 15

04318 Leipzig

Contact: Dr. Christian Kuhlicke, christian.kuhlicke@ufz.de, Tel.: 0341 235 1751

Dear residents,

How do you feel about the flood-situation in your community?

As researchers from the Helmholtz Center for Environmental Research - UFZ, Leipzig, we are conducting a survey to better understand the impact of flooding on residents in your area. Perhaps you have already been made aware of the survey by mail or in the press. The flood events of June 2013 illustrate the relevance of the issue.

For our research, your personal perception of flood in your immediate environment is of interest. There is therefore, no right or wrong answers. We have questions about your living situation, your experiences and your knowledge about floods.

The study is financed by the European Union. Similar surveys are taking place in other municipalities and cities of Saxony, but also in Turkey, Switzerland and England. The results are to be incorporated into new concepts for flood management. As residents of a residential area close to the river, you can make a significant contribution to this. After the evaluation, we will present the results in your municipality / city.

Answering the questions takes about 25-35 minutes and should be done by a adult from your household. Please fill in the questionnaire in the order given. Please tick the appropriate box or reply in your own words. Please pay attention to possible references, eg. "Please continue with question 13". In such cases, you can skip one or more questions.

We would be grateful if you would place the completed questionnaire in the stamped postage-paid envelope and post it within one week of completion.

Filling out the questionnaire is, of course, voluntary. The UFZ works according to the statutory provisions for data protection. We assure you that all results will be treated confidentially and will only be used for research purposes. You can always revoke your data at any time. If you want to delete your data at a later date, please fill in the following box using the following instructions:

the first letter of your town/city of birth,
the third letter of your first name and
the last number of your year of birth.

You can send us this code via email to: datenschutz@ufz.de with the subject line "floods 2013 delete".

If you have any questions please don't hesitate to contact us:

Dr. Christian Kuhlicke	christian.kuhlicke@ufz.de	Tel: 0341 – 235 1751
Anna Kunath	anna.kunath@ufz.de	Tel: 0341 – 235 1728

Thank you very much for your support!

Dr. Christian Kuhlicke

Projektleiter, UFZ Leipzig

Dipl.-Geogr. Anna Kunath

Wissenschaftliche Mitarbeiterin, UFZ Leipzig

To begin we would like to ask you some questions about the larger floods that have occurred in Saxony since 2002. Think of the floods in 2010 at the river Elbe and its tributaries, the floods in 2010 at the Neiße, the floods in the Upper Lusatia and the floods in 2013 at the Elbe and Mulde as well as at other smaller rivers in Saxony.

1. **Which municipality or city do you live in?**

   ……..

2. **Which "Stadtteil" (borough, suburb, quarter) do you live in?**

   ……..

3. **How long have you lived in the area?**

   ☐$_1$ Since birth.
   ☐$_2$ I was born here but I lived somewhere else between …….. until ……..
   ☐$_3$ Since …….. (year)

4. **In this time have you moved within the area?**

   ☐$_1$ Yes **> Please provide the year that you moved** (……..) **and the name of the "Stadtteil" that you lived in before** (……..).
   ☐$_2$ No

5. **How well protected from flooding do you think that your area is?**

   Absolutely not protected ☐$_1$ ☐$_2$ ☐$_3$ ☐$_4$ ☐$_5$ very well protected

6. **In the last 11 years various floods including heavy rain events have occurred in Saxony. Was your property (and, if applicable, your cellar) affected by one or more floods <u>since and including 2002</u> from one of more flood events?**

   ☐$_1$ No → <u>Please continue with question 18.</u>
   ☐$_2$ Yes → **Please provide the year and name of the river and please begin with your first flood experience since and including 2002.**

   Flood experience 1: year (……..) & river: (……..)
   Flood experience 2: year (……..) & river: (……..)
   Flood experience 3: year (……..) & river: (……..)

   In case your living area was affected by four (or more) floods, please provide information on the 3 floods of which your household was most affected
   .

   ☐$_0$ I have been affected by four or more floods since 2002.

7. When you look back: How prepared or unprepared do you think you were for each flood event? Please provide your answers for each flood experience detailed in question 6.

	Absolutely not prepared				Very well prepared
Flood experience 1: year (……)	☐1	☐2	☐3	☐4	☐5
Flood experience 2: year (……)	☐1	☐2	☐3	☐4	☐5
Flood experience 3: year (……)	☐1	☐2	☐3	☐4	☐5

8. How severe were the impacts of each of the floods?

	Not severe				Very severe
Flood experience 1: year (……)	☐1	☐2	☐3	☐4	☐5
Flood experience 2: year (……)	☐1	☐2	☐3	☐4	☐5
Flood experience 3: year (……)	☐1	☐2	☐3	☐4	☐5

9. Did you experience any financial damage to your property (Building or contents) as a result of flooding?

Yes ☐1
No ☐2 → Please continue with question 15.

10. How high was the financial damage that you experienced from one or more flood events? Please provide the amount in euros for each of the floods that you have experienced.

	Total damage
Flood experience 1: year (……)	Approx. €……
Flood experience 2: year (……)	Approx. €……
Flood experience 3: year (……)	Approx. €……

11. Did you receive financial support for the repair or reconstruction of your property?

Yes ☐1
No ☐2 => Please continue with question 15.

12. From whom did/will you receive financial support?

	Already paid	Application in progress
State institution	☐1	☐2
Insurance	☐1	☐2
Charity	☐1	☐2
Municipality/ city	☐1	☐2
Private donation	☐1	☐2
Other, namely ……	☐1	☐2

13. What was the share of this financial support for the overall loss (in percent)?

	Percentage of the total damage
Flood experience 1: year (……)	Approx……%
Flood experience 2: year (……)	Approx……%
Flood experience 3: year (……)	Approx……%

14. In view of the damage that you and your household have experienced during the flood event: are you generally dissatisfied or rather satisfied with the financial support that you received?

	Very satisfied				Very unsatisfied
Flood experience 1: year (……)	☐1	☐2	☐3	☐4	☐5
Flood experience 2: year (……)	☐1	☐2	☐3	☐4	☐5
Flood experience 3: year (……)	☐1	☐2	☐3	☐4	☐5

Could you please explain in a few words why you are satisfied or dissatisfied?

……
……
……
……

15. Please assess the level of impact of the particular flood was on household. Please provide the answers again for all the floods that you have been affected by since 2002.

Flood experience 1: Year (……..)	Very low impact				Very high impact	NA
Impact on your household in general	☐1	☐2	☐3	☐4	☐5	☐0
Physical- and health-related impacts	☐1	☐2	☐3	☐4	☐5	☐0
Damage to house/ flat/ other buildings	☐1	☐2	☐3	☐4	☐5	☐0
I had to leave my house/ flat	☐1	☐2	☐3	☐4	☐5	☐0
Psychological impacts	☐1	☐2	☐3	☐4	☐5	☐0
Loss of material valuables (car, furniture)	☐1	☐2	☐3	☐4	☐5	☐0
Loss of priceless/sentimental valuables (photos, souvenirs)	☐1	☐2	☐3	☐4	☐5	☐0
Other impacts, namely: …… ……	☐1	☐2	☐3	☐4	☐5	☐0

Flood experience 2: Year (……..)	Very low impact				Very high impact	NA
Impact on your household in general	☐1	☐2	☐3	☐4	☐5	☐0
Physical- and health-related impacts	☐1	☐2	☐3	☐4	☐5	☐0
Damage to house/ flat/ other buildings	☐1	☐2	☐3	☐4	☐5	☐0
I had to leave my house/ flat	☐1	☐2	☐3	☐4	☐5	☐0
Psychological impacts	☐1	☐2	☐3	☐4	☐5	☐0
Loss of material valuables (car, furniture)	☐1	☐2	☐3	☐4	☐5	☐0
Loss of priceless/sentimental valuables (photos, souvenirs)	☐1	☐2	☐3	☐4	☐5	☐0
Other impacts, namely: …….. ……..	☐1	☐2	☐3	☐4	☐5	☐0

Flood experience 3: Year (……..)	Very low impact				Very high impact	NA
Impact on your household in general	☐1	☐2	☐3	☐4	☐5	☐0
Physical- and health-related impacts	☐1	☐2	☐3	☐4	☐5	☐0
Damage to house/ flat/ other buildings	☐1	☐2	☐3	☐4	☐5	☐0
I had to leave my house/ flat	☐1	☐2	☐3	☐4	☐5	☐0
Psychological impacts	☐1	☐2	☐3	☐4	☐5	☐0
Loss of material valuables (car, furniture)	☐1	☐2	☐3	☐4	☐5	☐0
Loss of priceless/sentimental valuables (photos, souvenirs)	☐1	☐2	☐3	☐4	☐5	☐0
Other impacts, namely: …….. ……..	☐1	☐2	☐3	☐4	☐5	☐0

16. How long did it take after each flood experience for your household to return to normal?

	Less than 1 month	1 - 2 months	3 - 5 months	More than 6 months	We have not yet returned to normal	We will never be able to return to normal
Flood 1: Year (……..)	☐1	☐2	☐3	☐4	☐5	☐6
Flood 2: Year (……)	☐1	☐2	☐3	☐4	☐5	☐6
Flood 3: Year (……)	☐1	☐2	☐3	☐4	☐5	☐6

Please explain your answer

……
……
……

17. How did your household situation change as a result of the flood?

	Our household was/was much more worse off as a result of the flood	Our household was/is somewhat worse off as a result of the flood	Our household situation was/is the same as before the flood	Our household situation was/is better than before the flood
Flood 1	☐1	☐2	☐3	☐4
Flood 2	☐1	☐2	☐3	☐4
Flood 3	☐1	☐2	☐3	☐4

Now we have some questions that concern flood protection and precautionary measures.

The Federal Water Act remarks:
"Any person who may be affected by floods is obliged, within the limits of what is possible and reasonable, to take appropriate precautionary measures for the prevention of adverse floods and to minimize the damage, in particular the use of land, to the possible adverse consequences for man, environment or property Floods "(WHG 2009, § 5, para. 2)

Were you aware of this Act before filling out this questionnaire?
☐1 Yes
☐2 No

18. Do you think that this Law is reasonable?

☐1 Yes
☐2 No
☐0 I don't know

19. To what degree do you agree with the following statements?

	Strongly disagree				Strongly agree	I don't know
Individual citizens cannot do anything about floods.	☐1	☐2	☐3	☐4	☐5	☐0
Flood protection is the role of the state and not citizens.	☐1	☐2	☐3	☐4	☐5	☐0
The Law is reasonable.	☐1	☐2	☐3	☐4	☐5	☐0
Taking personal mitigation measures should be self-evident.	☐1	☐2	☐3	☐4	☐5	☐0
Private mitigation overwhelms people.	☐1	☐2	☐3	☐4	☐5	☐0
The individual should take more responsibility for food protection.	☐1	☐2	☐3	☐4	☐5	☐0

I have a different opinion, namely:
……
……

20. What do you think, do you how much impact can your actions have on minimising flood damage?
No impact ☐1 ☐2 ☐3 ☐4 ☐5 Strong impact

21. Have you taken personal mitigation measures in the past to protect yourself and your property?

☐$_1$ Yes ☐$_2$ No

When yes, when did you take these measures and which measures did you take?
Year (……); Measure(s): ……
……..
Year (……); Measure(s): ……
……..
Year (……); Measure(s): ……
……..
Year (……); Measure(s): ……
……..
Year (……); Measure(s): ……
……..

---

22. After the flood in 2013, public controversy about participation processes, e.g. In plan approval procedures. How important is your participation in the planning and implementation of flood protection measures?

Not very important ☐$_1$ ☐$_2$ ☐$_3$ ☐$_4$ ☐$_5$ Very important

---

23. Have you ever participated in flood protection in the context of a citizen participation process (for example, in the construction of new dikes or the removal of dikes)?

☐$_1$ Yes.
☐$_2$ No, but I would like to participate.
☐$_3$ No, i am not interested.
☐$_4$ Other, namely
……
……

24. To what extent do you agree with the following statements about public participation in decisions-related flood protection?

	Strongly disagree				Strongly agree	I don't know
We live in a democracy; every citizen has the right to participate in decision-making processes.	☐1	☐2	☐3	☐4	☐5	☐0
I am able to improve decision-making processes by contributing my personal knowledge.	☐1	☐2	☐3	☐4	☐5	☐0
If I am involved in the decision-making process, I can accept the outcomes.	☐1	☐2	☐3	☐4	☐5	☐0
In principle I find the opportunity to participation in decision-making processes good, but I don't have time to become involved.	☐1	☐2	☐3	☐4	☐5	☐0
There are experts who can take care of flood protection.	☐1	☐2	☐3	☐4	☐5	☐0
Participation slows down the planning and implementation process.	☐1	☐2	☐3	☐4	☐5	☐0
There is the risk that individual interests dominate participative processes.	☐1	☐2	☐3	☐4	☐5	☐0
I do not have the knowledge to contribute to flood-related decisions.	☐1	☐2	☐3	☐4	☐5	☐0
I have a different opinion, namely: …… ……						

Now we would like to ask you a few general questions related to insurance and flood-related damage as we all whether or not you have thought about relocation as a result of your flood experience.

25. Currently there is a discussion about the implementation of compulsory insurance for natural hazards, which includes every dwelling (also for those outside of flood risk areas) and which provides complete coverage in the event of a flood. Do you think that such a compulsory insurance is reasonable?

Absolutely not reasonable ☐1 ☐2 ☐3 ☐4 ☐5 very reasonable

I don't know ☐0

26. Insurance companies offer a voluntary insurance policy for flood risk (for buildings and contents). Have you thought about insuring yourself against flood damage?

Yes ☐1

No ☐2 => Please continue with question 29.

27. When you have thought about insuring your home and contents are any of the following answers relevant to your experience? (multiple answers possible)

- ☐1 I have a current insurance policy, since …… (year)
- ☐2 I have tried to apply for insurance but it is not possible to gain insurance in the area that I live in.
- ☐3 I am interested in insuring my home and contents but I think that the policies are too expensive.
- ☐4 I had an insurance policy but I was not happy with it so I cancelled it.
- ☐5 I had a insurance policy but the company cancelled it. **(When?** ……)
- ☐6 I do not want to insure my home and contents against flood damage.
- ☐7 I have taken other measures to protect my home and contents and therefore do not need insurance.
- ☐8 Other: .....

---

28. As a result of your flood experience, have you ever thought about the option of moving away from your current location?

Yes ☐1
No ☐2 => Please continue with question 31.

---

29. Have you decided for or against moving, alternatively what would support you in taking such a decision? Please tick the most appropriate answer option and briefly describe your answer *(multiple answers possible)*

☐1 I have decided to stay here.
Please briefly explain your answer.
……
……

☐2 I have decided to move away and have already moved into a new property
Please explain your reasons for this
……
……
……

☐3 I have decided to move and will do so in the near future.
Please explain your reasons for this
……
……

☐4 I would move, if i was able to gain financial support to do so.

☐5 I would move, if:
……
……

Now we would like to ask you a few questions about the last flood that you experienced. Please answer the following questions also when you did not experience flood damage.

30. Did you take any personal action to minimise flood damage during the last flood that you experienced? *(multiple answers possible)*

☐$_1$ Yes > **What actions did you take?**
☐$_1$ Regularly checked information about the flood event
☐$_2$ Obtained and used sandbags
☐$_3$ Moved valuables from the cellar/ first floor
☐$_4$ Moved valuables to higher levels in the building
☐$_5$ Parked car or motorbike outside of the area at risk of flooding
☐$_6$ Other types of aid were sort, for example:……
☐$_7$ Took other measures, for example:……..
☐$_2$ No **> Why did you decide not to do anything to minimise potential flood damage?**
……
☐$_3$ Not applicable, **because**
……

31. Did you receieve support (e.g. material, financial, assistance in cleaning up after the flood) from the following people or organisations after the last flood that you experienced?
*Please only tick the **three most important** people or organisations from whom you received support.*

☐$_1$ Family
☐$_2$ Friends
☐$_3$ Neighbours
☐$_4$ Fire brigade
☐$_5$ Police
☐$_6$ Volunteers
☐$_7$ THW
☐$_8$ German Red Cross
☐$_9$ Army
☐$_{10}$ Charity (e.g. Johanniter, Malteser)
☐$_{11}$ Municipality / city
☐$_{12}$ Church
☐$_{13}$ Other:……

☐$_{14}$ I didn't receive any support.

32. Which sources of information did you use during the last flood that you experienced?
*Please only tick the **three sources** that you used most often.*

☐$_1$ Communication with family members or neighbours
☐$_2$ Newspapers
☐$_3$ Online Press
☐$_4$ Water level from the Flood Centre in the Internet
☐$_5$ Social media i.e. Facebook or Twitter
☐$_6$ Local/Regional radio
☐$_7$ TV
☐$_8$ Videotext
☐$_9$ Flood maps
☐$_{10}$ SMS services
☐$_{11}$ Other: ……..

33. How trust worthy did you find the information from these sources?

	Absolutely not trustworthy				Very trust-worthy	I don't know
Communication with family/neighbours	☐1	☐2	☐3	☐4	☐5	☐0
Newspapers	☐1	☐2	☐3	☐4	☐5	☐0
Online Press	☐1	☐2	☐3	☐4	☐5	☐0
Water level from the Flood Centre in the Internet	☐1	☐2	☐3	☐4	☐5	☐0
Social media i.e. Facebook or Twitter	☐1	☐2	☐3	☐4	☐5	☐0
Local/Regional radio	☐1	☐2	☐3	☐4	☐5	☐0
TV	☐1	☐2	☐3	☐4	☐5	☐0
Videotext	☐1	☐2	☐3	☐4	☐5	☐0
Flood maps	☐1	☐2	☐3	☐4	☐5	☐0
SMS services	☐1	☐2	☐3	☐4	☐5	☐0

Other:

……

……

34. Have you informed yourself about the flood risk in your area in the past?

☐1 Yes, what motivated you to do so?

……

☐2 No

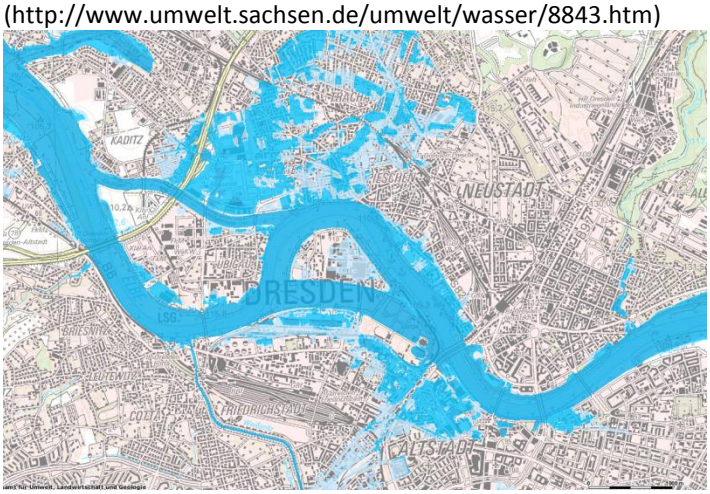
35. Are you aware of the publicly available flood risk maps from the Free State of Saxony for your area? (e.g. the picture below)?

☐1 No > Please continue with question 38.
☐$_2$ Yes

36. When did you see the flood risk map for the first time?

☐$_1$ Before the last flood
☐$_2$ During the last flood
☐$_3$ After the last flood

Example of a flood risk map (http://www.umwelt.sachsen.de/umwelt/wasser/8843.htm)



37. Are you aware of publicly available and free map service „ZÜRS Public“ from the Gesamtverband der Deutschen Versicherungswirtschaft e.V. (GDV) (see the picture below)?

☐$_1$ Yes
☐$_2$ No > Please continue with question 40.

38. Have you used this program before?

☐$_1$ Yes
☐$_2$ No

Example of ZÜRS Public (http://www.zuers-public.de)

To conclude we have just a few more questions about you and your household. The answers to these questions are important for us for the statistical analysis of this survey. Therefore, please carefully fill these questions out. All answers will be treated anonymously.

39. Please provide your year of birth ……..

40. Are you … ? Male ☐1 Female ☐2

41. The house/flat that I live in is:

Owned by me	☐1
The house of my parents, children, / other relatives	☐2
Rented	☐3
Other, namely:	☐4

42. What type of house do you live in?

Type of house		**Year of construction**
Free-stand single dwelling	☐1	……
Double house	☐2	……
Townhouse	☐3	……
Apartment block	☐4	……
Other, namely: ……	☐5	……

43. Which floor do you live on?

In the basement	☐1	Third flood	☐5
Ground floor	☐2	Fourth floor	☐6
First floor	☐3	Fifth floor	☐7
Second floor	☐4	Sixth floor or higher	☐8

44. How large is your dwelling in square metres?
…….. square metres

45. How many people, including you, live in your household?
…… People

46. Who lives with you in your household? Please select only one answer.

I live alone.	☐1
I am a single parent.	☐2
I live with my partner.	☐3
I live with my partner and children.	☐4
I lived in a share-house.	☐5
I live with my parents.	☐6
I live with my children.	☐7
I live with someone else, namely:	☐8

---

47. How many children live in your household?

……. Children under 18 years-old ……. Adult children

---

48. Does anyone in your household have a disability or is chronically ill?

Yes	☐1	**How many people?** .....
No	☐2	

---

49. What is your highest school certificate of education?

Hauptschul- /Volksschulabschluss, 8/9th Grade	☐1
Mittlere Reife/Realschulabschluss, 10th Grade	☐2
Hochschul-/Fachhochschulreife	☐3
I don't have a certificate/I left school before 8th Grade	☐4
Still at school	☐8

---

50. What is your highest qualitifaction?

I have work experience	☐1
Apprenticeship	☐2
Technical certificate	☐3
Technical school certificate	☐4
University degree	☐5
I don't have any qualifications	☐6
I am still studying	☐7

---

51. What is your monthly household budget? Please include your wages and welfare payments.

- €499	☐1	€2,000 – 2,499	☐5
€500 – 999	☐2	€2,500 – 3,999	☐6
€1,000 – 1,499	☐3	€4,000 or more	☐7
€1,500 – 1,999	☐4	NA	☐8

---

52. What is your current employment situation?

Full-time	☐1
Part-time	☐2
Unemployed	☐3
In advanced training or retaining	☐4
Army	☐5
Student	☐6
Housewife/ househusband	☐7
Paternity leave	☐8
Pensioner	☐9
Not employed for other reasons	☐10

53. What is your current or last employment position?

Unskilled labour	☐1
Skilled labour	☐2
Employee	☐3
Middle management	☐4
Manager	☐5
Self-employed	☐6

To finish we have two questions:

Are you interested in the results of the survey?

Yes ☐1 No ☐2

Would you like to share your opinion about the questionnaire with us? Are there any issues that you think need to be further discussed?

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

Thank you very much for your participation!

Appendix III

Presentations at International Conferences

- European Geosciences Union (EGU) Assembly, Vienna, Austria. 22-27th April 2012.

  Oral and poster presentation: Social capacity building towards flood risk resilience in England: The impact of shifts in risk governance.

- Royal Geographic Society with IBG, Annual International Conference, Security of geography/geography of security, Edinburgh, Scotland. 3-5th July 2012.

  Oral presentation: Social Capacity Building Towards Disaster Risk Resilience in England: The impact of shifts in risk governance.

- Deutsche Forschungsgemeinschaft (DFG) and National Science Foundation (NFS), 7th Research Conference, Reckoning with Risk of Catastrophe, 3-5th October, 2012. Washington, DC. USA.

  Oral presentation: Social Capacity Building Towards Disaster Risk Resilience in England: The impact of shifts in risk governance

- Resilience 2014 Resilience and Development: Mobilizing for Transformation, Resilience Alliance, 4-8th May 2014. Montpellier, France.

  Oral presentation: From resilience through transition or transformation?: Lessons from cities that have experienced repetitive flooding in Saxony, Germany.

- Royal Geographic Society with IBG, Annual International Conference, Geographies of co-production, London, England. 26-29th August 2014.

  Oral presentation: The role of Participation in Ensuring the Common Good: Democratic Processes in Flood Protection in Europe

- American Association of Geographers, Annual Conference, 21-25th April 2015. Chicago, IL. USA.

  Oral presentation: Citizen responsibilisation in flood risk management: The creation of new vulnerabilities?