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Flood risk management in Ireland: the role of public participation

Alexandra Revez

Irish Research Council Scholar

Submitted in fulfilment of the requirements for the Degree of Doctor of
Philosophy

Co-Supervised by: Dr. Marie Mahon and Dr. Frances Fahy

External Examiner

Prof. Lindsey McEwen
University of the West of England
UK

Internal Examiner

Dr. José Cortés-Vázquez
National University of Ireland,
Galway
Ireland

School of Geography and Archaeology
National University of Ireland, Galway
October, 2014

To Nina and Lucy McKeown

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Declaration

I hereby declare that this thesis is my own work and that it has not been previously submitted anywhere for any award. Where other sources of information have been used they have been acknowledged.

Signature: _____

Date: _____

Abstract

While growing vulnerability to floods globally emphasizes the need to pursue research in this field, the relatively recent engagement in Ireland with this escalating social problem is notably found wanting in both the areas of policy and research. In addition, attempts to engage with the complexity of social issues within this emerging body of knowledge have lagged behind in the face of a much stronger technical and hazard centred approach to flooding. The frequently ‘social blind’ perspective adopted is problematic as it offers very limited understanding of the causes, consequences and potential solutions to flood problems.

Opening up many of the hidden social and political dimensions associated with flooding in Ireland, the key concern in this research is to critically explore existing frameworks with specific focus on the role of public participation within existing strategies. Adopting a social constructivist approach to carry out two in-depth case study evaluations, the research makes use of thematic and discourse analysis to critique the nature of policy and institutional perspectives on flood management, and to understand the many relationships being forged with communities through the experience of flooding.

The findings highlight a number of institutional weaknesses which are seen to inhibit the development of adequate flood management solutions locally with damaging implications for vulnerable communities. The existence of weak institutional structures which lack in coordination and effective statutory powers to effect change are identified as problematic in this context. Engaging more critically with the use of risk based frameworks, the findings also highlight the dominance of risk as a managing tool which is largely carried out by expert-driven knowledge and limits the capacity of communities to contribute meaningfully in ongoing strategies. The targeted approach suggested by the risk paradigm is set against the noted large discrepancies between public expectations and state interventions, and the discussion relates these to evolving concerns over social justice and environmental rights debates.

While the evidence indicates many challenges and current limitations in terms of community involvement in on-going strategies, the research has noted that

challenging instruments of decision making such as the risk management approach provides an essential means to understand the underlying rationale and values informing these instruments and importantly to look for change if they are largely unrepresentative of the real experiences of flood impacted communities and if they hamper the process of effectively coping with flooding in real-time contexts.

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It is not acknowledged enough in my view that the PhD process is made up of many moments of inexperience, uncertainty and indecision. My own experience reinforces this view and overcoming these obstacles was only made possible by the ongoing support of my family and friends, academic peers and the very generous attitude of the people who participated in this project. These big or sometimes small gestures of generosity have enabled me to overcome many personal and professional obstacles and I wish to acknowledge these people for the help that I have received.

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List of Acronyms

AFA Area for Further Assessment

AAG Association of American Geographers

CFRAM Catchment Flood Risk

CSO Central Statistics Office (Ireland)

CWO Community Welfare Office

DEFRA Department for Environment, Food and Rural Affairs

EPA Environmental Protection Agency

EU European Union

GSI Geological Survey of Ireland

IFA Irish Farmers Association

JCEHLG Joint Committee on the Environment, Heritage and Local Government

NGO Non-Governmental Agency

NHA Natural Heritage Areas

NWPS National Parks & Wildlife Service

O.D. Ordnance Datum

OPW Office of Public Works

SAC Special Areas of Conservation

SAFER Strategies and Actions for Flood Emergency Risk

SME Small and Medium Enterprises

SUDS Sustainable Drainage Systems

UNISDR United Nations International Strategy for Disaster Reduction

UNESCO United Nations Educational, Scientific and Cultural Organization

Chapter One

Disasters as Social Based and Situated Phenomena

1.1 Introduction

The concerns and interests that inform disaster research today are very different from the perspectives that were adopted in the past. These constitute fundamental changes in the appreciation and definition of disaster episodes (Perry, 2005, Smith and Petley, 2008). Conventionally, disasters have largely been conceptualized as events that are concentrated in time and space. Physical forces and impacts are some of the key determining factors in this form of representation (Fritz, 1961, Tierney, 2007). There has been however a growing shift which broadens disaster research focus beyond physical process and towards a growing concern with understanding the underlying social complexity that constitutes a disaster (Oliver-Smith, 1996; Alexander, 2005; Hultman and Bozmoski, 2006; Tierney, 2007; Birkholz *et al.* 2014). Social based research started in the 1950s with explorations on the behavioural factors influencing disaster responses and it gradually led to the inclusion of analytical insights which incorporated social based dimensions and understandings of disaster events (Quarantelli, 2005). The work of Spector and Kitsuse (1977) on anthropogenic understandings of flooding and the work of Dynes (2000) on cultural representations of the Lisbon earthquake of 1755 are seen as stepping stones in what has been a slow introduction of social based theory in disaster research (Tierney, 2007).

This has been happening alongside increased concerns over disaster management as evidenced by an upsurge in the number of reported disasters and growing concerns over climate change impacts and potential connections between same (Pelling and Dill, 2010) Contributions in terms of social based understanding include challenges to preconceived and deep-rooted conceptions of disaster, its causalities and the sorts of knowledge acceptable to inform and sustain enduring solutions to disaster problems (Alexander, 2005; Bakker, 2009). The more social-based and alternative outlook can be broadly identified as a constructivist perspective where the emphasis is on the social construction of disasters in terms of causality, interpretation and solutions (Tierney, 2007). This relatively new outlook has significantly enriched disaster research and its

sub-disciplines such as flood management. An emphasis on the social construction of disasters brings to the fore debates concerning human-environment relations; the significance of meaning in terms of defining experiences and understanding (Perry, 2005) and specifically how policy development and political issues are fundamental in devising adequate solutions for the impact of disasters in society (Oliver-Smith, 1996).

The study of disaster management entails an investigation of the cross linkages between the physical environment and society. It is in the words of Scanlon 'inherently interdisciplinary' (2005, p. 16). Indeed some scholars in the field would state that the starting point for disaster research is rooted on the understanding that this relationship is in crisis and that flooding, pollution, resource depletion and other environmental stresses are outcomes of this crisis (Beck, 1992; Oliver-Smith, 1996; Kruse, 2008). Crisis is consequently seen to result from flaws and failures in social interactions with the physical environment (Oliver-Smith, 1996). Furthermore, the connections and causalities that make up the socio-environmental arena are the product of a large number of variables that are often non-linear and subjective in character which adds significant complexity and uncertainty to disaster and flood management problems and solutions (Kruse, 2008). In the context of this thesis, the term disaster management, as in the management of this crisis emanating from problems between social and environmental processes, is used interchangeably with flood management which is understood in the same terms.

The notion that nature can be observed, controlled and manipulated has been considerably weakened in academic research by overwhelming evidence opposing this longstanding belief (Wynne, 1996; Smith, 2008; Yusoff, 2009); this is also true in the field of disaster research. Where previously the logic of positivism, mathematical modelling and linear physical processes dominated there is now an emerging body of work critically challenging this form of approach to disaster research (Perry and Quarantelli, 2005). The significant increase in disasters directly linked to anthropogenic causes illustrates that overreliance in physical sciences can often be misplaced (Yusoff, 2009). The

growing number of alternative perspectives informing our knowledge of the environment has both provided valuable new insights into environmental problems as well as adding considerable complexity and perhaps uncertainty to environmental issues. Many scholars have shown a concern over the fragmentation of knowledge, where knowledge production stems from many different directions and sources which seem to clash with each other (Sherman *et al.*, 2005).

Finding a balance between knowledge of the shaping forces proceeding from natural causes on one hand, and those of a social, economic or cultural character on the other so as to provide an adequate explanatory framework can be problematic. The process of understanding thus requires an approach which is not overly determinist and is open to new findings (Baker, 2009). Contending with numerous perspectives and understandings that utilize quite disparate ontologies and epistemologies is a challenging task. For research this poses significant theoretical and methodological challenges which derive from having to reconcile what may be sometimes conflicting physical and social based understandings of disaster management (Jacobs and Frickel, 2009). Disciplines such as Geography have contributed significantly in this area by providing theoretical developments that bridge concepts that are often seen as irreconcilable (Smith, 1984; McDowell, 1993; Rogers, 1998; Castree *et al.*, 2005; Johnston, 2005). A recent survey on disaster based interdisciplinary research within academia across Europe has shown that Geography stands out amongst other disciplines in terms of collaborative knowledge development (Faber *et al.*, 2014). Geographical perspectives therefore are seen as illuminating interesting questions relating to how we understand natural phenomena in reference to their relationship with society. This is often a complex and contested issue but one that nonetheless is becoming increasingly relevant in the face of the weakening applicability of pure science alone to address environmental problems. What emerges from this process of conceptual bridging of human and natural phenomena and forces is an intensely heterogeneous array of questions and methodologies that enable the emergence of important theoretical insights, methodological paths and practical

avenues of action for understanding and handling environmental crises (Viles, 2005).

1.1.1 The Concept of Situated Knowledge

Broadening the scope of enquiry on environmental issues raises other challenges for research that relate to validity and robustness of knowledge claims. The problems of theorizing differences and complexity can be seen to lead to dilemmas concerning issues between conceptual integrity and representation of real life issues (McDowell, 1993). The concept of 'situated knowledge' coined by feminist geographer Sandra Harding (1986) and developed by Donna Haraway (1991) is highly appropriate in this context. This concept attempts to reconcile a series of critical understandings of theory and relations in society that is sensitive to postmodernist accounts of diversity and difference while at the same time relating to shared identity and place based experiences (McDowell, 1993, Rose, 1997). It does this primarily by advancing an alternative understanding of objectivity which is based on a careful consideration of different forms of knowledge and as such recognizes the political, partial and situated dimensions embedded in all forms of knowledge (Nightingale, 2003) Situated knowledge therefore offers a wide-ranging analytical scope, which attempts to incorporate complexity while at the same time producing a form of knowledge which is representative of specific experiences and perceptions (Haraway, 1991; McDowell, 1993).

Situated knowledge emerged from a theoretical dilemma of reconciling the concept of gender with increased realizations of the complexity of using this form of representation (Peet, 1998). The aim of situated knowledge in a gender-focused research context was to provide a new foundation from which the concept of gender and feminist thinking could generate more wide-ranging and inclusive understandings of social relations (McDowell, 1993). The concept has been incorporated in other areas of environmental research such as the work of Nygren (1999). Nygren's work is focused on the ethnographic case study exploration of local knowledge in the environment-development discourse among migrant peasants in Nicaragua. It makes use of the concept of situated knowledge to emphasize hybrid ways of knowing which go beyond the

usual dichotomy between universal and local based knowledge. Nightingale (2003) also makes use of the notion of situated knowledge to study natural resource management. She sets out to bridge ‘the silences and gaps between data sets’ (p.77) through the use of mixed methods and as such seeks to show how triangulation of methods can lead to opportunities to explore situated knowledges in the context of community forestry in Nepal. She states that the use of different methodologies provides the means to challenge dominant representations of reality.

The concept of situated knowledge alludes to the subjective and complex qualities of understanding social relations and knowledge while at the same time attempting to maintain a level of coherence between these. As argued by Nightingale (2003) the issue therefore is not about determining which form of knowledge or representation is more valid but to take ‘seriously’ the fact that there are different forms of knowledge available and that these potentially represent differing political, cultural and place based circumstances (p.78).

This research adopts this position in terms of theoretical development by acknowledging complexity and giving prominence to the place-specific and the contextually rich setting of local based experiences of flood management and flood risk management more specifically. There is therefore a conscious commitment to understand knowledge and representations of flood management issues as partial perspectives based on place, context and political factors. Community and place based knowledge and narratives in this context are explored with reference to dominant discourses in order to explore existing power struggles in terms of representation of flood management issues. The recognition of subjectivity and contestation leads to questions over the possibility of inequalities in terms of flood management discourses and policy making. It also leads to challenges of narratives of disaster research which advance positivist understandings as superior and legitimized by claims of impartiality. As noted, situated knowledge reframes objectivity in a way which both contends that there is no impartial way of knowing while at the same time arguing that objectivity rests in situating and embedding knowledge within a particular context which leads to greater transparency and clarity on how and

why representation is seen in a particular light (McDowell, 1993, Wynne, 1996).

1.2 CONTEXTUALIZING THE SIGNIFICANCE OF LOCAL BASED UNDERSTANDINGS OF FLOOD MANAGEMENT

Local knowledge and public participation are often promoted as crucial factors in the advancement of more holistic disaster management strategies. Yet questions should be posed as to what are the merits in promoting community based understandings and practices as a solution for the management of disasters such as flooding or indeed any other social issues? Some critics have called participation a myth, or a tokenistic strategy some have even seen it as a ‘tyranny of localism’ (Lane and Corbett, 2005). Other advocates of the approach suggest that this is a powerful concept and instrument but it is seldom properly conceptualized into policy contexts (Moulaert *et al.*, 2009).

The position adopted in this research is that despite the many complexities and problems associated with participation it remains a critical source of support and change. One of the crucial problems with participation is that there is an assumption that this is some sort of resource that can be harvested when it is better understood as a network of relationships which need to be nourished (Fisher, 2006, Lukes, 2009). Furthermore because it is a relationship between people it is diverse, temperamental and ever changing.

If participation can be understood as a process based on relationships it becomes important to establish how these relationships are forged and conceptualized, especially in light of changes in the way disaster management and indeed underlying environmental policy is handled. As noted, the role of the natural sciences in disaster/flood management approaches is increasingly being confronted by emerging challenges which seriously question both the ability and the social justice of current scientific based solutions (Mileti, 1999; Werrity, 2006). This development is part of a wider theoretical shift with regard to evolving notions of the capacity of the natural sciences to provide sustainable solutions to socially complex problems (Funtowicz and Ravetz, 1993; Scoones, 1999; Cutter, 2005a; Yusoff, 2009). This struggle is visible in many environmental policy arenas. This is the case with flood management approaches in a European context where a higher incidence of flood episodes is

feeding into an emerging public debate on adequate ways to understand and manage this growing problem (Oliver-Smith, 1996; Johnson *et al.*, 2007a). While floods are strongly linked to natural forces such as storms, heavy precipitation and river flows there is a growing consensus that human activities are central in this negative unfolding of events. New theoretical perspectives are emerging that aim to grapple with the complexity and diversity of issues that make up phenomena such as disruptive flooding episodes (McEntire *et al.*, 2002; Birkholtz *et al.*, 2014). These new perspectives look for answers in human development and the choices therein; they explore human influence and agency over the environment and they highlight the inability of science to handle the inherent uncertainty in socio-environmental systems (Scoones, 1999). The natural hazard perspective is being therefore progressively contested by more multi-dimensional notions which incorporate important social, economic and political aspects.

The visible failure of one-dimensional approaches to flood management has made clear the need for more comprehensive perspectives (Mileti, 1999). Furthermore many longstanding activities and attitudes to environmental problems are now being interpreted as manipulative strategies which serve specific interests and re-create unequal relationships in society (Wynne, 2002; Alexander, 2005; Cutter *et al.*, 2006; Heynen *et al.*, 2007). Already two major contentions weaken the position of scientific rationale. For one it provides a narrow and socially inept understanding of environmental problems; second, it has in the past served to legitimize the actions and self-interest of elites while intensifying environmental issues and social inequality. Furthermore, while in the past the politics of the environment was backed up by what was perceived to be objective and flawless scientific knowledge, it is progressively more difficult to achieve consensus and develop measures without the participation and support of a wider public (Kruse, 2008; Brondizio *et al.*, 2009). Environmental disasters, pollution, environmental degradation and depletion of resources have put the environment at the heart of political discourse (Castree, 2005); moreover, the perceived inability of current measures to tackle these problems is leading to a political restructuring where more stakeholders are claiming control and exerting influence over the environmental rulings that

affect them (Fisher, 2006). The inevitable encounter between higher incidences of flooding and political debate has had many interesting developments, one of which pertains to the increased role of public participation in flood management strategies. In some aspects extreme events such as disasters can stand out as high points in terms of collective mobilization and support (Alexander, 2005). The many ways in which people collectively may come together and help each other at times of often extreme need is a highlight of public participation, as are movements towards countering inadequate representations of how disasters play out in specific contexts (ibid). However, there are potential problems relating to the way in which public participation is conceptualized, along with issues of participation as a mechanism and instrument politically used to generate consensus and provide legitimacy to specific approaches and understandings (Bridge and Perreault, 2009). Ongoing shifts identified in the literature in terms of governance practices point to changes in the way environmental issues are managed (Pierre, 2000). In particular, current shifts signal a political arena where governing practices are linked to a wider political forum that is increasing in the number of stakeholders, and more importantly that is much more varied in terms of solutions and ideas for the future of the environment.

There are therefore a number of critical aspects to the study of participation in flood management research. Ongoing challenges to positivist based approaches require an understanding of public interactions and local knowledge's as critical elements which need to be adequately conceptualized. In policy terms the evolving role of non-state stakeholders in emerging governance trends also leads to questions of how this role is playing out. Exploring the process of participation seen to be mined with difficulties, originating from conceptual dilemmas and also deriving from the strategic control mechanisms of political institutions, is a particular concern in this research. The literature while substantial is not ample to address the specific concern with how the community role in flood management strategies can be adequately conceptualized in reference to inherent subjectivity and complexity (Tierney, 2007). Additionally, while most work acknowledges local knowledge as significant, there is often difficulty in negotiating between the different

positions that people occupy in relation to a specific issue which leads to determinist accounts of how people reproduce and negotiate their understanding of disaster issues (Lukes, 2009) Social constructivist perspectives, including the already discussed concept of situated knowledge can provide valuable contributions to this field by mapping this complexity and by further exploring how certain forms of knowledge gain legitimacy while others are obscured (Birkholz *et al.*, 2014). Perspectives which overlook the many conflicting power relations and contesting knowledge's around representations of disaster episodes often fail to address the underlying societal factors that contribute to disasters. The role between local based understandings and decision makers in flooding is evaluated in this light. Particularly significant in this context is the cultural theory of risk which explores how structural and discursive elements frame and reinforce particular perceptions of an event and how it shapes relationships around a specific issue (ibid).

The growing role of risk strategies is one which increasingly frames the whole flood policy issue in Europe in a manner which can arguably both marginalize and limit community voice. Overall this research looks at the many challenges posed by increased flooding and seeks to explore how communities have been able or sometimes unable to respond to this growing problem. It aims to add to theory by exploring some of the subjective, context specific and relational ways in which participation takes place. This includes a critical analysis of power relations and policy discourses in order to determine the role and value of public participation and local knowledge.

1.3 RESEARCH AIMS AND OBJECTIVES

This research is developed with the overarching aim of critiquing current flood management practices in Ireland and exploring the current and potential role of public participation in this area. The principle aim of looking at flood management practices in Ireland and comparing these to international best practice and academic debates is to evaluate the level of public participation in current strategies. This process sets out to provide theoretical knowledge and interpretation of these strategies, their strengths and limitations in order to

inform recommendations to strengthen flood management strategies by enhancing current understanding of local based experiences and the public participatory process. In theoretical terms this is achieved by adopting a conceptual framework (see figure 1.1 below) based on key concepts and factors identified in the literature pertaining to disaster research and flood management and applying this framework to develop a comprehensive critique of Irish flood management policy and practice; specifically in relation to public participation. The critical process involves problematizing the way in which the dominant and policy based perspectives have conceptualized flood management and participation within this policy arena.

1.1 A conceptual model of constructivist perspectives of disaster management

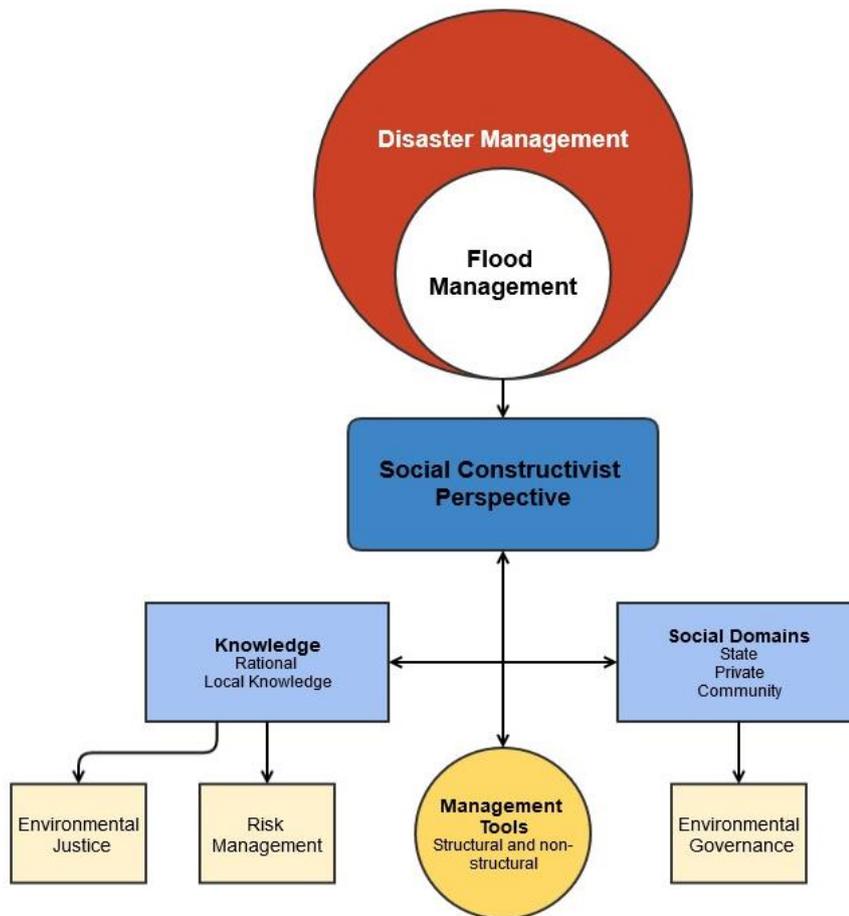


Figure 1.1 Conceptual model based on a social constructivist perspective of flood management (Source: author)

Figure 1.1 provides a narrative of contemporary disaster management to illustrate how current and seemingly divergent concepts and ideas interact.

Flood management is inserted within the wider debate and research focus of disaster research. Both concepts are used interchangeably to reflect a series of practices and ideas around the management of critical events as well as underlying social based dynamics and wider societal repercussions. The constructivist approach reflects a dual concern both with the social domains very generally divided here as the state, private sector and community but also a concern with knowledge, how it is constructed, how it provides meaning and how it produces specific types of representations which are often dissimilar (Clarke and Cochrane, 2001). The common divide from rational and local/subjective based knowledge is used to represent a much wider array of knowledges which are being constantly produced and evolving (ibid). In varying and interlinked ways both the social domains and existing knowledge frameworks inform how problems related to flooding are managed. Shifts in governing relationships such as increased non-state stakeholder involvement are seen to have an influence on the type of relationships that emerge and on the type of solutions developed (Lukes, 2009). Interlinked with this is the issue of discursive tools which provide a specific framework and logic from which to inform, legitimize and promote working practices within the flood management arena (Rothstein *et al.*, 2013). The conceptual model aims to illustrate the multiple factors considered within the constructivist perspective by linking disaster management to social based elements and considerations. Risk management and environmental justice ideas are scrutinized as forms of understanding which provide interlinked but differing conceptions of how to both conceptualize management strategies and how to understand social exposure and capacity for meeting the many challenges posed by flooding.

The key objectives that guide the research are:

- Identification and analysis of relevant conceptual and theoretical perspectives on the role of the ‘public’ in the process of flood management.
- In depth review and critical evaluation of current institutional flood management structures and strategies operating in an Irish context;

- critical evaluation of the role of public participation in flood management strategies in Ireland within a social constructivist theoretical framework;
- Development of a model of knowledge production that has the potential to enhance participation between all stakeholders by drawing on a range of conceptual and applied tools, with a view to improving flooding management strategies.

1.4 SIGNIFICANCE OF THE RESEARCH IN THE IRISH CONTEXT

Tackling flood events involves adopting a selection of structural and non-structural measures. Structural measures are typically developed to prevent and mitigate the threat of floods and are characterized by hard engineering solutions such as the physical containment of rivers or implementation of dredging schemes (Birkland *et al.* 2003). Non-structural measures are concerned with minimizing the amount of damage caused by floods and improving the capacity of localities to recover from these events. Methods can include changes in land use, public participation and the development of legal and institutional frameworks (Petry, 2002). There is a growing interest in developing integrated flood management strategies that are multi-dimensional and involve both structural and non-structural methods (Motoyoshi, 2006).

Current flood strategies in Ireland are limited to a combination of structural measures and recent guidelines based on land use protection and planning which is sensitive to growing flood exposure. Structural measures are expensive undertakings that require a huge amount of resources, which limits their ability to provide solutions. Land use management is commonly directed at new developments and is an ineffective tool for dealing with current flooding issues (Correia *et al.*, 1998). When public participation is low, the knowledge produced is limited by an overemphasis on practical generalisations that derive from specific experiences of flooding in a locality. While this sort of information is important for an initial understanding of the event it is also limiting by the lack of contextual knowledge that derives from locating the event within specific historical and political contexts (Tierney, 2007). Inclusive political structures that incorporate public perceptions of socio-environmental

systems originate a more comprehensive understanding that deals with the possibility of environmental change as a product of human actions and recognises the role of human agency as highly significant (Scoones, 1999).

Over the last eight years the Irish government has considerably developed policy relating to flood management issues. Two main factors have prompted this relatively new interest. Firstly flood management initiatives have emerged as a response to concerns over extreme flooding events such as the ones experienced in 2000 and 2002 throughout the country. These events (and many more since then) have highlighted the need for clear policies on flood management in Ireland. In addition, the EU Floods Directive (2007) has put forth a series of requirements that compel member states to develop national policies and strategies in this area. According to the EU Floods Directive every member state is expected to have a flooding strategy in place by 2013 (2007/60/EC, D. (2007)). This increase in interest and activity has doubtless presented important opportunities for gathering knowledge and improving existing approaches to flooding. Crucially, however, these rulings are very flexible with regard to the methods and processes used to inform flood policy (Mostert and Junier, 2009). There are potential limitations in adopting a risk based framework for flood management and these are critically assessed in terms of how the public is engaged in this particular process and the implications these have in terms of policy outcomes.

In spite of the richness of international literature on the topic, to date however there has been no structured critique of the flood risk management processes and policy outcomes in Ireland. Academic interest in flood management in Ireland is relatively recent and gaps in the research are evident in terms of providing a critique of risk management practices and policy outcomes agendas. This project is particularly significant in terms of its emphasis on a social and context-based understanding of flooding. This research is principally relevant to the following:

- Linking flood management in Ireland to related social theory concerning critical approaches to risk and environmental politics;

- Considering environmental justice themes within current risk management discourses.
- exploring the capacities of communities from a comparative urban-rural perspective;
- Providing alternative approaches based on place specific knowledge to harness the potential benefits of public participation in flood management strategies in Ireland.

1.5 RESEARCH DESIGN

This study uses a constructivist perspective to undertake an in-depth exploration of two comparative case studies in Ireland. This entails exploring different elements of how the issue of flood management is framed, with specific attention given to social-based elements and perceptions of same along with problematizing widely-held assumptions about how this issue has been conceptualized to date. The case-study approach utilises a variety of data collection and analysis instruments to gain a contextually rich understanding of the impact of flooding in communities and the participation mechanisms at play in these instances. Data collection methods include interviews, focus groups, secondary materials and observation. Discourse analysis is applied as the primary method of analysis, with a thematic analysis element also being utilised. There is an added comparative component to the study which derives mainly from the different geographical settings of the research. The first case study is conducted in a predominantly rural area in the Kinvara Catchment in County Galway in the West of Ireland, and the second case study is carried out in a predominantly urban setting of the Dodder Catchment in Dublin in the east side of Ireland. The case study material provides rich context and place-specific knowledge, although it is accepted that there are limitations to the generalizability of the knowledge produced via this methodology. However a critique of participation (which is founded on the premise that these relationships are intrinsically subjective), aims to challenge more universal type claims which bestow rigid attributes to a concept that is essentially partial and context specific.

1.6 THESIS OUTLINE

The current chapter has aimed to locate flood management within wider debates around disaster management and specifically it established the need to develop a greater understanding of social based factors within this area. The chapter also outlines the core aims and objectives of the research as well as expected key theoretical contributions.

Chapter 2 offers a critical review of five key concepts to contemporary disaster (flood) management focusing on questions knowledge and power relations, public participation, risk management and social justice. The significance of a constructivist approach to reveal the importance of a social epistemology in linking with scientific claims to knowledge on disaster management is also explored. This is seen to be particularly relevant to making sense of participation practices which are marked by uneven and unequal relationships, discontinuities and sharp changes that are driven by extreme events.

Chapter 3 outlines the research methodology which is based principally on a multi-case study approach. The choice of case studies in two specific study locations (one urban and one rural) enables a range of detailed and situated accounts to emerge on the ways in which flood management plays out at local level. The case study explorations also lead to a critical evaluation of policy and an assessment of how local experiences are reflected in ongoing strategies. Concerns with meaning, perceptions and knowledge claims as reflected in the overarching constructivist theoretical underpinning of the research lead to the development of an analysis strategy based primarily on discourse analysis.

Chapter 4 provides a critique of Irish flood policy at national and local level. The flood policy cycle is examined in the Irish context and it is argued that weak government institutions and lack of inter-agency collaboration has led to an implementation deficit which is seen as an underlying structural problem to the development of adequate flood management solutions. The detailed profile presented in the case studies carried out in the mainly urban Dodder Catchment and the prevalently rural Kinvara Catchment signifies an emphasis on place specific knowledge and the relevance of understanding community as a flexible concept which takes into account the different interests and capacities of

varying groups and individuals. The links, intersections and conflicts between these and mainstream policy representations show flood management as a political and social space where particular power relations and perspectives dominate which are shown to weaken the role of public participation in terms a channelling of practices towards limited consultation interactions.

Chapter 5 identifies different community capacities in the two catchments which overall suggest that community collaboration is largely reactive but also uneven, with places demonstrating greater community supports and other areas demonstrating a more individualized response to flooding. Issues of perception, awareness, leadership and governance mechanisms are seen to have a bearing on the current community capacities in these catchments.

Chapter 6 provides a critical evaluation of the use of risk management in the context of the two case study evaluations carried out. The chapter looks specifically at how flooding is understood within this framework and how the technique of risk is instrumentalized by the leading governing agencies. Finally the chapter considers the implication that this form of flood management has in terms of an environmental justice perspective. Both risk management and environmental justice notions are used to evaluate the current role of public participation in flood management and it is suggested that alternative social justice issues can enhance public participation relationships through an evolved engagement with the discursive limitations in current risk based management approaches.

Chapter 7 reconnects the literature with the empirical findings exposed in chapters 4, 5 and 6 as a way of refining and developing further conceptual ideas. The chapter moves on to assess policy implications and offer recommendations. The final sections of this chapter provide a consideration of how the research has contributed to a greater body of knowledge based on a conceptual and methodological approach which reengages more technical and factual elements of flood management with a context specific and social based understanding of floods.

Chapter Two

Disaster management, five critical concepts: power, knowledge, community, risk and justice.

2.1 INTRODUCTION

The main goal of this chapter is to offer a critical review of key conceptual and theoretical approaches to contemporary disaster/flood management, focusing in particular on questions of knowledge, power, public participation, risk management and social and environmental justice as complex and interconnected factors within this debate. The significance of a social constructivist perspective to reveal the importance of a social epistemology in linking with scientific claims to knowledge on disaster management is also explored. This chapter is divided into the following main sections. Section 2.2 outlines the core constructivist stance underpinning this research. Section 2.3 provides a critical review of literature in relation to public participation in disaster management research as well as an exploration of shifting governance relationships. Section 2.4 explores the growing use of risk based rationales particularly as they inform key strategy and policy responses to disaster management. Section 2.5 looks at the notion of social and environmental justice as a means of identifying a new critique of flood risk management.

2.2 SOCIAL CONSTRUCTIVIST PERSPECTIVES ON DISASTER RESEARCH

“Society must not be permitted to ‘naturalize’ its failings...”
(Evernden, 1992, p.27).

This section starts by providing an operational definition of constructivism and moves on to a critique of social constructivism perspectives in the disaster/flood management debate. The discussion explores how the relationship between a disaster event and the social domain allows access to the many vulnerabilities associated with it. Perception is also considered as a factor in the development of disaster management strategies and specifically how these are produced and reproduced through discursive processes. This leads to a debate concerning the significance of the widely held division between natural and social based representations of environmental problems which is

followed by a discussion on the significance of knowledge frameworks in the environmental and disaster management arenas.

2.2.1 Defining Constructivism: differing approaches to knowledge and representation

There are two departing points to the notion of constructivism. These can be conflicting as they represent different ontological positions to the concept (Basset, 1999; Mariyani-Squire; 1999; Demeritt, 2002). Constructivism can mean the conceptual development of human understanding of nature which Hacking has termed ‘construction-as-refutation’ (1999). The base of this approach is that concepts are socially constructed through theoretical developments which allow us to enhance our understanding of the world and revise previous held beliefs (Demeritt, 2002). The second application of the concept which Hacking terms ‘construction-as-philosophical-critique’ signifies a concern with how knowledge of the material and social world is entwined with a variety of elements which includes social based contexts and circumstances (Hacking 1999, Demeritt; 2002). The biggest difference between these two concepts is that the first notion is not largely concerned or conflicting with the positivist approach to knowledge and instead often positions nature as an external entity which can be objectively understood through ongoing theoretical breakthroughs (Demeritt, 2002). The critical aspect found in the second use of the constructivist concept problematizes this divide (ibid).

The differing ontological positions are based on divergent notions of reality and nature. This research project is aligned with the second approach to constructivism which is also often termed ‘social constructivism’. This approach therefore looks at theoretical development and knowledge frameworks as a channelling instrument from which a level of reality is observed, but ultimately one that remains a partial representation of reality (Haraway, 1991, Basset, 1999). The social constructivist approach critically explores the processes and instruments utilised in the ‘construct of things’, including representations of nature (Mariyani, Squire, 1999, p.101), and these constructs are centrally reproduced through social networks which are based in power relations through the medium of discourse (ibid).

This definition of social constructivism is a particular ramification of a variety of other conceptual critiques on the construction of knowledge debate which is often termed discursive constructivism. This particular approach is largely concerned with the discursive elements of representation and power relations within these (Demeritt, 2002).

Other perspectives within the social constructivist approach include i) the phenomenological approach which explores the normative and social based aspects of social and environmental problems; ii) the sociology of scientific knowledge perspective which explores how knowledge is negotiated and reconstructed by scientific actors and; iii) the actor network theory approach which sees reality as contingent on a complex set of human and non-human networks (ibid). Proponents of this approach such as Latour (1999) explore 'nature' in reference to the outcomes of these networks in society (Saraga, 2000). Overall the discursive and actor network approaches are largely more critical of reality and representations of reality which includes the ontological separation of these (Demeritt, 2002).

2.2.2 Constructivist perspectives in disaster research

As discussed in Chapter 1, disaster research has been largely dominated by a hazard centred approach which has focused on understanding the physical processes associated with disaster episodes. A constructivist perspective in disaster research challenges these approaches by highlighting the significance of social and political processes as intrinsic elements in disaster events. The many political, cultural, economic contexts that frame and inevitably produce the experience of issues such as flooding are recognized as very significant in this perspective which in essence enables a more human focused view of disaster issues (Tierney, 1999; Ball and Green, 2007, Tierney, 2007). Methodologically Tierney (2007) refers to the use of specific levels of focus and analysis to generate data; in the case of flood related disasters this would include social, political and institutional contributions to a collective representation of disasters such as floods. The work of Cutter (2005b) for example shows how the catastrophic 2005 Hurricane Katrina event in the USA was far from being a naturally-occurring phenomenon. Cutter focuses on the

processes of growing social, political and environmental vulnerability, which at the time led to systemic failures in flood defences, social protection, rescue and recovery services. The levels of analysis inherently suggested by the application of a constructivist perspective bring to the fore the relationship between an event (i.e. flood, often depicted in a hazard centred/ positivist manner) and the social domain.

Delgado *et al.*'s (2009) study on ecosystem management through participation of local actors takes the constructive perspective into more depth. The authors emphasize the epistemological shift that this approach offers by highlighting the notion of social perception as an inherent element in all knowledge. Perception is advanced as a notion that promotes more inclusive understandings of flood problems by drawing knowledge based on the premise that the social and natural environments are linked in ways which make factual evidence always context-specific and subjective (Mustafa, 2002). The subjective process of perception it is argued in the paper leads to many different understandings and interpretations (Delgado *et al.*, 2009). These authors found that diverging views existed between different groups and stakeholders in relation to perceptions of the wetland ecosystem and the impacts to these which resulted in conflict. Delgado *et al.*'s findings strongly suggest diverging perceptions to be largely based on partial representations of the wetland and the conflict itself. Based on the findings the authors conclude that consensus is difficult largely because different groups hold very different values (both normative and functional) which are not recognized in relation to the wetland ecosystem and changes therein.

Overall in the constructivist perspective, perception is seen to lead to greater understanding of the factors that drive, transform and moderate understandings and experiences of flooding/disaster issues (Birkholz *et al.* 2014). However Alexander (2005) cautions with regard to the uncritical understanding of local perceptions. This argument is grounded on the premise that collective views of disasters have a symbolic character and these symbols are given meaning and are subject to change over time (*ibid.*). The author explains that sometimes community views and general consensus regarding disasters may be based on what he terms 'convenient fictions' which are promoted and reproduced by

influential actors in order to establish consensus and reach desired objectives (p.103, 2005). This is the case in disasters being symbolized as a spectacle through the mass media which often emphasises disaster as chaos, panic and helplessness but omitting more subtle interpretations of the phenomena (Couch, 2000; Alexander, 2005). While this issue raised is very pertinent in terms of developing a constructivist analysis that is sensitive to imposed constructions of events it is also important to acknowledge the possibility of agency and struggle to imposed realities. In terms of the constructivist research process this means that one should not assume certain constructs are accepted without resistance; rather, this needs to be established on a case by case basis (Boltanski and Chiapello, 1999; Chiapello and Fairclough, 2002). This view of construction of meaning is therefore open to social structuring processes but sees these in an 'open system' of social action and agency which creates in different instances spaces for contestation of dominant views (Chiapello and Fairclough, pp.193-194)

Clarke and Saraga (2001) contend that a constructivist 'mapping' of diverging perceptions and social relationships results in the emergence of social patterns where knowledge divides and the consequences of these can be identified (p.1) Common divisions can be identified by a tendency to 'naturalise' the causes of environmental hardship (Oliver-Smith, 1996; Clarke and Cochrane, 2001; Saraga, 2001; McEntire *et al*, 2002; Heynen *et al*. 2007; Tierney, 2007). Clarke and Cochrane argue that a main dividing line between accounts of problems rests with the practice of separating the 'natural' from the 'social' causes of social problems. In the case of disaster discourses the tendency is to focus on explanations which define the disaster event as an act of God and/or inextricably linked to natural physical forces (O'Keefe *et al.*, 1976; Demeritt, 2002) These forms of discourse invariably sidestep issues related to social vulnerabilities (*ibid*). The concern with this common divide is that centring explanations around the 'natural' usually bring an accompanied claim of 'truth' and 'universality' which strongly resists other understandings and ways of relating to the problem (Clarke and Cochrane, 2001). This separation of environmental problems and disasters from social and political developments can work to safeguard the interests of particular forms of economic

development and the positioning in this light can be considered in strategic terms as a form of marginalizing conflicting claims (Demeritt, 2002; Heynen *et al.*, 2007). It is possibly the strategic component of positivist approaches to knowledge which has made this framework dominant since the enlightenment period in the 17th Century, which elevated the capacity to reason and objectivity above other human qualities as a pathway for social development. Reason and order in this sense are argued as a means of tackling ambivalence, subjectivity and self-interest and are promoted as such, as a desired form of human and social development (Bauman, 1991).

The social constructivist perspective is therefore useful in terms of critically assessing discourses around environmental problems. Evidence has shown that these issues are often reframed, normalized and naturalized as a way of securing and stabilizing financial growth and development in a capitalist system (Castree and Braun, 2001; Smith, 2008). Grounding knowledge in natural-based processes is perceived as a strategy used to devalue matters of accountability associated with environmental degradation (Evernden, 1992; Tierney, 2007). Contradictory expertise and ambiguity in environmental science is argued by Evernden (1992) as illustrative of how understandings even of 'hard facts' can be interpreted differently. The author gives the example of pollution and differing interpretations of the risk it poses to society as a way to highlight how attitudes and positions in relation to an issue may determine how it is perceived (p.4.). It is at this point that constructivist discourse provides valuable insights which questions and examines how this can be so. Methodologically discourse analysis is effective to identify these tendencies and explore some of the mechanism used to articulate dominant views of disaster issues using a specific set of assumptions about the problem (McHoul and Grace, 1993; Carabine, 2001, Grove, 2010). The notion of discourse further enhances the analytical exploration of the social construction of disaster problems as it addresses not only competing perspectives but it also illustrates how knowledge itself is organized around core themes and associations which produce outcomes in society (Hajer, 1995; Chiapello and Fairclough, 2002, Stanley, 2005). What the constructivist approach demonstrates in this case is that knowledge as a process establishes a series of

points of reference and associations that are difficult to transcend; these inform most social and political practices and many experiences unrelated to these references often go unheard (Carabine, 2001, Saraga, 2001). Many environmental injustice issues have been seen to be rooted in the practice of naturalizing and normalizing processes which derive from the activities of society on the environment (Evernden, 1992, Stanley, 2005). Flooding is a typical example of these practices, where often rainfall patterns and weather conditions are given primary focus in terms of causality, effects and solutions, frequently to the neglect of societal dimensions such as planning choices or social vulnerability patterns.

2.2.3 Challenges and limitations in adopting a Constructivist perspective

There are limitations and a number of critiques associated with a social constructivist perspective (Basset, 1999; Birkholz *et al.* 2014. Particularly in relation to conceptions on nature which Basset (1999) argues largely clash with a body of work that strongly refutes these by using a set of coherent theoretical arguments to prove the material existence of nature. As noted social constructivist research questions the ontological stance that nature is primarily external and material and therefore can be objectively understood (Mariyani-Squire, 1999). The development of theories associated with the constructivist perspective is linked with the idea of conceptual growth based on the successful negotiation of varied and subtle sources of knowledge (Dake, 1992; Bednar *et al.*, 1995). Social constructivist perspectives are therefore often seen to be far too idealistic and lacking grounding which make the focus and the consistency of associated research markedly subjective. Sayer (2000) for example suggests that social constructivism although focusing on the social domain often does not consider how it relates to physical contingencies. Mariyani-Squire contends that there is a level of *incommensurability* in social constructivist approaches which makes the creation of reference points to measure and analyse data difficult to sustain (1999, p.109). The idea of situated knowledge already referred to in Chapter1 is instructive in relation to these observed weaknesses in ontological and epistemological approaches. This is because situated knowledge conceptualizes objectivity in a different manner by arguing that through a situated vision of a specific issue you acquire a far more

intimate and informed understanding than you would if you distance yourself from the subject matter (Nightingale, 2003). Furthermore you are also more bound and therefore accountable to this position (Haraway, 1988). Using this approach to address the limitations of constructivist perspectives is extremely relevant; it acknowledges a degree of subjectivity in its constructs while appreciating this same subjectivity as a rich perspective grounded on specific ideas and perceptions of the world which may not have been addressed or indeed recognized heretofore.

2.2.4 The Social Construction of Environmental Knowledge

The existence of conflict and crisis over the knowledge and experience of environmental problems is a clear indication that there are multiple and often divergent ways in which environmental problems are constructed (Evernden, 1992, Beck, 1992; Kruse, 2008). The problems facing our relationship with the environment have captured greater societal interest and are perceived to affect a growing number of people. Jasanoff (2010) argues that the underlying polarization behind these growing disputes rest in a knowledge dynamic that is dominated by detached, impersonal and observational understandings which in the process foregoes the meaningful engagement with these within a situated framework that is dependent on embedded experiences of environmental issues such as climate change (p.234-235). The increased number of documented environmental disasters is closely intertwined with a growing awareness of environmental struggles (Alexander, 2006). There is currently a considerable expansion in the variety of experiences, relationships and narratives which in turn are connected to either the rising physical susceptibility to environmental disasters as well as an emergent sensitivity to these issues. Environmental hardship and disasters are not unprecedented occurrences, and growing discontent in this context reflects not only increased exposure to physical hazards but also dissatisfaction with how these are represented at political and decision making levels (Yusoff, 2009; Jasanoff, 2010). Environmental crisis is now a predominant theme in the social imagination and one that is characteristically marked by disagreement and conflict. In the words of Beck:

“Environmental problems are *not* problems of our surroundings, but in their origins and through their consequences - are thoroughly *social* problems, *problems of people* their history, their living

conditions, their relations to the world and reality, their social, cultural and living conditions...At the end of the twentieth century nature is society and society is also '*nature*'. (Beck, 1992:81).

A core contention in Beck's Risk Society theory is that contemporary technology and institutions are presently incapable of responding to growing hazards and indeed that they are part of the problem (Beck, 1992, Green 2000). Beck sees the growing vulnerability of society to hazards to be linked to scientific and technological practices. He further stresses that these approaches have omitted to grasp the deficiencies and the impact of industrialized development leading to a crisis on how to handle the considerable complexity associated with this vulnerability. These deficiencies, in Beck's argument, have also led to increased concern and distrust in current approaches to environmental matters. It is thus argued by the author that most hazards faced today are socially constructed through inadequate scientific and development choices. In this instance, Yusoff (2009) for example, questions scientific ability to comprehend the complexity of changes brought by the global warming scenario and argues that incapability to handle and model this complexity means that in some instances 'experience precedes science' (p.2). Wynne (1996) challenges some points in Beck's theory by arguing that the assumption of trust and/or lack of trust in contemporary times in relation to scientific and industrial development should be revised by an understanding of social relations which also considers dependence, struggle and identity. It is also argued by Jasanoff (2010) that losses in trust are in a sense self-imposed by regimes of knowledge which effectively de-humanize and disregard the inextricable link between the natural and social worlds.

The subject of knowledge is key for understanding how these relationships of trust, dependence and identity are maintained and how they change (ibid). Knowledge can provide practical guidance for making decisions but crucially it is also an instrument of control (Fischer, 2001; Alexander, 2005). Frameworks of knowledge are often mechanisms of inclusion or exclusion. These can serve to generate consensus on issues which due to complexity could potentially fragment into unmanageable proportions (Jasanoff, 2010). Knowledge can be defined as the socially acknowledged significance of events (Hall, 2003).

According to Flyberg (2001) it is the intellectual ingredient that provides society with a collective experience and is ultimately the key to producing solutions for common problems. Invariably, the processes associated with the production of collective knowledge correlate with issues of social and political practices and questions of power (Hall, 2003). This is because some relations, practices and structures dominate to the detriment of others. Our knowledge of the environment in western societies has been dominated by the primacy of objective rationality (Clarke and Cochrane, 2001) which is reproduced, internalised and materialised through discursive practices, institutional systems, and power relations (Haugaard, 2002, Ryan, 2009). These processes have enabled action (namely industrial development) within a frame or learnt environment to which we can refer but that constrains alternative actions and understandings (Foucault, 1970; McHoul and Grace, 1993). Latour argues that the appeal of positivist scientific rationale rests precisely on a stance which allows for re-creating and representing phenomena in both an ‘immutable’ and ‘combinable’ manner (1990, p25-26). Arguably disputes reach higher levels when representations of environmental issues are a long way off local, community and individual experiences of same.

The Power of Discourse

The concept of discourse developed by Michel Foucault reveals the processes whereby specific social understandings conflate into powerful discourses which become part of the fabric that structures life (McHoul and Grace, 1993). In this view, discourse is dispersed and reproduced through many of the practices in which we engage in (Hajer, 1995, Dean, 1999; Rose, 1999; Haugaard, 2011). It operates in a subtle way by becoming ingrained in the conceptual mechanisms and logics utilised to make sense of the world in general (Haugaard, 2002). In a distorting manner, discourse often corrupts people’s ability to understand more broadly their own positions in relation to a particular phenomenon (ibid). The institutions of government have a role in these processes as they promote, enforce and sustain specific understandings through different mechanisms that often extend from more banal everyday practices to grander performances but which ultimately ‘discipline’ and ‘control’ how problems are framed and addressed (McHoul and Grace 1993;

Haugaard, 2002). Marginalisation, exclusion and social inequality are often social problems left unchallenged because their logic has become part of the way society is understood (Ryan, 2009).

Research into these layers of social meaning is highly significant for analysing institutional practices, challenging mainstream statements informing social dynamics and exploring the mechanisms by which certain discourses gain authority (Hall, 2003). Differences of opinion range from lack of consensus in recognising a problem in the first instance, what the problem is and its impact overall, whether something can and should be done to solve it and finally what solutions are viable (Saraga, 2001). The potential for disagreements along this range of possibilities has proved significant in environmental politics and crucially it is at the core of many failed strategies to tackle environmental problems as well as implicated in social inequalities and injustice.

The notion of shallow and deep conflict developed by Haugaard (1997) regarding environmental conflict can also provide an added understanding of how knowledge can be excluded, negotiated and reconstructed by different actors. Haugaard introduces the concepts of 'shallow' and 'deep' conflict to illustrate differences in the way dialogue and understandings are often negotiated differently between opposing groups (1997). Shallow conflict is defined as a more superficial level of interaction between opposing stakeholders but where underlying assumptions regarding a specific problem are not challenged (Ryan, 2008). Deep conflict on the other hand relates to more profound differences which are referred to as being rooted on 'structural' conflicts which signal fundamental differences on how meaning is constructed (ibid, p.324). These concepts allow for an understanding of power relations which goes beyond the judicial or legislative coercive power of the state (Haugaard, 1997). Shallow and deep conflict notions help further a critique towards the discursive ways in which knowledge systems potentially exclude conflicting positions and explore these in terms of the evolving way in which people understand their relationship with the environment and the state (Ryan, 2008). Garavan (2008), for example, on his critical exploration of the Corrib gas dispute between a small rural community in the west of Ireland and a multi-national gas company highlights the process of deepening awareness and

articulation of knowledge divides in the community in the face of communication paralysis. In this process Garavan argues that local communities become more 'self-conscious' of their own position, their arguments to articulate this and the inconsistencies between their own position and that of the gas company representatives (p.65).

The critical value in exploring the role of knowledge in matters such as disaster research rests therefore in appreciating different positions in relation to an issue, understanding the mechanisms through which some experiences dominate and others are excluded but also appreciating the process of change in existing knowledge and knowledge disputes that allow the development of new and emerging discourses. The notion of co-production of knowledge advanced by Jasanoff (2010) encourages a weaving of crucial dimensions of cultural, spatial and temporal significance which favours a representation of the world that does not necessitate or resort to the 'erasure' of local specificity and 'embedded experience' (p.233-234). From these the author argues for a vital re-capture of community trust and commitment which leads necessarily to a pathway of stability that is vitally necessary for tackling contemporary environmental challenges.

2.3 MAKING SENSE OF PARTICIPATION IN DISASTER MANAGEMENT RESEARCH

It has been discussed in Chapter 1 that an exploration of disasters which focus on the social construction of the phenomenon provide a more contextualized manner of understanding the complex manner in which a particular event unfolds as well as the interlinked ways in which it impacts society. Oliver-Smith (1996) for example shows that disasters can have a compounding effect to both communities and individuals which means that often impacts are felt at many levels both directly and indirectly. In fact early research work by Merton (1969) shows that disasters have been seen to provide an ideal opportunity to examine critical dimensions of social relationships and organizations in society which allows for an expansion of social theories regarding these same relationships.

Disasters as critical events are thus seen to offer a very specific way of exploring and understanding socio-environmental relationships as these circumstances often heighten and intensify wider societal problems and vulnerabilities. For example issues of inequality, racial discrimination and power hierarchies are seen to become more salient during times of crises associated with environmental disasters such as flooding (Elliot and Pais, 2006; Chakraborty *et al.*, 2014). In terms of studying community relations and collective experiences in disaster events this area of research has offered some significant insights. Alexander (2005) contends that in these circumstances human relationships are in fact made more explicit which offers an opportunity to unveil a wide range of attitudes between people, the state and the environment.

In the disaster management field, concepts such as disaster-resistant community and disaster resilient community have been key contributions in the ongoing development of disaster management theory (McEntire *et al.*, 2002). Both concepts see a central role for communities in the development of better disaster management strategies. The disaster resistant community concept places emphasis on strategies that mitigate against human and material losses and impacts through proactive measures such as zoning, raising awareness, changing land-use practices by in a sense ‘designing’ communities within a natural hazard context (Geis, 2000, p.152). The disaster-resilient community concept addresses not only preventative measures like the disaster-resistant concept above but it also recognizes that there is a need to emphasize recovery and endurance during and after crisis (McEntire *et al.*, 2002).

The concept of community resilience also looks for answer in the many social, cultural and economic variables which play a part in the experience and processes associated with disasters (ibid). Adger (2000) defines social resilience ‘as the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change’. (p.347). Furthermore Adger (2000) contends that because social resilience concepts bear links and parallels with ecological resilience concepts these provide a means to bridge critical links between communities and natural resources and environments. A key insight offered by the concept in terms of

collective involvement and capacity relates to an understanding which sees community as defined as a ‘whole more than the sum of its parts’; this means in other words that individuals may have some resilient characteristics but these do not constitute automatically resilient communities (Norris *et al.*, 2008, p.128). There are however criticisms relating to the concepts of resistance and resilience which has been the subject of greater scrutiny in recent times and which challenge the implied notions within the concepts on a return to normality after a disaster event when in fact what may be required is change (McEntire *et al.*, 2002). Resilience thus tends to focus more attention on mitigation rather than adaptation measures (Cutter *et al.*, 2008).

While disaster research has contributed in terms of community disaster insights there are some noted gaps within the field. Tierney (2007) has shown that work in this area has been widely focused in behavioural and institutional concerns with less attention to social constructivist understandings which look at issues such as social divisions and inequality as an expression of disaster events. This more recent concern is seen to contribute to and fill a crucial gap in existing understandings by not only challenging limited and hazard based conceptions of disasters but also by engaging with the factors that inform, drive and change socio-environmental relations and policy in this area (Birkholz *et al.*, 2014). The need to adopt more critical based approaches in disaster management has gained academic interest in recent times (Alexander, 2005; Tierney, 2007; Birkholz *et al.*, 2014).

This review therefore moves on to consider some critical reflections of community participation in the governance of environmental issues which are underlined by a social constructivist perspectives. The discussion starts by problematizing the concept of participation with a focus on the argument that concepts are often representative of specific political rhetoric and policy goals (Hickey and Mohan, 2005). This subsequently leads to the development of a working definition of the concept of public participation which is a vital element in the theoretical underpinning of the empirical research as well as highlighting more generally the need for both flexible and finely tuned conceptions of participation. The final section contextualizes participation within changing environmental governance trends which suggest there is an

increased number of forums and spaces for different forms and manifestations of public participation but raises concerns over the political representativeness and accountability in these changing relationships.

2.3.1 Diverging participation concepts: implications in terms of social relations and policy

“There is nothing obvious about the ability of citizens to participate in environmental politics” (Fischer, 2001).

Moving from a discussion on the social construction of knowledge and the relationship between the social domain and the physical environment in section 2.2 makes it somewhat easier to introduce the idea that participation is a concept with various (often contradictory) ramifications. While there are many possible contingencies and conditions which influence collective action such as resources and education it is argued that *a priori* concepts framing these relations carry significant influence. These conceptual constructs represent an elusive and challenging facet of participation which nonetheless hinders the advancement of inclusive and meaningful practices in relation to environmental management (Cornwall, 2008). This is illustrated by a growing trend to use superficial levels of public participation, citizen engagement and community involvement as mechanisms for portraying certain environmental political choices as both morally and socially legitimate practices (Fischer, 2001). In this instance the role that public participation plays is described as being limited to providing the appearance of inclusion and diversity to what is often a more exclusive policy process (Raco, 2000; Murray, 2010a). The motivations for channelling the public into these positions can be varied. Raco (2000) suggests that neoliberal agendas steer relationships in this direction, while Fischer (2001) considers these trends more aligned with technocratic modes of governing which is increasingly reliant on expert-driven policy development. Crucially this trend is increasingly highlighted as a pervasive practice that limits the potential of lay people’s ‘real’ involvement in governing practices.

Fischer (2006) argues that in fact public involvement in decision making processes is more complex and subtle than the prevailing representations used to operationalize and promote collaborative environmental practices. The

implications of this ultimately suggest that participation does not work in every context and all the time, but needs to be carefully considered and nurtured instead in order to ensure positive outcomes in particular for the communities involved (ibid). It often happens for example that policy measures intent on promoting participation juxtapose a more rhetorical notion of the concept based on inclusion, empowerment and community values with a set of practical objectives which lead to a greater 'responsibilization' for social supports at community levels (Kelly and Caputo, 2011, p.3). Notwithstanding the obvious added burden of responsibility on these communities there is often no underlying consideration of whether there are available conditions to make this possible. Additionally this also usually leads to a damaging mismatch between expectations of state and community inputs in the delivery of social policy solutions (Cornwall, 2008). Further research evidence suggests that not only is the use of participation misleading it can also be harmful for those involved (Pierre, 2000). The concern is therefore that while there is presently much policy work directed at promoting participation this can imply a specific set of relationships which may work to subvert key public and community interests.

The task of promoting adequate community or citizen involvement in political life is for these reasons increasingly becoming harder to carry out. Public involvement, it could be argued, finds itself in a rhetorical environment where the vocabulary of participation has been appropriated as a badge of credibility to policy makers and political representatives (Cornwall, 2008). Moulaert *et al.* (2010) argue that because there are new policy agendas aiming to capture public participation action and channel these into governing strategies there is an increased blurring of what constitutes participation, who the actors are and what their motivations are. Not only does this increased blurring make it less easy to identify participation practices, it can be argued that the channelling of participation into specific policy positions can be both stifling and damaging. Swyngedouw and Moulaert (2010) instead argue that innovation and change emerges from a grassroots collaborative process which inhabits the "...fissures, cracks and free spaces..." left uninhabited by current governing landscapes (p.50).

The main problems with the concept of participation are therefore threefold. For one it represents a complex set of relationships which are often inadequately theorized, secondly, research increasingly shows that the growing capture of participation into mainstream policy may work to subvert and weaken community collaborative capacity and interests (Flyvbjerg and Richardson, 2002), and finally, as suggested by Swyndedouw and Moulaert (2010) there is a perhaps more radical conception of participation which suggests that innovation and change emerges from a more alternative and independent engagement with existing strategies and institutions.

2.3.2 Defining Public Participation

Having established the need to provide conceptual clarity in the use of public participation this section aims to offer a working definition of the concept. A crucial initial point is highlighted which argues that participation while beneficial is not a panacea for environmental problems as these need to be addressed at different levels which includes the role of the state (Agrawal and Gibson, 1999). Subsequently this section moves on to discuss the typology offered by Arnstein's ladder of participation as a way of introducing the link between power and effective participation processes. In this context deliberative participation mechanisms are seen to provide greater opportunities for change. This section moves on to discuss the functional characteristics of the concept.

The definitions offered do not aim to have universal applicability but they try and capture some of the essential characteristics that represent public participation in specific contexts. As stated the concept in this instance is not portrayed as the answer to most social and environmental problems and neither is it identified as a solution for environmental crises (Agrawal and Gibson, 1999; Green, 2007). It is on the other hand aiming to represent a series of local engagements with lay people which although complex and fragmented in nature possess a remarkable ability to bring innovation, greater equality and strength to social and environmental agendas (Moulaert *et al.*, 2010).

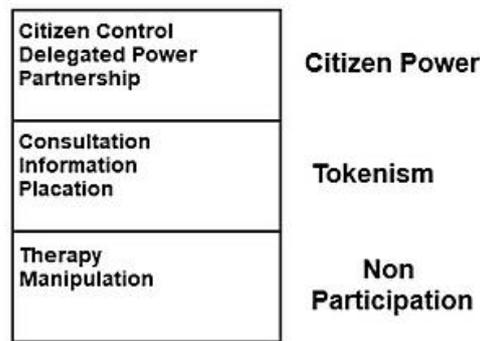


Fig.2.1 Adapted version of Arnstein's Ladder of Public Participation

As a starting point the idea of public participation as suggested by Arnstein's *Ladder of citizen participation* (1969) is helpful in terms of engaging with the notion as a continuum. This view is useful for appreciating the various layers of involvement included in concepts related to participation, in particular modes originating from a top-down level of engagement (Cornwall, 2008). By considering this concept as a continuum which ranges from no participation input to complete citizen control there is scope for a preliminary assessment and measurement regarding the level of involvement of the public in specific contexts. Figure 2.2 demonstrates the various levels of involvement that are portrayed in Arnstein's model. The core idea illustrated here is that participation takes on different forms which are distinct from each other and have specific implications for those involved. Manipulation and therapy are classified as non-participation activities which could even be harmful do the specific interests of communities and individuals. Informing, consultation and placation are viewed in this model as tokenism. It suggests that this frequently superficial level of involvement is often devoid of real value and has little effect on the main goals trying to be achieved. For example public consultation regarding the production of a governmental development plan can frequently be relegated to a symbolic appreciation of public views and perceptions which have little influence on the drafting of the development plan being produced (Cornwall, 2008). Lastly citizen control, delegated power and partnership are referred to as citizen power which indicates that there is a degree of public influence and power in these processes.

This is a valuable guide in terms of appreciating that participation occurs at different levels and real public influence and control depends to a degree on the type of participation developed (Rocha, 1997). Emphasis on power also touches on the prevailing problem of citizens struggling to contribute and influence the decision-making processes that impact on their lives (ibid).

There are other modes of engagement and other dimensions which are not represented in this model. New forms of engagement such as social learning and deliberative participatory methods demonstrate that participation takes on many forms, is varied and is constantly being re-imagined (Kenyon *et al.*, 2003 and Kenyon, 2007). Social learning for example can be seen as an instrument which promotes a concerted and open process of engaging with complex issues which aims to reach an integrated perspective based on the view of the multi-stakeholders involved (Collins and Ison, 2009). The conceptual frame behind social learning is based on the value of experience and its interplay with knowledge and individual competences (Wenger, 2000). Social learning through practical collective experiences leads to a greater alignment between knowledge and experience and helps develop a sense of identity, capacities and refine understanding based on practical references (Wenger, 2000; McEwen *et al.*, 2012) This form of innovation in terms of concepts and modes of participation enriches and strengthens the ability of lay people to engage in the governance processes relevant to their well-being. However the concern for commentators such as Flyvbjerg and Richardson (2002) would be the extent to which such ideas can be subverted into retaining a link to these values while conflating these with specific objectives related to institutional or corporatist agendas. Overall the concern is that while specific ideas are valued, in practice the process is driven by a different set of objectives which are usually set at higher levels of policy making (Cornwall, 2008

2.3.3 Deliberative Democracy: considering power relations in community engagement strategies

Challenging the reality of unequal power relations the deliberative participatory methods are often highlighted as relevant forms of participation in policy development and implementation (Hajer and Wagenaar, 2003; Dryzek, 2005, Kenyon, 2007, Fischer, 2006). This notion offers a way of channelling

participation in a way which considers representation and power relations as significant elements. Using this form of understanding leads to questions as to who is being represented and on what terms. Proponents of deliberative democracy such as Dryzek look for a wider governance regime which provides a necessary challenge to the position of state institutions and political representatives (2002). Power relations in these deliberative processes are seen as particularly relevant as it is often the case that people have very unequal standings while discussing an issue and therefore it can be argued that their views are represented on unequal terms (Fischer, 2006). In fact Hajer and Wagenaar (2003) argue that increasingly the relationship between the state and the public should be seen as in constant transition and conflict and that from these tensions governing practices are constantly reassessed and developed. The prevailing need or desire for agreement and harmony between state and citizen is therefore questioned. The consensus and rational communicative ideal as proposed by Habermas in this light shifts to a focus on the discursive properties of deliberation in the public sphere (Dryzek, 2005; Ryan, 2008) which is ideally productive and transformative rather than consensual (Dryzek and Braithwaite, 2000; Ryan, 2008).

Fischer (2006) contends that participation can also be evaluated in reference with three core effects. These are: instrumental, developmental and intrinsic. Instrumental effects, Fischer argues, relate to the goals that precede participation and they define the functional characteristics of the concept. Developmental effects refer to the expansion of individual and community qualities such as education, coping capacities and evolving networks. Finally by intrinsic effects Fischer means the less tangible impacts of participation which range from personal self-worth to community spirit and stronger community identity. Within this typology Fischer focuses on the perceived 'instrumentalization' of participation by arguing again that the concept is often used as a 'political technology' 'which in effect bounds and disciplines communities into specific roles (2006, p.23). The seeking out of consensus can be a way to discipline and control the public is again emphasizing the instrumental side of participation whereas the more deliberative process would

generate developmental and intrinsic effects through a greater political engagement with policy.

As discussed, public participation can be expressed and applied in a number of ways. The concept therefore is usually associated with a number of labels such as community, citizen, public, locality and stakeholder (Etzioni; 2000, Bauman, 2001). In fact the diversity and variety of ways in which it is used and operationalized has led to academic concerns over the coherence of the concept (Etzioni, 2000; Kelly and Caputo, 2011). Although it can be rightly argued that each label or expression of participation has specific connotations and cultural significance it is also true that in practice these terms are connected and represent a common principle of lay people's collective involvement in social, economic, political or environmental matters. It is important however to understand that the scope of this involvement is very broad and diverse and can be expressed in terms of policy strategies, political and social theory, government bureaucracies or small practical and grassroots driven action (Kelly and Caputo, 2011). This form of involvement may range from formal to informal links and relationships with governing bodies (Etzioni, 2000). It is also important to highlight that the nature of this involvement can be born either from a desire or necessity to oppose particular developments and governmental strategies or it can be originated as a form of partnership with other institutions or organisations such as the nation-state (Curtin and Varley, 1995).

From a constructivist perspective the concepts used to describe the collective involvement of lay people such as public, community or citizen are seen to be rooted in historical, political and cultural traditions and to a great extent these embedded practices shape the evolution of collective interactions, perceptions and networks (Barnes *et al.*, 2007). Some of the most important criteria in this view relate to the weight and influence of the many voices and experiences that make up public knowledge (Fischer, 2000). Other factors include access to resources and information, involvement in policy formulation and implementation of strategies. Such practices have a bearing on the determination of acceptable representation arrangements as well as the negotiated and constructed representativeness of the collective participation

process (Barnes *et al.*, 2007). The constructivist position to the concept of participation therefore provides a degree of flexibility which encourages an understanding of this involvement based on shifting contextual circumstances, representations and power relations. It is therefore a concept not bound by specific labels and interactions but situated in context specific practices.

2.3.4 Environmental Governance: Institutional Change and Participation

This section aims to focus discussion on a set of perceived trends associated with governing practices which reflect not only the evolving field of managing environmental matters but also the shifting positions and relationships between stakeholders in the governance of these emerging policy areas.

The environment as a political issue has considerably grown and expanded in the last twenty years. This is evident in the significant growth in the number of organisations, institutions and agencies that now have an environmental brief (Weale *et al.*, 2003). Alongside a general transformation of governance brought about by processes such as globalization, there is a visible incorporation of environmental elements into governing policies and social action; in other words there is now considered to be a keener social, political and economic awareness of the environment, which is steadily trickling into the thought processes that drive social order (Castree, 2008). Research into the changing nature of environmental governance thus reveals important shifts in social-environmental relationships governing processes and state-community interactions.

The concept of governance itself has also developed considerably from its traditional use as a direct synonym of government (Peters and Pierre, 1998; Stoker, 1998, Pierre, 2000; Hooghe and Marks, 2003; Lee, 2003; Swyngedouw, 2005; Fisher, 2006; Swyngedouw, 2009). Government is situated within the realm of central state control and formal institutions however governance goes beyond this understanding to capture the rich variety of political, economic and environmental relationships that encompass a more complex governing process including the role of the state in this process (Stoker, 1998). The value of a governance model has been identified in terms of the opportunities to engage and encourage collective action without

resorting to government sanctions and direct authority (Stoker, 1998, p.17). Environmental governance is reflective of these trends and is increasingly made up of an array of national and local strategies, international agreements, and NGO or private based delivery of services (Lemos and Agrawal, 2006). These evolving governing systems are sometimes seen to lead to problems relating to accountability, transparency and representativeness (Hajer, 2003; Swyngedouw, 2005). Processes such as globalization, transnational alliances, decentralization, privatization and social movements are seen to be both manifestations of and channels for change in what is a refashioned state apparatus (Ostrom, 1999, Pierre, 2000, Fisher, 2006; Betsill and Bulkeley, 2007; Bulkeley and Watson, 2007). These processes are indicative of the complexity of strategies and authorities at work in emerging governing systems. In this instance while governance indicates greater scope for exchange, co-operation and political bargaining between different institutions and stakeholders it also reveals power hierarchies and conflicts between competing approaches, agendas and claims to natural resources (Weale *et al*, 2003; Bridge and Perreault, 2009). In their review of environmental governance Bridge and Perreault (2009) argue that this complexity has led governments to promote mechanisms of interaction which channel various groups into negotiating positions with the aim of articulating commonality of purpose and often stifling conflicting positions through the political process. This understanding has led to arguments that posit that current governance structures are largely determined by the type of socio-political and economic relationships that are allowed to flourish and conversely by the many other interactions that in the process become weakened (Lemos and Agrawal, 2006; Howitt, 2008).

Further explorations and research in this unfolding of governance structures demonstrate that while there are visible developments in the governing systems of western societies such changes do not represent a specific type of governing architecture and nor do they reveal an ideal type of governing model (Hooghe and Marks, 2003). Although it is commonly accepted that current governance systems are linked to a transformation in the role of the state and an increase in the capacity of other forms of authority, this new dynamic has many different

outcomes (Rhodes, 1994; Hooghe and Marks, 2003). This variety can be seen to provide more flexibility in terms of working across different scales and tackling the increased interdependency between different spaces, such as local-global relationships for example (Hooghe and Marks 2005). However it can also be a new source of struggle and conflict as some experiences and concerns are overwhelmed by the weight of more powerful discourses. Environmental crisis can be seen as a trigger for political change, where the shortcomings of governing structures are brought to light and where new forms of collective action flourish (Peters and Pierre, 1998; and Lee, 2003; Folke *et al*, 2005, Pelling and Dill, 2010). New governance regimes can therefore highlight the limited capacity of previous frameworks and allow access to new actors, resources and ideas. However the opposite is also true and it is often the case that many crisis narratives serve to further reinforce the development of measures that deepen environmental inequality (Dryzek, 2002; Lebel *et al*, 2005; Johnson *et al.*, 2005).

In terms of more inclusive participatory governance systems some researchers have identified the significance of state institutions as promoters and facilitators of greater collaborative and deliberative relationships (Fung and Wright, 2003, Fisher, 2006). A detailed examination of this role by Fung and Wright (2003) reveals that the design of institutions matter in promoting more inclusive relationships. The authors highlight that redistribution of power, resource allocation and institutional learning are important characteristics in promoting greater participatory governance. Fisher (2006) sees these factors as relevant but argues there are underlying social and cultural dimensions which stress the significance of the political context in which these participatory processes are developed. Sociocultural practices the author argues are influenced by a politics of social meaning and identity which plays a deciding role in determining specific 'subject positions' for participants in evolving governance systems (*ibid*). It is further argued that governance structures are progressively dominated by a cultural politics where specific challenges in relation to identity and social meaning are in fact increasing (Oels, 2005; Fisher, 2006; Ryan, 2008). Involvement in this sense is progressively limited through constructed notions of participation which channel people into specific

positions such as consumers, clients, users or beneficiaries (Bakker, 2000; Fisher, 2006). This is then a source of conflict and marginalization. However, this dimension of politics of meaning is not unchanging and these positions can also be understood as a space where people develop and mature their identities (Haraway, 1991, Garavan, 2008). There is then a cultural void in opposing discourses and this has been explored as a potentially vital space for the development of alternative voices and which can lead to social movement and social change (Dryzek 2002, Fisher, 2006, Ryan, 2008). Engagement with risk discourses, environmental justice and human rights debates is further discussed in the following sections which aim to provide the means to further explore the creation of alternative views and representations of environmental management and crises therein.

2.4 THE SIGNIFICANCE OF RISK IN CURRENT FLOOD MANAGEMENT STRATEGIES

Risk management has become widely utilised as a tool that provides technical know-how to extremely complex issues such as disaster management (Green, 2000; Hood, 2001; Rothstein *et al.*, 2006a; Krieger, 2013; Birkholz *et al.*, 2014). The significance and the implications of the risk based approach are considered in this section. The key object of discussion centres on the critical understanding of risk as a concept and as a mechanism of control which frames governing regimes in a specific way. Exploring the evolving role of this approach in the area of flood management it is argued that this is a crucial development which reflect changes in socio-environmental relationships. The specific way in which disaster policy evolves, often driven by extreme events, points to the possibility of greater entrenchment of a risk based frameworks but it also opens the possibility of alternatives and challenges to emerge. Crucially Dean (1999b) argues that ongoing opposition and transformation to state led approaches should focus on critically challenging these mechanisms of control such as risk which have become a core foundation of contemporary governing regimes.

As a notion risk management can be defined as a scientific-based tool that measures, predicts and sets standards for the likelihood of disasters such as floods occurring as well as the impact that these might have on the different

layers of society (Rosenbaum, 2008). The rationale backing this sort of approach is that it greatly increases the efficiency and effectiveness of strategies by providing ‘targeted and proportionate interventions’ (Rothstein *et al.*, 2006a, p.1057). Overall, risk can be understood as a form of discourse that aims to provide a rational and positive mode of thinking which enables the tackling of complex issues (Green, 2000). Wynne (1996) argues that scientific expertise and its logic of positivism has provided a type of risk-based knowledge that offers the promise of impartial ruling and objective ‘knowing’ and by so doing creates a sense of control and influence over the natural environment. The concept of risk has extended over time to become a decisive medium of social interpretations of reality (Ewald, 1991; Wynne, 2002, Rothstein *et al.*, 2006b). Proponents of the risk management approach highlight that it provides substantial benefits in terms of facilitating the development of solutions, leading to evidence based decision making, targeting scarce resources where they are needed, enabling innovative handling of complex systems and ensuring unnecessary burden on communities. Rothstein *et al.* (2006a) however point to the considerable challenges inherent in the risk approach, including questions regarding the frequently unbalanced range of criteria used to assess socio-environmental relations, it involves the inadequate representation of uncertainty in terms of probability formulas, it concerns an overreliance on the natural sciences and quantitative approaches to acquire data and generate solutions (Green, 2000; Rosenbaum, 2008). Of particular concern in this regard is the potential to influence perspectives on what constitutes environmental justice, specifically debates around acceptable risk and development (Rothstein *et al.*, 2006a).

Perhaps the principal contemporary perspective on the concept of risk derives from the work of Ulrich Beck (1992). Beck explores the often ambiguous, invisible and subjective interpretations of risk. He establishes a clear link between knowledge and risk; and offers a strong modernist deconstruction and critique of knowledge processes and experiences in relation to risk. One of the critical arguments is that there is a change in the way we relate to this concept. Previously risk was intrinsically associated with nature whereas now it is mainly a reflection of social modernization and industrialization (*ibid*). This

has increased the intensity and diversity of risks and is leading to a crisis in the legitimization of scientific scope and rationale. Through this idea that risk has taken a new meaning in the contemporary world, Beck (ibid) further argues that the proliferation of side effects from heavily industrialized societies now requires access to a highly skilled system of expertise in order to understand and manage the implications of human impacts on the environment and health (Green, 2000, Hood *et al.*, 2001). For example rising concerns over climate change are demonstrative of the increased link between industrialization and environmental vulnerability. The high levels of uncertainty with regards how these changes will play out both globally and locally also illustrate the emphasis on expert knowledge and understanding the complex impact of these in society and the environment (Grove, 2010). It has also been argued that in the face of palpable gaps and inadequacies in scientific knowledge in terms of climate change, scientists have resorted to managing the ‘excess knowledge’ or non-knowledge issues by techniques such as risk management (Wynne, 2002; Ryan, 2008; Yusoff, 2009). Through the guise of mathematical formulas and modelling the environment is portrayed as manageable, and uncertainty is conceptualised and translated into probability formulas in the process.

2.4.1 Contextualizing risk with respect modernity, industrialization and legitimizing practices

Beck (1992) uses the concept of reflexivity to expand on the continuous repairs and re-examinations performed as a consequence of modernization. This essentially posits that the exponential side-effects deriving from the industrial growth associated with modernity have led to a collective sense of vulnerability which considerably challenges the rational foundations upon which these are based (Abbinnett, 2000; Green, 2000). Post-structural and constructivist critiques of Beck’s concept of risk and reflexivity argue that while the experience of technological side-effects has been influential in social and political re-evaluations of current practices the underlying meaning of how these processes occur is considerably different than that proposed by Beck (Abbinnett, 2000; Wynne, 2002, Pellizonni, 2011) Critiques of Beck’s theory challenge the realist approach underlying his conception of risk which assumes risk as an ontological given (Ewald, 1991, Stanley, 2005). Constructivist

perspectives aim to broaden the debate by flagging the damaging ambiguous and apolitical stance in realist approaches to risk which considerably narrow the reflexive process by turning these into debates over the objective parameters and scale of environmental threats (Wynne, 2002). This critical approach questions how and why risk becomes a dominant discourse which both structures our understanding of environmental threats and regulates our behaviour (Green, 2000; Stanley, 2005). These critical approaches focus on the notion that risk is a political instrument which can be used by governing agencies in response to political challenges and regulatory failure (Hood *et al.*, 2001, Dean, 2002).

This interpretation of risk management suggests that institutions faced with increased pressure have responded by developing risk based policy systems which aim to strengthen legitimacy, accountability and enhance decision-making (Power, 1997; Hood *et al.*, 2001). Rothstein *et al.* (2006a) have argued that risk management not only offers a means for institutions to tackle complex policy issues but also it enables the management of risks to the institutions in terms of reputation, accountability and legitimacy. The concept is therefore seen as a form of knowledge developed in consonance with institutional objectives to make practices of government meaningful and governable even when faced with uncertainty (Stanley, 2005) Risk is in this sense an instrument of power that uses knowledge as a technique to rationalize state practices (*ibid*) Risk it is argued is not only informing policy but is increasingly informing institutional behaviour in what the authors term 'governance by risk'. This rationale can lead to a shift in priorities to issues that carry institutional risks to the detriment of those that have a high risk to society (Rothstein *et al.*, 2006a). Practices such as the use of risk assessment in the management of policy agendas and institutional liabilities are illustrative of this growing trend (*ibid*) Dilemmas such as conflicting priorities, uncertainty and regulatory constraints may lead to governing agencies balancing the risk in favour of their institutions as opposed to society (*ibid*). One of the ways in which discourses of risk are used to achieve this balancing between institutional safeguards and policy is through rationalizing the limits and scope of what policy strategies can do (Krieger, 2013; Rothstein *et al.*, 2013). Risk management is thus also

developed as a way of containing and controlling how the government interacts with specific policy issues (Krieger, 2013, Rothstein *et al.*, 2013)

Dean (1999a) builds on Foucault's concept of governmentality to illustrate how governments correlate risk rationales to strategies of management and control. He demonstrates the ways in which risk has become a type of calculation and control that has led governments to significant and constant reconfigurations. The critical driver of this control Dean (2010) argues is the need to rework problematic 'dissonances' between policy claims and objectives and the practical regimes of power (p.4). This is reflected in the operation of particular models of government such as the welfare state for example whereby a set of apparently common values and objectives become in practice significantly different from one country to another (Dean, 1999a). This process of control is channelled and applied through various techniques and institutions. This notion derives from insights of Foucault's theory of governmentality which highlights the extended mechanisms of state power from institutional and regulatory mechanisms to the less obvious analytical, reflexive and discursive elements of state control (Foucault, 1991; Pellizzoni). A crucial argument concerning the application of risk in a *reflexive government* is whether it has undermined the relevance of socio-political action. Wynne (2002) argues that even though there are certain concepts in social thinking that dominate and pervade most aspects of our lives, namely the notion of risk; change is possible through a challenge and reformulation of these ideas. Challenges in the way discourses around environmental problems are framed in realist terms are suggested as crucial in the promotion of more socially attuned and accountable regimes of power (Wynne, 2002; Fischer, 2006). The importance of communities and influence of groups are identified as a changing force in the way that risks are constructed and managed (Wynne, 1996)

These interpretations provide a crucial understanding of how the notion of risk has become embedded in virtually all aspects of human life. An additional important reading of risk looks at variation in the use of risk from one country to another and even from one policy domain to another (Hood *et al.*, 2001; Pellizzoni, 2011). Research focusing on variation in definitions of risk and varying levels of embeddedness in institutional practices has shown that risk is

not a universally applicable instrument but is instead interpreted and used differently in different contexts (Krieger, 2013; Rothstein *et al.*, 2013). These differences in approach can be substantial and include differences in political stances, practices, safety standards and assessment criteria (Hood *et al.*, 2001). While some risk approaches are notably pre-emptive and intrusive such as public health vaccination policy, others can be more reactive such as the case of radon gas exposure in homes (*ibid*). These differences can also be found in varying forms of responsibility sharing between governing bodies, private entities and the public (Johnson and Priest, 2008).

2.4.2 Flood risk regimes in Europe

A comparative exploration of differing risk regimes in Europe carried out by Rothstein *et al.* (2013) has shown that while the risk approach has penetrated much deeper in the governing practices across many domains in the UK it remains relatively limited in France and in Germany. This is seen to be inextricably linked with the institutional and cultural contexts in which risk is inserted (*ibid*). Focusing specially on the issue of flood risk management in Europe, Krieger (2013) put forth similar arguments in relation to the importance of institutional traditions as well as cultural and normative factors in observed variations in both the UK and Germany's approach to flood risk management. Risk management is a dominant approach to flooding in Europe. The EU Floods Directive plays an important role as a European-wide framework for flood management strategies. It's relatively rapid conception and implementation was due largely to the devastating flooding events in Central Europe in 2002 (Mostert and Junier, 2009). The overarching aim of the Directive is to institute in all member states a framework for assessing and managing floods using risk assessment and risk management tools and it sets out specific objectives and time frames to this end. However it also leaves considerable scope for each member state to interpret and construct national and local flood risk management plans (*ibid*).

Current paradigm shifts across Europe in the way flood management is handled also represents a shift and a further deepening of the risk rationale (Johnson *et al.*, 2008; Rothstein *et al.*, 2013). This relates to a transition in flood

management measures which were traditionally focused on flood prevention through a number of extensive structural measures. Now the approach has turned towards a greater acceptance of floods and is linked with a European wide shift associated with the ‘making space for water’ approach adopted in England and Wales (DEFRA, 2005) and the ‘room for rivers’ approach adopted in Germany (Bundesregierung, 2005 in Krieger, 2013, p.238). These shifts have emphasised the role of land regulation, risk communication and private insurance as issues that are now central to flood management strategies (Petry, 2001). This significant ideological change has been driven by a number of factors not least of this the recurring experience of extreme events which have led to considerable re-evaluations of current policy positions mainly based on an overreliance on structural defences as well as an emphasis on prioritizing and targeting efforts which outline the impossibility of providing all-encompassing levels of protection. (Johnson *et al.*, 2008)

Krieger (2013) states that it would be fair to assume that on the face of these EU requirements a widespread ‘colonizing’ of the risk paradigm across European member states might be identifiable, however. a closer exploration reveals that in fact risk approaches can be extremely variable from one country to another (Krieger, 2013). There is then considerable variance in the ways that different countries implement these ideas. The insurance issue for example shows varying levels of agreements and partnerships between the state, the private sector and the public which shows on one side France and the Netherlands providing a large number of guarantees while on the other the UK relies more strongly on the market to provide flood guarantees to the community at large (Botzen and van den Bergh, 2008). The significance of the cost-benefit culture in the UK is also markedly different from the approach used in Germany where decisions include a risk assessment that is used in conjunction with the HQ standard (a water level measure) that is based on the return period benchmarked at the 1 in 100 year to provide safeguards and guarantees to everyone exposed to this level of risk or higher (Johnson *et al.*, 2007a, Krieger, 2013). Rothstein and Downer (2012) in an overview of DEFRA and its widespread use of risk management tools have linked these to a practice marked by a clear objective towards enhancing and protecting the

reputation and legitimacy of the agency (2012). It is suggested that the ability to do this through a risk-based approach is enhanced by policy which is objective-driven and rationalized (ibid). Other countries where risk is not so ingrained are seen to have very different accountability and legitimacy practices (Krieger, 2013; Rothstein *et al.*, 2013). Overall what this crucial evidence suggests is that risk management takes different forms depending on the institutional and cultural traditions of each country and is also subject to change in response to public challenges and demands (Krieger, 2013, Rothstein *et al.*, 2013).

There are some key driving processes of note in terms of the evolving role of risk in managing environmental issues. Vogel (2012) argues that extreme events and disasters explain the development of new configurations and risk management systems which can further suggest a potential deepening of this form of approach. Johnson *et al.* (2005) contend that in fact disasters may serve as catalysts for change and provide opportunities to deepen specific strategies or ideas. Additionally, Pelling and Dill (2006) argue that the opportunity afforded by these events can lead to shifting power-sharing arrangements as well as the legitimation or de-legitimation of rights and specific sectors of society. For example Pelling and Dill (2006) illustrate how following the extreme Tsunami event in Sri Lanka in 2006 there were considerable shifts which led to the reallocation of land rights. Conversely extreme events also can increase mobilization and pressurize governments to provide more responsive and inclusive strategies (Johnson *et al.*, 2005 and Pelling and Dill, 2006). Again Pelling and Dill (2006) illustrate this point by recounting the exceptional mobilization and dissent of local people in Morocco following an extreme earthquake event in 2004. What Johnson *et al.* (2005) conclude from this idea is that the impetus characteristic of extreme events should not be interpreted in terms of opportunism, in the sense of speculators jumping on specific opportunities but that these movements reflect a dominant set of values and rationales of the time which at these particular junctures, i.e. during disaster events, become more prominent. Risk in this sense is representative of mainstream governing practices however the structures and practices deriving from this approach can be different depending on context and circumstances.

2.5. PARTICIPATION AND ENVIRONMENTAL JUSTICE: SECURING BASIC RIGHTS THROUGH FORMAL AND INFORMAL PROCESSES

The following discussion over environmental justice issues pertaining to flood management aims to consider how state and private responsibilities are established and transformed in current flood risk management debates. This section initially explores the historical and cultural characteristics of the human rights concept (Gready and Ensor, 2005). The discussion moves on to consider the drivers and the mechanisms through which rights and responsibilities are established. This is subsequently framed within a disaster management context.

It has been stated on a few occasions that there is an unquestionable shift in the way environmental matters are understood and managed. This principally derives from a heightened awareness of how environmental issues and injustices are directly related to socio-environmental relationships (Ozerdem, 2003; Edmondson and Rau, 2008). Increasingly it has been noted that there are vulnerable groups which are unequally damaged by the burdens of environmental crises (Shrader-Frechette, 2005; Clayton *et al.*, 2013). Furthermore, at the heart of most conflicts relating to environmental problems rest conflicting positions with regard to the equitable distribution of both environmental bads such as pollution, and other hazards and environmental goods such as resources (Shrader-Frechette, 2005). As a consequence, environmental rights as well as responsibilities have gradually gained legal and regulatory status in many nation states (Du Bois, 1996, Deegan *et al.*, 2002; Weale *et al.*, 2003). Contemporary societal values have tended to reinforce the notion that every person should have equal rights to a safe environment and in fact this powerful social principle has gained constitutional status on many parts of the globe in relative recent times (Boyce, 2000). Ireland is an exception in this instance as it offers no constitutional principles and guidelines regarding the environment and environmental equality.

Human rights ideologies have two particular historical traditions that influence the ways in which rights are reiterated in different social and political platforms. The first tradition derives from principally primordial justifications; it grants universal entitlements by virtue of perceived elemental qualities in

humanity; the foundations of these rights are based on these common humanity notions (Gready and Ensor, 2005). Nature and religious beliefs are the main foundations of these powerful moral claims which still have significant political impact (ibid). The second tradition represents a break from the natural or divine type of conceptions and turns to 'social contract' theory as a form of guarantee of key entitlements. The origins of social contract theory are founded in the influential works of classical political philosophers such as Thomas Hobbes (1588-1679); John Locke (1632-1704) and Jean-Jacques Rousseau (1712-1778). This frame of thinking emphasizes the relationship between individuals and the state as a negotiated synergy of rights and duties on each end (Deegan, 2002; Gready and Ensor, 2005). This is seen to provide a safe platform for collective living where people abide by the state and in exchange their basic rights are protected and sustained by the collective; in other words, there is a *contract* between the state and citizens. Both traditions have through the years gained considerable support and it can be argued that they have been behind many political struggles and activist agendas (Dryzek, 2002; Gready and Ensor, 2005). In terms of environmental struggles, the notion that society should guarantee a number of fundamental rights directly related to the environment has rapidly gained public support and has also increasingly matured into legal and political discourses (Du Bois, 1996; Deegan *et al.*, 2002; Dryzek, 2002; Weale *et al.*, 2003). Internationally, nationally and locally citizens expect more and better public sector leadership in terms of environmental management (Kapucu and Van Wart, 2006). It is not unexpected therefore that there is an increased concern with the institutional 'management' of these expectations which may reflect specific legitimation strategies, as discussed previously in terms of risk management (Dryzek *et al.*, 2002; O'Donovan; 2002; Chon, 2009).

Additionally, Boyce (2000) argues that rights are often secured either through formal or informal processes. Formal processes are usually inscribed into law while there are also vital rights executed through non-legal arrangements which rely on more informal agreements and procedures (Deegan, 2002). Boyce (2002) in fact argues that as complex as informal processes may be they are often the best means for achieving equality, participation and empowerment at

the local level. This is because regulations and legal frameworks can be constricting and single minded and not represent the complexity of claims and contexts that exist in the real world (Boyce, 2002; Gready and Ensor, 2005; Adger *et al.*, 2012). In the current disaster management arena this fact is seen as extremely relevant, as noted disasters can create sharp changes in society which also relate to political strategies and the delivery of supports (Dryzek *et al.*, 2002; Johnson *et al.*, 2005). The realization that there is an exponential increase in vulnerability to flooding and that state commitment may also be increased can potentially alter how the government approaches its role in this area. The previous discussion on risk highlights the idea that extreme events may prompt considerable shifts in state-society relationships regarding entitlements, provision of services and use of resources. The current risk management paradigm can be interpreted in this instance as a means to rationalise downwards and contain the role and responsibilities of government in this regard (Krieger, 2013; Rothstein *et al.*, 2013). However, the difficulty arises when these types of shift in arrangements occur without the previous consent or knowledge of affected communities. Worryingly, these shifts usually leave gaps and assumptions that these will be managed by the community at large. Boyce (2002) has argued that supports and arrangements that are provided on an informal basis are also those more easily taken away.

2.5.1 Flood impacts and environmental justice: notions and systems of justice

Environmental justice questions are closely connected with the role the state plays or should play, in defending and guaranteeing these rights, as well as the responsibilities communities assume in relation to each other as a collective group living in a shared society. Environmental crises issues can provide some compelling contextual frame because it is often at the crossroads of environmental change and the relationships within these (Clayton *et al.*, 2013). Two significant issues arise in terms of the environmental justice debate; one issue refers to the underlying values informing mainstream notion of justice, and linked to these is the issue of how in practice these are best achieved.

The theoretical propositions in Rawls' (1971) understanding of justice is relevant in this instance as it highlights the means through which justice can

and should be achieved in society. For the author the structure by which rights are assigned and distributed is essential for securing equality that is representative of existing democratic values. Rawls' theory also represents a set of fundamental values which posits that the rights of the most vulnerable and worst off in society should be a primary focus within the social contract between people and the state (2001), in terms of flood management policy. Johnson *et al.* (2007) see this policy direction as targeting the more vulnerable communities as opposed to focusing strategies on high value assets. There are however other theories holding different principles of justice such as Nozick's libertarian position which highlights the important role of the free-market as a guarantee of fairness and equality in society and promoting a minor role for state intervention in this area (Nozick, 1974; Johnson *et al.*, 2007). So there is potentially considerable difference in the way justice is understood and framed. Additionally, Rawls' theory is relevant for establishing the need to have a system and structure in place which defines these principles of justice, and provides an understanding of the consequences of these systems in particular as noted for those more vulnerable in society (Tisdell, 2003)

Rights and wealth-based approaches from a disaster management perspective

To understand some of the potential implications of different justice systems Boyce's classification based on disaster management justice issues is useful. Boyce differentiates between rights and wealth-based approaches to discuss some of the common divides in on-going disaster management policy. These bear some similarities with Rawls' and Nozick's original conceptions but diverge in other ways as well; they are useful however in terms of the noted implication in terms of disaster and flood management policy.

A rights-based approach in terms of flood management is premised upon the egalitarian and universal distributions of the basic right to a secure a clean environment (Boyce, 2000). Flood management initiatives based on these principles would aim to provide and allocate public sector resources to mitigate and adapt to flooding impacts equally amongst the population, regardless of social, geographical or economic status (*ibid.*). In practical terms however, this principle is applied in different forms. A rights-based approach can be

understood as a complicated process of social and political negotiation, which is constantly challenged, reconstructed and indeed represents in many cases an on-going struggle for recognition of social injustices (Gready and Ensor, 2005). The contexts in which these claims are made are highly significant and illustrate a number of limitations and contradictions in the process of obtaining, enjoying and securing these rights (Ensor, 2005).

Three main problems can be highlighted in this instance. One main issue relates to living in a capitalist economic system which in itself generates and perpetuates inequalities in the allocation of economic wealth and political power (Boyce, 2000, Pastor *et al.*, 2006; Heynen *et al.*, 2007). It would be therefore a contradiction to claim that all individuals in any given location could enjoy equal rights to safety from floods; for example, when the processes of capitalism, which is the predominant development model does not operate on the basis of equal distribution of economic and social benefits (Smith, 2008). Closely aligned to this are the ethical and administrative challenges linked to the spatial diversity and complexity of our societies (Tisdell, 2003). These difficulties often present themselves as dilemmas particularly for governments in relation to decision-making on higher public investment in flood mitigation measures when decision-making criteria normally focused on cost-benefit analyses, and the spreading of scarce resources inevitably (politically) mitigates against more sparsely-populated areas (Boyce, 2000). Other issues derive from individual residential choices. Those residing closer to hazardous and flood prone areas such as coastal neighbourhoods are more exposed to flooding. A rights based approach would aim to provide equal support to these households. This provision is often disputed on the basis that people should not make such choices (Boyce, 2002). This is a 'moral hazard' based argument which suggest that supports incentivise 'risky' behaviour; however, this argument assumes that individuals are in fact free to exercise choice over where they live and just as importantly that they are fully aware and informed of the potential for flooding.

Disaster research focused on environmental justice issues would suggest that often poorer communities are more vulnerable to disasters such as flooding because they are located in less desirable areas and have less structural

protections. Hurricane Katrina provides a powerful example of the impacts of unequal socio-geographic patterns of destruction, compounded by poverty, marginalization and exclusion from established institutional support frameworks based around risk management strategies for flood protection.

The wealth-based approach on the other hand is based on a different set of principles which prioritizes policy, values the efficient use of resources and promotes a more individualized approach for reducing or preventing the impact of floods. This approach in policy terms would assume that those who pay more are more deserving than those who pay less, as they choose to invest in disaster reduction practices (ibid). In terms of state commitment, this form of approach highlights the need to pursue policy which delivers the best possible results to society in general as opposed to feeding resources based on principles of equality which could be less effective in terms of using scarce resources (Johnson *et al.*, 2007). These two very distinct approaches to environmental justice represent a common divide in terms of policy and it can be useful to analyse how particular strategies reflect institutional concerns for justice. Growing reliance on market instruments, the emphasis on personal responsibility and a shift in terms of services provided which limits the number of those entitled to flood protection and prevention measures have been highlighted as some trends in response to growing exposure (ibid). Naomi Klein's (2007) discussion on the treatment of such issues in the aftermath of Hurricane Katrina provides a powerful illustration of the negative effects of the growing entrenchment of market and private services in the delivery of flood management services and the resulting vulnerability of some segments of the population to environmental hazards.

Claims concerning environmental equality and welfare are growing and represent an on-going struggle to secure fundamental guarantees which have a great bearing on lives and livelihoods (Shue, 1996). Understanding the position of environmental claims in specific contexts is a significant means of exploring the challenges involved in producing stronger disaster management strategies. Johnson *et al.*, (2007) in their review of social justice mechanism is the delivery of flood policy in the UK highlight that there is little acknowledgement of principles of justice and equality in existing policy

strategies and in particular the way that these are delivered is not well established or understood. There are potential overlaps between UK and Irish flood policy and these are investigated further in Chapter 6.

2.6 CONCLUSION

It has been argued that disaster based research offers a particular relevant set of circumstances from which to explore greater social relationships and processes in society. This is because not only do specific moments of crises highlight enduring inequalities and vulnerabilities in society but also because the ensuing discontinuities and opportunities for change also reveal power struggles, potential for greater mobilization and the entrenchment of some practices based on dominant ideologies and understandings. Within this debate the contributions from a social constructivist perspective can be enlightening and bridge some existing gaps in current disaster research. The more critical approach to risk based instruments of governance and justice are identified as areas of significant importance in this exploration and discussion. Community participation in this field is established as a key area which can significantly enhance existing strategies but which needs to be properly conceptualized in order to underline the significance of power relations and knowledge and vital contributor factors in this debate.

Chapter Three

Conducting multiple case-study research: investigative steps and strategies

3.1 INTRODUCTION

The purpose of this chapter is to provide an outline of the rationale and structure of the methodology used. The key aim is to provide a detailed outline of the methodological design and show how it enables the exploration of public participation in flood management strategies. The methodology employed for this purpose is that of a case study. The benefits and advantages of selecting the case study approach as well as potential drawbacks are highlighted. Furthermore, all of the methodological choices and practices are identified and addressed based primarily on a consideration of good practice guidelines suggested by academic literature which outlines relevant techniques and methods in the area of public participation, environmental management and discourse analysis studies. The chapter entails four key sections which provide information on the theoretical underpinnings of the research, the case study structure and context, methods of evidence collection and methods of analysis.

Fieldwork plans and the execution of the case study evaluations are described at length which includes: i) the use of semi-structured interviews with a variety of stakeholders, ii) focus group interactions as a supplementary technique, iii) the uses and advantages of information deriving from observation techniques, iv) narratives and stories as richly informative qualitative materials v) secondary materials as crucial sources of background and contextual data, and finally, vi) discourse analysis as the data analysis instrument with a focus on power and knowledge relations.

3.2. THEORETICAL UNDERPINNINGS

“In texts, agents (actors, actants) are continually coming into being, fading away, moving around, changing places with one another, and so on. It is important that their status can easily make the transit between being real entities and social constructs and back again”. (Pickering, 1993, p.563)

“A sociology that makes do with describing the configuration of various concrete situations, and the way in which people construct these arrangements, can clearly serve to inspire various sorts of 'repairs' to the social fabric, made on a day-by-day basis by working 'participants' or social 'engineers'. But it does not make it possible to aid the construction of wider collective projects...” (Boltanski and Chiapello, 2005, p.xi-xii)

This section of the methodology discusses the core assumptions and intentions of the research project. For this purpose it identifies the guiding principles informing the research process as well as outlining the relevance of the project in terms of anticipated forms of theoretical contributions.

As discussed in the literature review this research adopts the constructivist perspective which aims to emphasize the constructed nature of flooding phenomena by exploring the many ways in which social relations and circumstances shape existing definitions, experiences and capacities in relation to flood management issues (Hajer, 1995; Hall, 2003; Taylor and Winquist, 2001; Tierney 2007; Birkholz *et al.*, 2014). In particular, the research problematizes dominant representations of flooding phenomena and pursues alternative expressions and experiences of flooding issues at community level (Saraga, 2001). There is however a more measured approach to the use of constructivist inquiry that is anchored in relating the more critical and unfixed concern with meaning to a pragmatic understanding of material contingencies (Chiapello and Fairclough, 2002; Boltanski and Chiapello, 2005; Adger *et al.*, 2006). The first quote introduced in this section by Andrew Pickering (1993) which concerns itself with establishing how social and material agency may be defined points out that agency occurs at different levels. Pickering (*ibid.*) states that highlighting the symbolic and constructed nature of social relationships should be done in a way which does not lose its connection with the more 'real' facets of human living. Keeping this concern in mind, the constructivist approach looks to sort out differing structures of meaning and varying influencing factors and attributing to these either more normative based or discursive based implications. This is done as well to emphasize that communities have a degree of agency and control over discursive practices (Boltansky and Chiapello, 2005) which enables them to identify and measure the many discrepancies involved in dominant interpretations of flood

management issues. As such, there is a concern to acknowledge the different processes involved in what constitutes flood phenomena that focuses particularly on the neglected social-based characteristics of this experience, but that also aims to retain a degree of connection with a more pragmatic view of reality. This research is therefore positioned between trying to understand underlying and deep rooted influences reproduced by powerful discourses about flooding but at the same time being sensitive to the more tangible aspects of this problem. In the second quote introduced above, Boltanski and Chiapello (2005) highlight the necessity to use research to work through and challenge the deep-rooted ideological frameworks central to most problems in society. This remains a key concern for this project which is coupled with knowledge that builds on existing structures and frameworks.

As a researcher this means that the task of collecting, analysing and recounting empirical material requires a diverse variety of methods and interpretation which give voice to community experiences of flooding in a contextual based approach that considers different levels of agency (Golden-Biddle and Locke, 2007). The theoretical contributions of this approach are to consolidate the perspective that flood management issues are complex and intrinsically linked to social-based processes, symbolic representations and power relations, but also inextricably linked to environmental and physical contingencies.

3.3. RESEARCH DESIGN: THE CASE STUDY APPROACH

“Only through the experience in dealing with cases can one develop from a beginner to an expert” (Flyvberg, 2006, p.222).

This quote by Bent Flyvberg highlights many of the methodological and personal advantages of selecting a case study as an approach to studying complex research questions. Over the years case study approaches have contributed significantly to methodological and theoretical developments in qualitative research (Yin, 2003; Bennett and Elman, 2006; Flyberg 2006; Khron, 2010). Essentially the case study provides a flexible and alternative way to combine complementary methodological techniques; it is also a very detailed and refined process of inquiry and analysis (Bennett and Elman, 2006). Case studies have been used extensively as a research design in disaster

and flood management, specifically with regard to exploring local based knowledge, perceptions and capacities (Hughey and Tobin 2006; Vogel *et al.*, 2007; Posthumus *et al.*, 2008; Cho; 2009; Howgate and Kenyon, 2009; Chanse, 2011; McEwen *et al.*, 2012). Of note also is the fact that in the same way that the case study enriches the research process through the comprehensive and varied focus and methods that it utilises, these methodological advantages also significantly strengthen the variety of skills and conceptual know how of the researcher (Flyberg 2006).

In line with a constructivist perspective, the research adopts a case study approach which stresses the significance of social construction of meaning *in situ*. The case study methodology can be described as a multifaceted and exhaustive research approach that is based on the collection of data through a variety of sources, techniques and methods (Yin, 2003). The emphasis in this research is on in-depth study of the ‘case’ of public participation in flood risk management. This not only enables account to be taken of issues such as policy, but also considers the way the phenomenon of flood risk management is socially constructed, the nature of social encounters that are linked to it, the way it is realised in social action, and the influence of the physical location. As such, the case study approach seeks to develop a comprehensive understanding of public participation in flood risk management by recognising and engaging with the social complexity and context within which it occurs, and by revealing the range of meanings that individuals bring to it within that context.

The research processes associated with case studies are considered the most suitable to meet the core objectives of this project. The use of the case study is seen to be beneficial for the purposes of the research because the methods used are exhaustive and complementary which provide a varied and rich understanding of the social setting in which flooding occurs (Yin, 2003; Kumar, 2005). This method enables a varied exploration and detailed evaluation of data, which often captures information overlooked by other methods (Kumar, 2005). Case studies for example provide an ideal way to explore dominant as well as marginalised statements through the construction

of knowledge based on a contextually rich setting (Bennett and Elman, 2006). By using different techniques in this research as enabled by the case study design a variety of stakeholders are targeted which will provide a way to reach out to different people in the community and therefore have a more complete map of the different issues experienced.

Case studies also have a role in promoting and enabling theoretical engagement with complex issues. Many social scientists now rely on case study methodologies to address increasingly multifaceted problems. Case study projects such as those by Burn (1999) on flood risk perceptions, Tol *et al.* (2003) on the political implications linked to climate adaptation and Junker *et al.*'s (2007) study of public participation on river restoration reveal the fruitful applications of case study evaluations with regard to environmental issues. Through the use of case study methodologies, these projects, have attempted to address the complex relationship between social and environmental processes. As outlined in Chapter 1, the conceptual model developed for this research aims to explore the complexity of issues intersecting with the role of communities in flood management. As such a case study design presents an appropriate methodological framework to capture this complexity.

Bennet and Elman (2006) argue that the case study has a number of methodological advantages to other methods, including: i) the contextually rich and sensitive way in which concepts are operationalized and developed, ii) improved face and content validity of the study; iii) potential for identifying new research variables. It is also argued that this relative advantage comes from a flexible and complex view of the world that provides a more wide-ranging understanding and concern over contextual interactions as well as their negative or positive outcomes (*ibid.*). In this sense case study methods both reflect and enhance the research and its core concerns for the social mechanisms and capacities at play in flood matters. The potential for refining and enhancing the concepts being studied is also a crucial factor in the adequate fulfilment of key aims and objectives of the research which culminate in a model of knowledge production that looks to enhance the potential of stakeholder participation in flood management practices in Ireland. The wide-ranging way in which information and meaning develop alongside during the

case study evaluation leads to a greater unravelling of the significance of these findings (Garavan, 2013).

Flood management concerns are related to a varied number of factors and dimensions. Environmental, political, economic and even cultural components have a strong influence on flooding issues. Bearing in mind this complexity there is a need to merge and negotiate conflicting knowledge and positions. Krohn (2010) states that taking a case study seriously entails a form of learning that is significantly different from the more traditional views of deductive or inductive methodologies. Case studies place value not on a single research process but on grasping the complex configurations at play, and assessing mechanisms and capacities (Bennett and Elman, 2006, Krohn, 2010). Case studies normally rely on a variety of data collection techniques to help them both refine and answer the research questions. At the analysis stage the same is true and different methods are again used to enrich, qualify and inform the process.

Complexity and contextual richness then are two key qualities of the case study approach. There are a number of methodological challenges in adopting a method that embraces complexity. There is invariably a degree of tension between the different understandings emerging, their specificity and uniqueness and what they can tell us more generally about the problem being studied (Krohn, 2010). Externally the tensions are visible between the focus on place-specific contexts and the search for knowledge that can be applied to other contexts. Internally the tension emerges from applying different knowledges to a storyline, which inevitably leads to the existence of conflicting and contradictory positions (Flyvberg, 2006). Many scientists have questioned the effectiveness of case study methodologies to generate knowledge applicable elsewhere. It has often been noted that case studies lack focus and strategy by engaging with the numerous subtleties and narratives within the case. Flyvberg (2006) in his influential article about case study research addresses these two issues.

First, the idea that knowledge should be churned into generalizable theories is an enduring assumption, he argues, but one that should also be questioned.

Generalizable knowledge should not be the ultimate and singular objective of research; place-specific and contextually rich understandings are valuable as well. Furthermore, generalization issues are dependent on the type of questions being asked and how they are formulated. The questions over participation capacities and their interactions with flood management mechanisms are a type of problem which suits the approach. It is valid in a number of ways; for example, it can be used to dismiss widely held assumptions over the role of participation in flooding. The second argument Flyvberg poses responds to critics of case study methodology which have identified an inherent tension stemming from unresolved complexity. Engaging with too many singular storylines is often seen as a limitation in cases studies designs due to conflicting narratives. Flyvberg (2006) addresses this problem by again questioning the assumption that research needs to provide closure and develop answers to the many problems encountered. Emphasis on detail the author argues is in itself a form of understanding without the need for closure and the case study itself in many ways can be seen as an end result.

3.3.1 Multiple case study approach

This research adopts a specific multiple case-study approach (Yin, 2003; Babbie, 2010). The multiple case study approach is used in this instance as the means to capture a wider set of experiences and contexts which prevail in the overall context of flooding in Ireland. This approach brings three added components to the research: 1) it adds a comparative dimension to the study of floods in Ireland; 2) it widens the contextual background of the research by drawing information from two different case study evaluations which provide a chance to validate findings; 3) it expands the potential of the study to put forward more generalizable conclusions with regard to flooding conditions in Ireland (Yin, 2003). The case studies are based on two interlinked levels of investigation. The first is aimed at exploring the role of public participation in flood management in Ireland and the second is to critique existing flood management strategies in Ireland from both a policy perspective and from a consideration of grassroots perceptions on this matter. This second sub-unit level of analysis provides an anchoring for establishing a more holistic

understanding of how participation fits in within the wider flood risk management strategy arena (Yin, 2003).

Introducing the urban and rural areas as distinguishing characteristics enhances the comparative component of the two case studies explored. The different interactions associated with rural and urban backgrounds are relevant as they represent a greater awareness and exploration of cultural, political and environmental diversity (Cloke, 2006). Rural and urban differences can be driven by a variety of qualities such as land use practices, stakeholder composition, infrastructure, geographical dispersion, livelihood characteristics and policy focus (Cloke *et al.*, 2006, Morris and Wheeler, 2007). The value of introducing this dimension to the study lies in the many implications that this sort of variety has on people's cultural and practical ability to handle flooding problems (*ibid*). It also represents differing exposure to flooding, policy focus and environmental conditions (Morris and Wheeler, 2007). Rural areas are seen to be in relative terms characterized by lower population density, availability of open spaces which provide greater flood storage opportunities and a more self-sufficient form of land use management undertaken by local farming stakeholders and stewards (*ibid*). Urban areas on the other hand are in relative terms characterized by higher population densities, larger concentration of infrastructure and buildings, less permeable land and natural storm water storage capacity as well as a more complex man-made storm water drainage system which is often combined with sewage infrastructure (Morris and Wheeler, 2007; Saul and Ashley, 2007). This added variety is therefore important for providing a wider understanding of flooding overall in Ireland as it engages with a more diverse contextual dynamic. Each case study is treated individually for the purposes of data collection. However, in the data analysis and discussion processes there is a level of data consolidation, cross-case examination as well as comparison and contrast between the two different case study catchments (Yin, 2003).

The first case study undertaken was the Kinvara Catchment in South County Galway. This catchment has a long history of flooding which is associated with its unique karst based geological features. It is characterized by low population

density and small farming holdings. The Gort lowlands as they are often described have suffered numerous flooding episodes, which in some cases led to the isolation of the area for over 10 weeks. The last flooding event to badly impact this area occurred in February, 2014; previous dates include 2009, 2002, 2000 and 1995. The second case study area is the Dodder Catchment located in southern part of Dublin City centre and the greater Dublin areas extending to the Kippure Mountains. This area also has a long history of flooding. The historical legacies of highly engineered river sections and development on flood plain areas have led to enduring vulnerability to flooding. The area is densely populated and a hub for many businesses, services and institutions. The last flooding event occurred in 2011 and marked a sad historical record in the recent history of flooding in Ireland because it caused the death of two people.

3.4. DATA COLLECTION

Because the nature of the enquiry is to establish the range of meanings applied to flood risk management within particular bounded contexts (the study locations) data collection has been achieved through a range of methods. The data collection methods used are:

- Secondary materials
- Semi-structured interviews
- Focus group sessions
- Participant observation.

In total over 90 interviews were conducted, which were completed by 2 focus group and a number of observational materials. (see Appendix A for fieldwork log). There was no sequential method used in data collection; while secondary materials and observations were used initially to obtain a greater understanding of the background of each case-study, all methods were used interchangeably during fieldwork activities and complemented, reinforced or challenged the data collection process as well as the initial field engagement with findings.

3.4.1 The use of secondary materials

The use of documentary evidence and archival material is very common in case study research (Yin, 2003). This type of data offers the opportunity to gather certain information which may be valuable in terms of generating background contextual facts about the case study location (White, 2010); however, it is also a potential source of evidence which can confirm, supplement or refute data gathered from other sources (Yin, 2003; Heaton, 2008). This research project benefits from this data collection method in two ways. Firstly, the analysis of secondary material such as newspapers, policy documents and planning documents provides the opportunity to obtain important information concerning current policy strategies for the locality as well as more general background information concerning the study area. The use of secondary materials also provides evidence to sustain the selection of the case study areas. Finally a better understanding of issues specific to a locality has enabled a greater intimacy with the subject matter which has greatly enhanced rapport between the researcher and the research participants and to a large extent enabled a more purposive targeting of key participants in both case study situations.

The list of materials utilised is varied and has been the product of a comprehensive search for documentation and materials relevant to the study areas. Key policy documents were reviewed at both local and national level. Key local documents pertaining to the Dodder Catchment included:

- Down the Old Poddle. In: Clanbrassil Street 2, 22-33.(1973)
- Flood risk assessment and communication. Report of RIPARIUS First Workshop. (1999)
- A selection of extreme flood events - The Irish experience (2005)
- Progress Report on Extreme Event Pluvial Flooding 24th October 2011 (2011)
- River Dodder Catchment Flood Risk Management Plan (2012)
- Other minor reports
- Photographs provided by local residents
- Local newspapers pieces

- Several online materials (community Twitter pages, Residents' Associations' websites, comments and posts on social platforms).

Local documents pertaining to the Kinvara catchment included:

- Land Reclamation in South Galway (1991)
- An Investigation of the flooding problems in the Gort-Ardrahan Area of South Galway, Final Report to OPW (1998)
- Caves of County Clare and South Galway (2003)
- Review of South Galway Flood Study Report (2011)
- The western lowlands. Ground Water Karst. GSI (2013)
- Western CFRAM Unit 29- Galway Bay South East inception report (2012)
- Other minor reports
- Photographs and visual material provided by locals
- Local newspaper pieces
- Several online materials (Community Facebook pages, photos, comments on social platforms)

The use of secondary materials also included the review of key national based policy documents, which included:

- Report of the flood policy review group (2004)
- The planning system and flood risk management (2009)
- The management of severe weather events in Ireland and related matters (2010).

As detailed, the search included an extensive exploration of materials, which included online sources, national and local newspapers, exploration of policy documents and engagement with photographic materials provided by local people. The list of sources comprise existing documentary analysis of relevant policy papers, reports, strategic planning documents, documents that record past and existing levels of public participation consultation processes by the relevant local authorities; newspaper reporting of flood events in the locations,

as well as historic or other archival material that records details of local flooding events.

3.4.2 Advantages and limitations of secondary materials

Technological advances specifically in internet-based sharing platforms has meant that data sharing is widely accessible (Heaton, 2008) and has in this instance enabled greater access to secondary materials. The use of secondary data enabled primarily the profiling of the two catchments areas and allowed for a much greater understanding of the social and physical characteristics of the case studies. The review of policy documents was a key part of this approach however through informal data sharing with the research participants and the use of online resources collection of secondary material expanded substantially and provided support in targeting and contacting research participants.

In relation to problems associated with using this form of data collection it has been noted that it can be problematic to use data that has been collected for other purposes. In terms of fit it might be misleading to take data out of its initial context (Heaton, 2008). While very rich in content online sources can also be unreliable, especially the social based platforms such as Facebook and Twitter. For this reason most of the secondary material obtained through informal sources is largely utilised to help contextualize and gain background information on the two case study areas and does not substantiate primary findings or interpretations of the findings.

3.4.3 Focus Groups as a participatory method

The focus group is chosen as an exploratory vehicle (Fern, 2001) which aims to learn about local shared perceptions and experiences of flood management. Focus groups occur in a less structured environment, and within an interactive context they can prove to be a useful tool for gathering data about more subjective experiences (Barbour, 2007), and also in relation to power relationships and the construction of meaning (Wilkinson, 1998). In comparison to individual surveys and interviews, the multiple membership of focus group discussions facilitates interactive development and clarification of participant responses and have even been shown to encourage the stimulation

of new ideas; essentially focus groups can be generative as well as reportive (Breakwell 1990; Lewis 1992; Davies, 2013). Focus groups are especially useful for studying and evaluating communities since they provides unique access to a variety of perspectives and experiences (Wilkinson, 1998; Clare, 1999; Chiu and Knight, 1999; Linhorst, 2002). This is done in a context where individuals are involved in constructing their own views, by discussing their opinions and experiences with the other participants. This participatory method enables people to articulate their own beliefs and experiences and those of their communities. Additionally, the interactive environment facilitates the production of knowledge by the subjects through group discussion (Kitzinger and Barbour 1999; Barbour, 2007; Davies, 2013).

3.4.4 Focus group strategy and techniques

Focus groups are mainly targeted at drawing information from people in relation to shared experiences, attitudes, understandings and knowledge. Additionally in the context of this research the sessions look at generating knowledge to evaluate flood strategies and programs. This type of focus group purpose is generally identified in the literature as a phenomenological or experiential focus group (Fern, 2001). A number of characteristics and applications are part of this focus group strategy.

The phenomenological focus group strategy is normally formed via groups that are more homogenous (ibid). This is because the aim is to draw shared understandings of participants. The use of homogenous groups can to an extent limit the range of issues and positions that the participants discuss (Kellogg *et al.*, 2007). The core concern is therefore for the shared understandings of participants and not unique experiences and positions. In the case of this research there was, however, a conscious concern to highlight any significant conflicts arising with regard to people's perceptions and ideas, as it is fully acknowledged that communities or sections of communities are always necessarily varied with unique experiences and concerns.

The initial case study strategy placed a greater emphasis on focus groups as a key data collection instrument; however, experience on the ground soon began to suggest a degree of reserve on the part of participants to discuss their

experiences in a group setting. This reserve suggested that flooding can to an extent be a sensitive issue to people. This issue and further observations on people's attitudes to the subject is discussed in Chapter 5. The use of focus groups was therefore revised and more emphasis was placed on semi-structured interviews with which participants seemed more comfortable to engage. Two focus groups were carried out, one in each catchment area, both representing people resident in the areas affected by recent flooding events. The sampling methods utilised to choose and recruit participants are further outlined below in this chapter.

3.4.5 In-depth interviews

In-depth interviews are considered one of the most important data collection instruments when conducting case study evaluations (Yin, 2003). Interviews in this instance have been selected as the principal element of the data collection strategy utilised in this research. The interview process consists of a conversation with one or more participants (Garson, 2002; Hennink *et al.*, 2011). In the case of this research, interviews were conducted with a range of participants, chosen to reflect their positionality on the issue, in order to establish in-depth understandings of the nature of flood risk management and also to further explore issues of consensus and contestation, the identification of which is integral to developing participatory management strategies.

Discussions were framed by a semi-structured interview process which is both targeting specific themes and ideas but at the same time aims to allow a degree of spontaneity which helps draw unexpected ideas and experiences the participants might have (Garson, 2002). There was, therefore, a pre-structured plan developed for each interview (see Appendix B for a review of guiding script for interviews) which was flexible and progressed according to the participant's inputs and own experiences (Wengraf, 2001). It was part of the strategy to allow the interview to take a different course other than the structure pre-designed if the researcher deemed the material interesting and valuable for the overall case study evaluation (Gray, 2009; Babbie, 2010). The role of the interviewer in qualitative semi-structured interviewing is very important for both framing the direction of the interview in line with the research objectives

while at the same time taking care not to stifle spontaneity and indeed overly lead the topic and bias the interview content (Wengraf, 2001; Babbie, 2010). Active listening techniques and prompts were subsequently used during the interview in order to promote interest and facilitate more in-depth discussion of themes (Gray, 2009).

In general the interviews were based on open-ended questions informed by a number of pre-identified themes:

- Contextual and historical background
- Flood awareness and knowledge
- Perceptions of state led flood risk management activities (both local and national)
- Community participation practices
- Engagement between communities and government in relation to the different functional areas of a disaster (i.e. prevention, response and recovery)
- Entitlements and responsibilities.

Because there was flexibility exercised in terms of the structure of the interview and an effort to accommodate and facilitate various forms of interaction with people the type of interviews varied substantially. From more formal and structured templates using an interview script to guide the process to a particularly informal setting where interviews took the form of narratives and oral histories and some interview were not audio recorded. Interviews were carried out both face to face and on the telephone. The duration of the interviews was also varied, the average interview lasting approximately 50 minutes. However there were shorter interviews which only lasted 20 minutes and at the other extreme there were also 5 interviews which lasted over 2 hours and one which was over 3 hours long. Additionally most interviews were conducted with individuals however there were also 6 group interviews conducted which entailed 2 people along with the interviewer.

3.4.6 Advantages and limitations of in-depth interviews techniques

The use of interviews is extremely valuable for obtaining in-depth knowledge of a person's experience and ideas in relation to a particular topic. It is also an

opportune environment for attaining clarification or verification of answers that may be unclear which would not be the case in the use of questionnaires or surveys (Gray, 2009). However there are a number of limitations which are common in the use of interviews which should be highlighted. Interviews are time consuming and therefore limit the amount of people that can be reached using a different data collection method such as the survey. The dataset sample is therefore much smaller and some would argue less representative of the general population than the survey or questionnaire technique for example (ibid). Interviews also require flexibility and a high level of skill to keep the interview frame within the research theme without leading or restricting the interviewees' concentration and spontaneity when sharing his/hers stories and experiences (Hennink *et al.*, 2011). There were over 90 interviews conducted in the case studies and this sample is considered adequate given the large quantity of material collected for this data source as well as other materials. As may be expected some interviews were more successful and more fruitful than others but this variety in response and reaction made the data collection richer, for example flooding can be a sensitive issue for some people and on two occasions the emotional dimensions of loss and blame strongly illustrated the deeply human side of flood impacts.

3.4.7 Observation

Observation is the final data collection instrument utilised in the research. The use of observation is identified as an important element of data generation as it provides material which is valuable in terms of the added dimensions it offers the overall case study examination. Observation is commonly seen as a valuable technique to acquire information which transcends in many cases people's perceptions and attitudes by seeing them played out in practice (Gray, 2009). In other words observation captures a more dynamic study setting by looking at movement, action and other visual factors of importance. For this research, a number of observation techniques were used and applied at different stages of the fieldwork. First, direct observation was utilised as a stand-alone technique mainly through informal observations of the case study area (Yin, 2003). These observations were used as contextual and background information for the case study evaluation. Direct observation is beneficial for

providing and conveying important contextual and background information through photography and descriptive reporting (ibid). Another important phase of observation was done at the recruitment stage of the research. ‘Door knocking’ has been identified by Davies (2011) as an extremely fruitful phase to gather observational material. Davies argues that this stage of the research is often neglected but it offers the opportunity to gather valuable observational data with regards people’s community setting, relationship with neighbours and initial responses to the research ideas as well as a more general sense of perceptions on flooding issues in the locality. Davies (ibid.) further argues that even those who decline to participate often provide a variety of information with regard to why they think the topic does not apply to them, or why they do not wish to participate which in itself leads to insights regarding the way people relate to the topic being discussed. This approach was extremely relevant for the collection of data for this research; knocking on doors totalled inputs and impressions of an additional 200 people and it enabled a much greater understanding of how local people and specifically those not directly affected by flooding perceive this problem within their own environment and communities. It also provided hints and information that allowed more targeted access to influential stakeholders within the community such as community leaders, political representatives and target areas seen as particularly vulnerable within the community.

Finally observation also entailed a number of guided tours to sites specific areas in both catchments. In the Kinvara Catchment local farmers and local cave divers gave guided tours of site specific areas which helped significantly to understand the complexity of the system. These tours were a crucial insight into the profiling and understanding of the environmental circumstances of the catchment and without the support of local people this would not have been possible. Three guided tours were undertaken in Kinvara which lasted from 2 hours up to 5 hours. These expeditions covered many areas of the Kinvara Catchment, including the Slieve Aughy Mountains. In the Dodder catchment two participants also provided guided visits to particular sites. These were minor compared with the ones conducted in Kinvara. One guided visit was

carried out along the Ringsend area and lasted 30 minutes and the other in Ballsbridge which lasted also around 30 minutes.

3.4.8 Collecting and recording observational material

In order to guarantee an adequate level of accuracy to the observational material being gathered a system has been adopted which provides both a template and a structure for the way that data is both collected and recorded. This method has been adapted by the systems suggested by Gray (2009). The method involves three main stages for collecting field notes.

- An initial chronological log where raw data is written down which includes observation, photography and detailed records of issues observed.
- The second stage involves a more critical reflection of the raw material gathered and additional recall of information.
- The third stage involves a pre-analysis of the material produced where main themes and insights are identified.

3.4.9 Advantages and limitations of observation techniques

The main advantage of the observation methods is that it allows the researcher access to information that would be difficult to acquire by utilising other methods. It also complements data collection by adding valuable inputs concerning the dynamic contextual background that frames people's interactions and relationships. There are, however, a number of disadvantages which relate to researcher bias and ability to record accurately the information being observed (Neutens and Rubinson, 2010). These limitations have been handled throughout the fieldwork by adhering to a system of observation that is detailed and precise in the forms of observations that are recorded (Gray, 2009).

3.5 DEFINING THE CASE STUDY POPULATIONS AND SAMPLING TECHNIQUES

3.5.1 Case study areas: Selection strategy

The two case studies have been chosen because they have been deemed representative of the on-going problems associated with flooding in the

Republic of Ireland. They are also illustrative of specific public participation traditions which impact on the role communities have in the area of flood management. As outlined in Section 3.3.1 above, the two sites chosen are the Kinvara Catchment area in Co Galway and the River Dodder Catchment area in Dublin. The two areas have a history of flooding. Both are the focus of specific flood management plans developed by statutory authorities which are reflective of a number of policy perspectives and applied interventions and practices on flood management (thus enabling an examination of policy from the level of formulation at central government, through to its interpretation at local authority level, through to its actual implementation at local level). Both areas contain a number of zoned ordnances, reflecting an associated range of land uses and activities, including residential, agricultural, and commercial. A detailed profile of the case study areas is provided in chapter 4.

3.5.2 Participants: Selection strategy and sampling frame

The participants for this case study were; a) those who have been directly affected by flooding incidents in the study areas, and who were selected on the basis of their relationship to the study location using the different zones, e.g. whether they are residents, whether they are involved in agriculture, commercial or industrial activity, whether they are involved with amenity or recreational spaces, or a combination of these; b) those involved at institutional level in current flood management strategies that impact directly upon the study area, i.e. local authority officials such as engineers, planners.

A list of key stakeholders was developed to facilitate selection and sampling frames. The sampling frame is mainly focused on the local level flood management activities and participation although there are some national bodies represented as well. The list is extensive and highlights the focus on the local arena as the area under investigation in terms of flood management participation. The selection process began with the identification of participants that were representative within these groups but was continuously re-evaluated by the participation and through the suggestions of local groups, and the process was therefore open for change with additions and changes being made where necessary.

Local level representation includes:

- Local authorities;
- Local government bodies,
- Local Councillors
- Local economic stakeholders
- NGOs working at the local levels
- Farmers and landowners
- Resident association and local community groups
- Other local residents
- Other local interested parties and citizens

National level representation includes:

- National flood agencies (OPW;
- Other state agencies (NWPS)
- NGOs at national level
- Other national interested parties and citizens.

Sampling is important to ensure that it reflects as near as possible the full range of opinions and perceptions of the group. The sampling scheme should ensure this diversity (Barbour, 2007). The sampling frame utilised for the fieldwork involved both purposive sampling and snowball sampling techniques. Purposive sampling was utilised to ensure access to the communities involved, such as the identification and engagement of key members of those communities. Initial identification of affected localities and community groups established in the area was used as a source of contact. A purposive sampling technique was also used for access to key flood management decision makers. The snowball sampling technique involved asking the known members of the group to reach out to the other members and invite them to participate in this study (Berg, 2007). The establishment of rapport with members of the community led to increased access to people affected by flooding belonging to the different stakeholder groups identified in the list above.

3.6 DATA ANALYSIS STRATEGIES: THEMATIC ANALYSIS AND DISCOURSE ANALYSIS.

Two main techniques of data analysis were used in order to adequately portray the rich variety of data collected in the two case study evaluations. These are thematic analysis and discourse analysis. The two different techniques not only provided different ways to communicate the knowledge acquired during fieldwork they were also interlinked in that the initial thematic analysis provided a stepping stone for the development and the maturing of discourse analysis themes and insights. The thematic analysis method was therefore used as a technique for both sorting and transmitting knowledge acquired in fieldwork but also as a way of building into another different form of analysis, i.e. discourse analysis.

3.6.1 Thematic analysis

Thematic analysis is a data analysis technique which in general terms enables the researcher to identify patterns and themes in the data set and subsequently it provides categories for analysing and reporting this information (Daly *et al.*, 1997; Braun and Clarke, 2006). Thematic analysis is a widely utilised method in qualitative research however the strategies employed can vary substantially (Wengraf, 2001; Braun and Clarke, 2006; Massey, 2011). The use of this method of data analysis has been considered beneficial in terms of evaluation of community level interactions and practices as it allows for engagement with different levels of information such as community perceptions, practices and values (Massey, 2011). Best practice guidelines on conducting this form of analysis argue that this method requires a balance between a pre-defined step-by-step strategy coupled with an iterative process where categories, concepts and ideas are refined (Braun and Clarke, 2006; Fereday and Muir-Cochrane, 2006).

Massey (2011) argues that when employing thematic analysis three distinct types of data emerge. These are:

1. Articulated data
2. Attributional data
3. Emergent data

Articulated and attributional data types are mainly theory driven but there are differences between the two types. Articulated data is defined as data that illustrates a more direct and defined response to specific themes and research questions such as descriptions and observations. On the other hand Massey argues that attributional data is less direct and requires the development of measures and indicators to assess a specific dimension of a topic being discussed. The final data type is emergent data and this signifies the need to have flexibility in the analysis process in order to allow new findings to emerge. Making the distinction between these different types of data the author argues allows for a more precise understanding and evaluation of how the findings link with theoretical assumptions as well as new forms of knowledge which may either challenge or enrich the theoretical basis of the research (ibid). The interview and focus groups script where specific themes and indicators were identified provided the basis for the initial stages of the analysis process and it also allowed an understanding of the different data types as per the discussion above.

The thematic analysis also entailed a phased process as suggested by Braun and Clarke (2006) in order to undertake a more systematic and comprehensive analysis of the data material. The six stages proposed by the authors are:

1. Initial familiarization with the data
2. Generating tentative codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report.

Taking these guidelines as a framework to inform the data analysis process the refining and growth of data was facilitated while at the same time having a structure which allowed for an evaluation of the theoretical implications of the data analysis and the themes encountered.

3.6.2 Discourse analysis

Discourse analysis is an interpretative tool which can be used to focus enquiry on knowledge and power relations as a means to identify and critically explore

how ideas and understandings are produced and reproduced around a particular subject matter (McHoul and Grace, 1993; Hajer, 1995; Saraga, 2001; Carabine, 2001, Stanley, 2006). In this case it is applied to public participation in flood management strategies. Discourse analysis is based on the notion that any given subject matter is socially constructed (Hajer, 1995; Saraga, 2001). This perspective focuses on the underlying social processes of knowledge and power relations in its treatment of data. This form of analysis first and foremost looks beyond the truth-bearing statements, the hard facts and the impartial observations made on particular topics and focuses instead on their social and political foundations as well as the effects they have over time (Carabine, 2001; Hall, 2003). This exploration of how issues are ‘spoken of’ unfolds a range of knowledge making processes, and it expands our understanding of a particular issue into other important dimensions such as new views of how patterns of development emerge and how relationships are forged (ibid).

Discourse analysis is able to unfold these numerous layers of understanding by drawing cause and effect links between the statements and concepts informing knowledge of any given issue and the ‘real life’ interactions that we witness. In other words discourse is seen as a productive process which has a great deal of influence on how we understand the issues impacting our lives as well as creating real life structures and relationships which further consolidate the establishment of particular ways of viewing the world (ibid). The idea is therefore that knowledge of a subject such as flooding is defined by particular statements and constructs which influences the type of actions taken and which ultimately results in real life experiences being inherently encased by a specific mind-set. In this perspective the idea of power is important as it allows a critical understanding of the ways in which dominant discourses gain control over how society, communities and individuals interact with the issues that affect them (Hall, 2001). Influential social theorists such as Foucault have shown how through discursive processes, our social institutions and the policy agendas that we define as well as our physical environments echo a particular vision of the world (ibid).

Discourse is a dynamic concept and the processes of discourse formation as it is defined in discourse analysis are varied. The specific method employed here

emphasises two specific dimensions. The first is an appreciation of the ways in which issues are represented through a combination of statements and activities, which in turn provide meaning and generate a collective understanding. Discourse analysis identifies this as a process of normalization, which reinforces and regulates social behaviour and interactions (Carabine, 2001). This process establishes standards and norms for what is considered normal, and bases information and decision making on these standards. By looking at the process of social construction of meaning around flooding and public participation in flooding issues we can identify which statements and ideas have been most prominent in the social arena, how they are defined and also explore the existence of conflict in this collective understanding (Saraga, 2001). The second dimension relates to how discourse has real effects on the world. This form of analysis explores the material effects of discourse on the ground (Hall, 2003). These include public interactions, practices, interventions, institutional arrangements among others which eventually cascade into an effect on the physical world. For the current exploration of public participation's role in flooding matters this dimension allows for a critical engagement with the ongoing capabilities of stakeholders and how they can be improved through challenges of established paradigms. Additionally the last dimension provides a view of how discourse can manipulate and combine elements of common meaning and visions of the world, to legitimize desired outcomes (Carabine, 2001). This issue is particularly relevant for unravelling potential inequalities and struggles in society. Discourse analysis is a very effective tool for critiquing deep rooted assumptions of the world which favour and protect a group in society and leave others unheard (Hajer, 1995). The data analysis strategy for this research is aimed at interpreting the history and progression of public participation in flood management strategies in Ireland through the lens of discourse analysis (Carabine, 2001, Stanley, 2005). This perspective enables an understanding of the context in which flood management issues operate and how they have changed over time; what ideas, what institutions and what procedures dominate this issue and ultimately how people are enabled and/or limited by these dominant discourses.

3.6.3 Discourse analysis strategy

In the same manner that thematic analysis followed a structured and phased process as identified in best practice guidelines in the literature so does the discourse analysis follow a process which comprises different elements and allows for a gradual exploration of the data material. This strategy (adapted from Carabine, 2001) is outlined below in the form of a step-by-step description of the different elements of the analysis that were included in the process in respect of this research (Table 3.1):

1	Topic	Identifying the sources of data to be analysed which includes policy documents, photographic material, participant observations, interviews and focus groups with all relevant stakeholders.
2	Knowing the data	Becoming familiar with all the material collected by critically reading and re-reading all sources of data.
3	Identifying themes	As identified in the thematic analysis section
4	Discursive relationships	Exploration of data for evidence of specific inter-relationships between discourses
5	Discourse strategies	Identifying specific strategies and techniques used in current discursive practices
6	Absences and silences	Looking for absences and silences provides the opportunity to identify possible marginalised areas of concern
7	Counter-discourses	Identifying counter-discourses entails the engagement with on-going challenges to dominant approaches and perspectives on the issue.
8	The effects of discourse	Exploration of data for the effects of discourse on public capabilities, institutions and the environment
9	Context1	Context 1 provides an outline of the background to the research questions
10	Context 2	Context 2 contextualizes the material for the perspective of power/knowledge processes

11	Limitations	The final step entails a critical engagement with the limitations of the data and sources used and the research scope in general.
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Table 3.1 adapted from Carabine (2001)

Table 3.1 illustrates that this is a gradual process of analysis which starts with the review of the literature and documents, entails an understanding of the contextual circumstances at play and culminates in the evaluation of the material collected and theoretical implications of this approach. It is therefore a process which develops alongside all the stages of the research work. Additionally the focus on specific questions for interrogating and problematizing the use of dominant discourses followed suggestions offered by Hajer (1995). The author suggests that the exploration of discourses should entail 3 dimensions which include: 1) explore how issues are understood, 2) look at how they are inscribed in governing institution and 3) identify the implications these have.

3.6.4 Processing and organizing the data

The large quantity of material collected required different approaches to data organisation. The main empirical material derived from interviews and focus groups in both catchments. The majority of this material was audio recorded and /or inserted in the fieldwork diary. All audio material collected during the focus group sessions and the interviews were transcribed (see Appendix C for a sample excerpt of the transcripts). Most of the details in these transcripts were recorded; however, repetitions, pauses, tones and laughs as well as other interruptions were not recorded unless they were deemed valuable to the content of the conversation. The transcription process also entailed note taking and comments on the preliminary findings emerging, when the transcripts were finalized these were read and further notes and reflections were added to the transcribed material.

3.7 ETHICAL CONSIDERATIONS

The institutional guidelines informing research ethics protocols in the National University of Ireland, Galway act in accordance with the *Declaration of Helsinki*. In consonance with these overarching principles additional supporting protocols in this

institution are also informed by more specific guidelines developed by the relevant professional organizations and disciplines. The international code of ethics provided by the Association of American Geographers (AAG) through their *Statement on Professional Ethics* (2009) offers a number of key guidelines and standard operating procedures which ensures adherence to optimum research conduct and the safeguarding of ethical research practices within the context of geographical enquiry.

The field work conduct followed in this project and the treatment of data is in observance with the mandate and stipulations of the National University of Ireland, Galway ethics guidelines. These include a considered approach to participant recruitment and due care and protection of all research participants; namely through integrating in the research strategy a pre-involvement orientation structure which was dedicated to providing participants with clear details regarding:

- Research project description,
- Researcher background information,
- Contact details for future reference,
- Highlighting full control and entitlements of participants in the interview/focus group process in terms of scope and if required withdrawal from the project
- Assuring full anonymity for those involved.

Written consent was also sought prior to carrying out interviews and focus groups. A research information leaflet and a consent form were developed for these purposes (see Appendix D and E).

Anonymity steps were taken to ensure that participants are not identifiable. This included coding the data, not disclosing material which could help identify participants and keeping the detailed transcripts off limits for general public scrutiny as these contain material and disclosures that can potentially allow the identification of participants and other data which is sensitive in nature. In this instance the code of ethics of the AAG further cautions that owing to the interdisciplinary nature of geographical research due care should be taken in terms of data being co-opted for other uses.

At all stages of the project interaction with participants proceeded in a sensitive and humane manner which entailed careful consideration of the well-being of all those volunteering or participating in the project as a priority above all else.

3.8 CONCLUSION

Overall the research methodology signals a concern with developing measures and techniques which are appropriate for the theoretical approaches underlying the research project and which allow in a robust manner to strategically gather the necessary information. The case study approach is identified as an ideal research approach by facilitating and encouraging the use of multiples sources of information.

Fieldwork activities have included semi-structured/ in-depth interviews with over 90 participants, 2 focus groups interactions, a variety of observational material which extended insights of an additional 200 people and finally activities also included the exploration and analysis of secondary material. The methods informing empirical research activities are qualitative in nature and are given greater emphasis to the context, meaning and understanding of the material gathered and explored. The constructivist perspective has informed the development of the research questions and the thematic and discourse analysis tools utilized complement the theoretical framework design by providing a contextual and discursive exploration of the material gathered.

Chapter Four

Profiling community experiences: national policies in local contexts

4.1 INTRODUCTION

The development of flood management policy in Ireland has been influenced by the ever increased recurrence and impact of flooding in both urban and rural areas. Responding to these extreme events, there have been advances in the way flood management is tackled. In general terms these new policy developments demonstrate a concern for creating a national plan which is informed by a knowledge baseline and a management framework. However as evidence illustrates in this chapter, the political cycle informing current flood management practices in Ireland is a relatively recent process. There are limitations of note in current strategies and drawing on the concept of discourse analysis in particular in terms of contextualizing the empirical and secondary material from the perspective of power/knowledge relationships this chapter aims to provide a review of policy at local and national levels which offers a detailed evaluation of flood management policy in Ireland. The local policy review materials presented are approached through an emphasis on local context and community based experiences. The approach examines policy through this local based lens in order to ground policy evaluation on locally based experiences and perceptions. This chapter is divided into 3 sections. The first section provide an overview of flood policy at national level and the two sections aim to provide a profile of the Kinvara and Dodder catchments, which includes an account of flood management practices and policies in each area.

4.1.1 The recurring experience of extreme flood events: the 2009 flood event in the Kinvara Catchment.

November of 2009 was a time marked by extreme flooding in many parts of Ireland, especially along the River Shannon, the West and the South West Regions of the Country (Met Éireann, 2009). The direct impacts of flooding resulted in several rivers and streams bursting its banks, structural defence failures, overloaded urban drainage systems and water encroaching on residential, agricultural and industrial settlements. Along the country insurance

claims added up to a record sum of €244 million and the state bill for this event has been said to be around €276 million. Met Eireann records show that rain was over three times higher than usual for November, this was compounded by extreme rain peaks on the 18th and 19th of November (ibid).

Flooding at this time had disastrous consequences for many home owners, businesses, and infrastructure and as a result it severely strained existing coping capacities in the area. The Kinvara Catchment in South Galway was one of the worst affected by the floods. During the initial stages of the flooding event some people needed to be evacuated from their homes, others were marooned for several weeks. Road closures were another problematic issue in the area; several local and regional roads were under water for a number of days and secondary roads in rural areas remained flooded for a considerable time; in some instances lasting for over two months. Commute to work and school were highlighted as extremely difficult, some taking over 4 to 5 hours daily. The N18 dual carriageway from Oranmore to Gort was flooded in many parts, as was the newly restored railway link from Limerick to Gort. During the fieldwork activities which started in March 2012 and ended in October 2012, three families in the area had still not returned to their homes and remained on temporary accommodation with the financial support of the Local Community Welfare Officers, waiting on a decision from the lead agency, the OPW, with regards potential state funding towards the reconstruction of their homes or a relocation support.

For these families and others like them the impacts incurred had been considerable and in many cases the recovery from the flooding of 2009 had meant starting over and accepting the loss of a home, personal belongings and livelihood arrangements. Volunteer groups working in the Kinvara Catchment noted that even though the area has a history of flooding, in the aftermath of 2009 there were concerns over people's mental wellbeing, and the risk of suicide was seen as a problem emerging from the impact of the floods that was not there before in other flood events. What is more this flood event was immediately followed by an extreme cold spell which made it considerably harder for local people to start the recovery process from the flooding. For

many people the floods of 2009 represent a new cycle in their life in these localities as their experiences of loss, fear and isolation changed their relationship with the locality and its community.

4.1.2 The new meaning of floods: moving beyond past experiences and capacities: The 2011 flood event in the Dodder Catchment

October, 2011 was also a time marked by flood devastation. Following a month of unusual heavy rain, on the 24th of October, Dublin City experienced extreme rainfall between 4 and 7pm (Dodder CFRAM, 2012), Met Eireann states that half of the month's total rain fell in a number of hours (Met Eireann, 2011). This extreme and sudden period of very heavy rain culminated in a flash flood discharge which had devastating consequences for people in the area. The most tragic result of this flooding was the loss of two lives. These devastating losses raise significant concerns over Ireland's growing vulnerability to flooding, as the loss of life marked a historical precedent in terms of flood impacts in Ireland.

Many rivers running through the city such as the River Dodder, Poddle and Swan burst their banks. The urban drainage capacity of the city was also overwhelmed and both caused major damage to homes, businesses, schools, hospitals, banks and infrastructure. Insurance claims for this period total €127 million (Insurance Ireland, 2013). Current figures reveal that over 1008 properties were reported to have been flooded in Dublin City and there were also reports of 318 roads being significantly flooded (Strategic Policy Committee, 2012). The Dodder catchment area was one of the worst affected. Businesses and residential hubs in the Dodder Catchment were severely impacted. The newly built Dundrum Shopping centre was one of the many business areas badly impacted by the floods. Here the water came through the back of the shopping centre from the River Slang. The flood was caused by an overflow of water from the newly channelled sections of the river, which had been put in place only recently to give way to the shopping centre itself. Flood waters stayed for at least 48 hours in the area. This instance illustrates the fact that flooding is frequently a legacy directly related to development and planning choices of building in flood prone areas. Because of the flash floods many people had to leave their homes; the speed of the rising flow of fluvial

waters and sewage wastewaters surprised residents which left very little time to salvage belongings and in many cases even for people to find safer ground; as was unfortunately the case with the young nurse that died in her basement flat due to the flash floods and the off duty policeman that was diverting traffic from a crumbling bridge when the flood damaged structure suddenly broke down and killed him.

Highly engineered river systems and urban sewage systems were pushed far beyond their existing coping capacities. The flood event of the 24th of October, 2011 in Dublin which caused the death of two people now raises many concerns over community physical safety from floods whereas before concerns were more directed at material, property and infrastructural concerns. Again for many people the floods transformed their relationship with the locality, the river and their community.

While collecting field research these two accounts of flooding in the Kinvara and Dodder Catchments were still strongly present on people's minds. The fieldwork material is primarily based on experiences of these two particular events, but to lesser extent events previous to these as well. Recent flooding caused by a series of Atlantic storms in January 2014 has caused substantial damage across many parts of Ireland. The Kinvara catchment in particular was substantially affected. On this occasion coastal areas in this catchment were also exposed to considerable damage. As the fieldwork was finalized and the write-up process was near completion these events will not be introduced further in the findings but they reinforce the on-going exposure of these catchments to flooding.

4.2. FLOOD RISK MANAGEMENT IN IRELAND, NEW POLICIES OLD POLITICAL STRATEGIES

Strategies to deal with the problem of floods have been in place for nearly two hundred years in Ireland. However the scope of these strategies was very different from objectives informing contemporary decisions. Historically flooding approaches were directed at improving and reclaiming land for agricultural purposes (O'Brien, 1941; Bruton and Convery, 1982). The series of Arterial Drainage Acts sanctioned over the years (1842, 1867, 1925, 1928,

1945 and 1995) are representative of the evolution of state involvement and contribution to flood prevention. For many years legislation concerning land drainage practices was focused on rural areas. With the introduction of the Arterial Drainage Act 1995 amendment, the existing flood prevention authorities were given extended powers to tackle localised flooding problems. This amendment focused on providing much needed relief work in residential and urban areas (OPW, 2011a). However, the creation of a cohesive national plan was not a concern at this time. These pieces of legislation developed with the limited remit of reclaiming agricultural land, maintaining localised flood prevention structures and providing flood relief, were always a partial solution to a growing problem. The inadequacies of this unstructured approach were made evident as increased urbanization, demographic growth and economic pressures considerably exacerbated Ireland's vulnerability to flood disasters. OPW records of extreme flooding events show that since the mid 1990's Ireland has been experiencing greater impact from flooding episodes. Some of the major events include:

- 1994: Severe flooding in South Galway (west of Ireland)
- 1997: Major flooding, Co Tipperary (south of Ireland)
- 1999-2000: Extreme flooding along the River Shannon (west and south of Ireland).
- 2000: Severe flooding affecting most parts of Ireland.
- 2002: Tidal flooding in Dublin (east of Ireland).
- 2004: Major floods in South-East Ireland.
- 2009: Severe floods affecting most parts of Ireland, worst affected in west and south of Ireland).
- 2011: Flash flooding event affecting the greater Dublin area
- 2014: Atlantic storm surges and extreme flooding due to prolonged periods of rainfall, affecting many parts of Ireland.(OPW, 2011b)

Flooding as a contemporary public policy issue in Ireland is still in its early stages and the emerging policy cycle process is less than 10 years old. Challenges to the more ad hoc and uncoordinated approaches to flood management in Ireland only became apparent in 2002. The issue of flood

management was propelled into the policy arena in the end of 2002 by the then Minister of State at the Department of Finance (with special responsibility for the Office of Public Works), Mr. Tom Parlon, In his foreword statement written for the *Report of the Flood Policy Review Group* (2004), Mr. Parlon asserts that in 2002 he became concerned over the state's unclear role in managing flooding which he adds was made more evident by a series of damaging flooding episodes impacting the country in October and November of that year. A review group was thus set up in the end of 2002 to assess the existing capabilities of state institutions to deal with floods and to make policy recommendations to overcome any limitations identified.

The review report published in 2004, confirmed the lack of research, state input and institutional capability to handle flooding issues. A number of recommendations were put forth in the report to improve flood management approaches. These included the use of risk assessment and management as a framework for tackling flood problems, recommending the appointment of the OPW as the lead state agency for delivery of flood risk management policy, suggesting the introduction of a catchment based approach, and flagging the need for more non-structural measures to tackle flooding (OPW, 2004). The government subsequently moved to adopt the key recommendations of the report. The task of developing a national strategy for flood risk management in Ireland was henceforth assigned to the OPW. This is the state's principal engineering division with a historic background in water engineering projects such as arterial drainage schemes and flood relief schemes (OPW, 2011c).

These initial steps brought the problems of flood management to the government agenda and identified the need to provide a more integrated approach to flood management (Jeffers, 2011). It can be argued however that it was with the influence of the EU that flood management in Ireland was taken to the next level, i.e. the phases of national policy formulation and implementation. The EU Floods Directive (2007) put forth a series of requirements compelling member states to develop national policies and strategies in relation flood management. Compliance with the requirements of these directives represents a pioneering exercise in the formulation, legitimation and implementation of a national flood risk management strategy

(Jeffers, 2011). These EU rulings have stimulated and strengthened the need to create a national flood plan, its pressing targets and time limits have secured the status of flood management as a live policy issue. Flynn (2007) argues however, that often Ireland adopts the sophisticated environmental policy frameworks and management instruments devised by the European Union without coming up with the structural capacity to carry out the work necessary. It is therefore a concern that highly developed legislation and strategies to deal with flooding may be undermined by the lack of institutional capacity to execute these plans in most areas pertaining to environmental policy in Ireland (Flynn, 2007).

Research focused on evaluating governance structures in Ireland has shown that the policy cycle in Ireland is hampered when it comes to the stages of policy implementation and enforcement (McGuirk and MacLaran, 2001, Flynn, 2007). Clientelism, corruption and lack of representation have been highlighted as issues which prevent the adequate implementation of strategies at local level (Callanan, 2005; Forde, 2005; AnTaisce, 2012). These problematic patterns can be explained through a specific form of political governance in Ireland which is often characterized by weak local authorities in comparison with its European counterparts (McGuirk and MacLaran, 2001). Political structures in Ireland are seen to be strongly influenced by a dominant central government in terms of legislative, professional and financial resources (Ó Broin and Waters, 2007; Pape *et al.*, 2011). Forde (2005) argues that most local government reforms while allowing for more power to county and city council managers has facilitated the development of administrative powers but has further inhibited local participatory interactions, through the ‘managed’ way in which participation takes place. Local authorities in Ireland are also seen not to possess the autonomy, resources and expertise essential for handling environmental policies, which they are invariably in charge of implementing, as is the case with flood management policy (Flynn, 2007). Flood management policy in this context is therefore marked by the distinct limitations of Irish government institutions. The implication of some of these limitations in terms of flood management strategies is further discussed in section 4.4 of this chapter.

4.3 THE FLOODS DIRECTIVE: FRAMEWORK INFORMING THE DEVELOPMENT OF IRISH FLOOD RISK MANAGEMENT STRATEGIES.

The EU Floods Directive (FD) was officially introduced in November 2007. It plays an important role as a European wide framework for flood risk management strategies. It can be argued that its relatively rapid conception and implementation was due to the devastating flooding events in central Europe in 2002 (Samuels, 2008; Mostert and Junier, 2009). This directive has firmly established the need to put forth a cohesive national strategy for managing floods in Ireland, as it requires member states to come up with nationwide (including coordination with border regions) flood risk management plans by 2015. The overarching aim of the directive is to institute in all member states a framework for assessing and managing floods using risk assessment and risk management tools

The Floods Directive is a document that sets out specific objectives and time frames. The implementation of the directive has been designed as a three stage process (Monstert and Junier, 2009). The main activities and timelines are; i) to undertake a preliminary flood risk assessment by 2011, ii) to produce flood hazard maps and flood risk maps for areas considered to be at risk from flooding by 2013, iii) and to devise flood risk management plans by 2015 (2007/60/EC, D.). Although there is a number of concrete aims and objectives the FD also leaves considerable scope for each member state to interpret and construct national and local flood risk management plans. Krieger (2013) using a comparative evaluation of the implementation of a flood risk strategy in Germany and England has demonstrated that in fact risk management approaches are influenced to a large degree by the institutional traditions and values of the implementing institutions. In Chapter 6 the discourse of flood risk management is evaluated in the Irish case using empirical evidence to highlight different dimensions and positions regarding this issue.

Mostert and Junier (2009) argue that the implementation of the FD requires extensive research because adequate plans are dependent on a vast range of information from an array of disciplines and subject matters. Some of the areas of information required are:

- the evaluation and use of ‘flood risk’
- mapping flood hazard and flood risk areas, providing comprehensive flood risk management plans (e.g. economic, social, environmental)
- handling uncertainty and lack of knowledge
- developing methods for promoting collaboration
- participatory research
- risk communication (ibid).

For certain EU member states some of this research and information was already available, in Ireland, this has proved to be a ground-breaking exercise. There have been significant advances and extensive research in flood risk management issues, but worryingly research is focused almost exclusively on technical, quantitative and hazard centred examinations. There is to date no comprehensive body of knowledge offering detailed information on the political, economic or social variables which are crucial for the adequate conception of flood management strategies in Ireland. The use of risk as an instrument for managing floods is by and large used uncritically. Current flood risk policy development in Ireland largely excludes debate or evaluation in terms of risk concepts and knowledge that looks at the links between risk perceptions, risk communication and Irish culture. There are however considerable gains for policy in terms of engaging with a more critical use of risk and the effects they have at political and cultural levels (Motoyoshi, 2006; Grove, 2010). Chapter 6 attempts to provide a level of analysis and critique of flood risk management in Ireland which challenges some problematic assumptions and practices using local based experiences and perspectives as a comparative approach.

4.4 UNPACKING WEAKNESSES IN THE INSTITUTIONAL FRAMEWORK OF FLOOD RISK MANAGEMENT IN IRELAND

The implementation of the FD is notionally the responsibility of the OPW; however is it clear that in practice it has a more limited role to play. As noted previously the OPW is the state agency in charge of developing and executing a national flood risk management plan. The OPW has a strong background in providing engineering support and expertise to government projects, its work

historically has been focused on the provision of structural protection measures against flooding (Jeffers, 2011). Evidence seems to indicate that the OPW's strength lies in working within a structural strategy framework. This serious weakness was made more apparent during the floods of November 2009. It is a widely held perception amongst the general public, the media and central government representatives that the impact of the heavy rainfall experienced during that time was aggravated by the lack of coordination between the several state bodies responsible for flood prevention, mitigation, response and recovery (ibid). Previous research on Scottish flood risk management practices reveals that the lack of a centralized system for flood management can be a problem which leads to inadequate strategic planning, however it is also argued that there may be advantages in facilitating a decentralized and locally-accountable decision-making process (Werritty, 2007). The circumstances in Ireland have similarities in relation to having a fairly fragmented approach to flood risk management, consisting of numerous agencies; however, as noted, it also has weak local institutions which significantly diminishes the possibility of a strong decentralized approach to flooding.

These extreme flooding events of 2009 culminated in the production of a report by the Joint Committee on the Environment and Local Government (JCEHLG) entitled '*The Management of Severe Weather Events in Ireland & Related Matters*' published in July 2010. The report focused on assessing the wide range of circumstances, activities and actors involved in the November 2009 floods. It identified a series of weaknesses and limitations in the state's procedures. The highlights of the report pointed to the absence of clarity with regard to the duties and responsibilities each agency assumes; this is especially true in relation to the role of the OPW as the lead agency in charge of all matters relating to flood management. During the report hearing the OPW emphasized that it is not the lead agency responsible for flood management response, instead it is the lead agency in charge of devising and implementing a flood risk management strategy (JCEHLG, 2010). What emerged from the 2009 floods is that there is a damaging lack of leadership and clarity concerning the crucial duties that each agency is supposed to perform. This sort of confusion in terms of roles and responsibilities was seen to be a prevalent

theme, and other bodies such as the local authorities also seemed unaware of their overall remit in terms of flood management activities (ibid). Other issues raised concerned the need to have a concerted effort towards linking the different activities and practices that impact on flood prevention, mitigation and relief, such as canal maintenance, road safety, land drainage, environmental conservation and housing and infrastructural development. It was found in the report that the OPW lacked adequate statutory powers to assume full leadership and responsibility for all matters concerning flood management in Ireland. Associated to this, as shown in the report, was the fact that the many agencies linked to the development and implementation of flood strategies such as local authorities, Fisheries Board, National Parks and Wildlife Services, National Emergency Management Unit, National Road Authority, Waterways Ireland and the Environmental Protection Agency had showed poor cooperation in terms of articulating commonality of purpose around issues pertaining to flood management. This means that they have a remit which often overlaps with flood issues but there is little concerted effort to conciliate these different and overlapping remits (Sheate, *et al.*, 2007). This institutional deficiency is a constant issue, making flood policy in Ireland a fragmented and unstable process. The issue arguably is not so much related to the increasingly polycentric governance structures which reflect complexity and the need to defend different positions within policy but more so the lack of coordination mechanisms (Brondizio *et al.*, 2009). Existing research supports the argument that communication and joint thinking between agencies is seen as inadequate (Sheate *et al.*, 2007; JCEHLG, 2010).

Other weaknesses in the state's response to flood events as identified in the Oireachtas Report (JCEHLG, 2010) included a deficiency in funding and resource allocation practices which was challenged and scrutinized as a potential concern in terms of the inadequate maintenance and implementation of flood risk management strategies. With regard to the subject of funding, the Joint Committee on the Environment and Local Government (JCEHLG, 2010) raised doubts over the distribution of resources. The issue noted in the report relates to the allocation of funds for carrying out the Catchment Flood Risk Management Plan programme which has been devised as the framework

chosen to provide flood risk management plans for the country. As the name suggests the study uses the catchment as the appropriate unit of water management, which embraces the total area of land that ultimately drains into a main watercourse (Brunckhorst and Reeve, 2006). The project aims to provide Catchment Flood Risk Assessment and Management (CFRAM) plans nationwide. Three pilot case studies were chosen to start the programme, with a nationwide programme started later in 2011 to encompass all major catchment areas across Ireland. The pilot studies are; the Lee CFRAM, the River Dodder CFRAM, and Fingal East Meath CFRAM. Out of the three projects the Lee CFRAM in Cork which has been severely impacted by floods in recent times has been allocated most funds. The concerns expressed by the joint committee members relates to the disproportionate amount of funds allocated to the Lee CFRAM project. The inconsistency with regard funding allocation is challenged in terms of equitable distribution of resources. The report shows that the total budget figure for flood risk management between the periods of 2004-2010 was approximately €310m. The study and the recommendations of the Lee CFRAMS have been budgeted at a cost of €200m (ibid). This would be done within a three phase time period with high priority measures scheduled for 2015, medium priority tackled between 2016 and 2022 and low priority action taken after 2023 (ibid). These numbers show a clear disproportionate allocation of funds to the Lee CFRAMS. The problem is made more stark in view that the CFRAM programme/budget had not at the time considered the River Shannon CFRAM, which is by far the largest river and catchment area in Ireland and one which has also a history of extreme flooding events (JCEHLG, 2010). The question in this instance is not whether the Lee CFRAMS project needs these resources to develop a successful strategy but whether it is equitable to apportion what amounts to two thirds of the last six years total flood risk management budget into this one project (ibid). This issue demonstrates an absence of integrated planning and a lack of vision that takes into account the national flood risk management project as a whole.

Another problem which merits mention with regard to funding issues relates to decision making processes informing the building of structural works for flood defence. Water flood defences and structural works are very expensive

undertakings (Petry, 2001). The way that available resources are allocated can be problematic. For example, an application to the Minor Flood Mitigation Works & Coastal Protection Scheme needs to be made by local authorities to the OPW in order to obtain funds. The criteria for obtaining these resources rely on a number of technical considerations but most importantly they are mainly decided using a cost benefit analysis. The use of cost benefit analysis in environmental decision-making is highly problematic. Although this economic based tool enables a wider consideration of the financial implications and requirements of flood risk management projects it can also be argued that it may be inappropriate to do an evaluation in purely economic terms of issues that encompass an array of social and environmental complexities (Hanley, 2001). The benefit to cost ratio for successful applications to the minor works scheme must be at least 1.5:1 which basically means that the cost benefit of a project must be 50% greater than its cost. This sort of approach can have serious implications towards targeting projects to the most disadvantaged and vulnerable in society (Johnson *et al.*, 2007). The desirability of having a public debate regarding these decision making processes and perhaps find alternative ways of targeting disadvantaged communities (Hanley, 2001) is one that has not been promoted within this context. The lack of active debate concerning such decisions undoubtedly renders Irish flood risk management policy more inequitable and leaves it open to conflict and contestation.

Lebel *et al.*, (2011) have coined the hindrances deriving from governing practices and regimes as 'institutional traps' (p.47). This term is suitable for explaining the systematic undermining of Irish society's capacity to tackle flooding. The most visible obstruction in the Irish case derives from fragmentation, which is marked by a disjointed policy arena, and considerable uncertainty in relation to the roles, responsibilities and activities of different stakeholders (*ibid*). In Irish flood risk management policy there is a severe lack of coordination between the numerous agencies involved in flood related activities such as land drainage, road safety and riverbank maintenance. Fragmentation therefore leads to serious gaps in what should be an unambiguous and cohesive action plan. The second institutional trap in Ireland derives from scale structures which are hallmarked by the stifling influence of

a highly centralised government. Flood policy development is curtailed by a structure which is too narrow and limited to one level of action which prevents local authorities and communities from developing place specific capacities and plans.

4.5 INSTITUTIONAL PERSPECTIVES AND APPROACHES TO PUBLIC PARTICIPATION IN CURRENT FLOOD MANAGEMENT STRATEGIES

The outlook of public participation in flood management matters in Ireland in terms of official interactions with state led strategies is not overly positive. There are numerous reasons why this is the case but these shortcomings are invariably connected to a lack of participatory mechanisms and opportunities which can be optimized through state commitment particularly at local government level (Daly, 2007; Mahon *et al.*, 2009). Current participation in flood management in Ireland is characterized by a two-tiered consultation process. These are divided into relatively formal meetings with state bodies and key non-governmental organizations and a second tier of open public consultation meetings with the community. Callanan (2005) argues that most participation practices in Ireland are influenced by the national ‘social partnership’ (p.917) strategy which has been considered as a hallmark of collaboration policy making in Irish politics (Taylor, 2005). These social partnership arrangements led to the collaboration and increased negotiation between the government and influential groups in Irish society. However Callanan (2005) argues that there are representation and accountability issues as most of these groups may not portray the experiences and view of communities more widely.

A first worrying sign that public participation does not play any significant role in the development of a national flood management policy relates to the fact that there is little research or consistent data gathering activities focused on gaining information pertaining to people’s views, perceptions and experiences of floods and current flood risk management practices. This knowledge gap weakens the policy development process and is a missed opportunity for providing more inclusive and representative policy strategies (Irvine *et al.*, 2002). Secondly it can be argued that there is a need for adequate participation

opportunities to encourage and nurture the type of active and committed debate that makes public participation meaningful (Innes and Booher, 2004; Mahon *et al.*, 2009). This can perhaps be explained by a lack of clarity or experience by those in charge of promoting participation in environmental policy, and the fact that there should be a guiding knowledge background concerning ideas of what constitutes good participation and what should be done to achieve this (Flynn, 2003). The participation mechanisms put in place by the OPW and the local authorities seem to be aiming for a superficial level of involvement in flood policy development, i.e. what was identified in Arnstein's ladder of participation (Chapter Two) as a tokenistic level of participation. Evidence from CFRAM plans and the OPW shows that participation requirements set out by the Floods Directive are mostly met by providing low key consultation opportunities and some risk communication and awareness campaigns.

Public consultation on the CFRAM process for example has been acknowledged by both the OPW and local authorities as getting little attention from the public and being widely unrepresentative of the communities impacted by flooding in these localities. This limited form of participation was previously highlighted by Flynn (2003) concerning the implementation of the Water Framework Directive. It was argued in Flynn's article, that participation with regard to water policy development in Ireland was inadequate and that the mechanisms put in place to enable the involvement of the general public were underdeveloped and conceptually weak (*ibid*). This same form of approach has been adopted with regard to meeting the requirements of the Floods Directive as attempts to involve the public have been notably unsuccessful. Murray (2010) comments on this lack of concern for participation practices in relation to the development of guidelines for the incorporation of flood risk management assessments into the planning process. Murray noted that in the draft version of the guidelines on '*The Planning System and Flood Risk Management*' (2008) the joint foreword statement made by the then Minister for the Environment, Heritage and Local Government, and Minister of State, stated that the draft preview would be followed by a finalised version in statutory form which would be published after a consideration of the comments made during public consultation. However as Murray correctly noted in the

finalised version of the document ‘*The Planning System and Flood Risk Management*’ (2009) there is no mention about the consultation process, policy inputs or comments offered by the public (Murray, 2010a).

It has been noted that flood management policy is dominated by institutional based objectives and concerns and this means that most research, data collection and discussions are orientated towards feeding into the knowledge needs of state institutions (Tierney, 2007). This is reflected in practical terms in the sense that the items of discussion and debate made available are pre-set by these institutional needs. This excludes in large degree the viewpoints, concerns and experiences of people living and experiencing the everyday consequences of floods and flood management strategies.

4.6 A PROFILE OF THE KINVARA CATCHMENT AREA

This section provides a detailed profile of the Kinvara Catchment. This is divided into 4 subsections detailing the, physical profile of the area, information on local flood measures, profiling of the population and history of flooding in the catchment. Section 4.2.1 offers a detailed profile of the Kinvara and relates the specific qualities of this catchment with existing policy and community experiences. Section 4.2.2 outlines the key flood management measures carried out in this context and details some limitations in this context. Section 4.2.3 discusses the policy significance linked to the social profile of the Kinvara Catchment, namely the influence of the farming community and rural characteristics of the catchment and the final section 4.2.4 provide a history of previous flooding problems in the area.

4.6.1 Physical profile of Kinvara catchment: understanding a complex karst system

“It’s like having a layer cake with air gaps in between all the layers, you know the water can go off on any direction that it wants to.” (P39, Interview with Local cave diver, Kinvara Catchment)

The Kinvara Catchment is a mainly rural area situated in the west of Ireland in the south part of County Galway. This area is also usually referred to as the South Galway area or the Gort lowlands. The catchment is mainly delimited by hydrological and geological boundaries. To the east the Kinvara catchment is

bounded by the Slieve Aughty Mountains, westward it extends to Galway Bay, to the south it borders the river Fergus in County Claire and to the north it stretches up to the Dunkellin River (GSI, 2013; OPW, 1994; Drew, 2003). The Kinvara catchment is a sub-division of the Western River Basin District¹ which is a largely rural area and with a considerable amount of protected sites that are dependent on water systems (Western RBMP, 2010). According to the EPA's *Kinvara Water Management Unit Action Plan* the catchment comprises an overall area of 637 km² (EPA, 2010). The principal rivers within the Kinvara Catchment are the Owendalulleegh, Beagh, Boleyneendorrish, Ballyee, Ceannahowna- Gort and Coole rivers. In the area there are over 30 lakes, the major ones are, Lough Cutra, Coole Lough, Lough Bunny and Lough Coy (GSI, 2004a). There are also major turlough areas such as Blackrock Turlough, Ballinduff Turlough, Garryland Turlough, Newtown Turlough and Caherglassaun Turlough (EPA, 2010).

The present day landscape is dominated by a highly karstified limestone corridor in the lowlands that is situated in sharp contrast between the Slieve Aughty Mountains to the east and the Burren plateau to the southwest (Drew, 2003). Most of the drainage in karst landscapes occurs underground (Simms, 2003), these systems are particularly complex and site specific (Drew, 2010). Although there are commonalities in the processes and features that typify this form of landscape, the uniqueness in which each karst landscape develops makes it very difficult to conceptualize the groundwater systems (ibid). Attempts to understand this hydrological system have been both work intensive and extremely expensive (Drew, 2010). Both conceptual and resource limitations can have implications in terms of development of flood management strategies. South Galway in the context of flood risk management

¹ As part of the commitments to comply with the Water Framework Directive (WFD) eight River Basin Districts (RBDs) have been devised consisting of catchment based areas of land which embrace rivers, lakes, streams, estuaries and groundwater that connect into a main watercourse and the sea (DEHLG, 2003). This division was chosen as appropriate. When the catchment boundaries were decided for this study (2009) the OPW had no documented catchment boundaries for the Kinvara study. With the new Western CFRAM plans currently under development this area is designated Unit of Management 29 part of the Western CFRAM the plans. The boundaries of the catchment are similar but not exactly the same.

strategies in Ireland is a key example of the challenging task of producing evidence based risk management strategies in a uniquely complex system. Although all karst landscapes are complex, distinct and site specific, South Galway seems to stand out as one of the most complex karst systems in Ireland (Drew *and* Daly, 1993; Skeffington *et al.*, 2006; OPW, 2010). While there has been a considerable amount of research already done, the hydrological behaviour of many karst features in this system are still not fully understood (Simms, 2003; Western CFRAM Unit of Management 29, 2012). There are three main characteristics that add to the complexity of this unique site.

Firstly, the hydrology is distinct from other limestone areas because not only is the karst aquifer absorbing water from the porous limestone but it is also fed by considerably large streams that originate in the Slieve Aughty uplands (Drew *and* Daly, 1993; Drew, 2003; Skeffington *et al.*, 2006). These surface rivers flow on impermeable sandstone and mudstone and they eventually sink near the limestone plain; very large water conduits are associated with these streams (De Bhailis, 1991; Drew, 2003). Coupled with the low permeability of the subsoil (blanket peat) the steep slopes of the mountains considerably promote surface runoff which greatly increases the stream flow onto the limestone plain below (GSI, 2004b, Drew, 2010). The problems of flooding present in the lowlands interconnect in many ways with the water discharges coming from the streams in the mountains. Local communities have expressed serious concerns about development practices in the Slieve Aughty uplands such as forestry and wind farm infrastructure. These were recorded and observed on numerous occasions during fieldwork. Some people have argued that the capacity of the mountain to retain water has been compromised by these changes in land use, particularly because they have entailed robust drainage activities which are seen by locals to be a direct cause of increased flooding in some parts of the catchment.



Figure 4.1 Perspective of Gort Lowlands and the wind turbines in the Slieve Aughty Mountains, 2012 (Source: Author)

For the reasons outlined above related to the complexity of the karst system and the level of expertise/resources that it requires in terms of generating evidence to support these claims, it is very difficult to either confirm or disprove to what degree these developments impact the Gort lowlands. Information obtained in relation to these issues from an academic expert with extensive knowledge of the catchment suggests that drainage and forestry activities can be linked with a more rapid flood peak; however the difficult question, as was stressed by the expert consulted on this issue and re-emphasized by local cave divers, is whether the ultimate peak would remain the same. Uncertainty in this instance has created an accountability difficulty as some people strongly believe themselves to be victims of bad development practices. This ongoing reality was expressed by many participants during field work research and the issue is further discussed in Chapter 6.

Another distinguishing feature of the area is the extreme complexity of the hydrological system of South Galway mainly because landscape karstification and fragmentation is widespread (Drew, 2003). South Galway has a varied network of hydrological features which are linked in complex ways both underground and over ground. There are at present 273 features recorded such

as swallow holes, caves, turloughs and springs; current records are only considered to represent a fraction of the complexity of existing features in the area (GSI, 2004, OPW, 2010). Furthermore these can also change overtime; the appearance of new swallow holes has been observed by locals on a few occasions.

Due to the extreme richness and complexity of the underground system this area has been of increasing interest to cave divers, hydrology and geology experts. Local cave divers and local farmers have a very intimate knowledge of the area and fieldwork interviews for this research were complemented by guided expeditions which provided substantial support and clarification on the complexity of the catchment that is profiled here.



Figure 4.2. Karst Landscape (The Burren) Lough Bunny at the south end of the Kinvara Catchment, 2012 (Source: Author)



Figure 4.3 Caherglessaun Turlough², Kinvara Catchment, 2012 (Source: Author)



Figure 4.4 Swallow hole, Blackrock Turlough, Kinvara Catchment. 2012 (Source: Author)

South Galway has a rich natural habitat and most of the catchment is afforded special protection by National Parks and Wildlife Services (NPWS) which are based on protocols developed from the EU Habitats Directive (1992). Contained in the directive are the guidelines which have provided for the

² A turlough is a unique type of disappearing lake found mostly in limestone areas in Ireland; it is filled by the upsurge of groundwater.

establishment of Natural Heritage Areas (NHAs) and Special Areas of Conservation (SACs) across European member states, also known as Natura 2000 (Paavola, 2010). The major sites include the Slieve Aughty Mountains NHA and a large variety of SPAs, such as Lough Cutra, Coole-Garryland Complex and Caherglassaun Turlough (EPA, 2010). Turloughs are considered priority habitats under the EU Habitats Directive; the main threat to these ecosystems is drainage and pollution (Skeffington *et al.*, 2006).

The hydrology and geology of the catchment are intimately linked. The geological composition of South Galway is characterized by a layer of impermeable old red sandstone and mudstones which is several kilometres deep to the east in the Slieve Aughty Mountains and karst limestone to the west (OPW, 1994; Simms, 2003). These features are the culmination of geomorphological processes of weathering and erosion over millions of years which have significantly changed the landscape and determine the current hydrology of the area (Simms, 2003). Downstream from the mountains the karst drainage system which was once entirely underground is now extremely fragmented through dissolution and glacial erosion processes (*ibid*). The topography of the lowlands is also mainly flat which limits the speed at which water drains in the lowlands (GSI, 2013; De Bhailis, 1991). From the impermeable streams in the mountains water reaches the lowland section of the catchment through a combination of underground and over ground channels, springs and swallow holes (OPW, 1994, Murray, 2010b); these eventually drain from underground channels into the springs at Corranroo and Kinvara in the Galway Bay (Drew, 2003; GSI, 2004). Intensive water tracing experiments and ground research carried out on behalf of the OPW has enabled a greater understanding of the important hydrological links and features in the area; however the complexity of this unique system is still not fully understood (Simms, 2003).

The depth and the duration of floods are linked to the specific characteristics of each karst feature. Some turloughs in this area for example empty in the summer months while others retain water nearly all year around, some are also fed via surface waters while others are fed from the underground conduits and

then again few are also under tidal influence (Coxon and Drew 1998 in: Skeffington *et al.*, 2006; Drew, 2010). Some turloughs in the area display significant water fluctuation levels such as Blackrock Turlough which has been seen to change its water level above 9 m in just 48 hours (Skeffington *et al.*, 2006).

The third feature which distinguishes the Kinvara Catchment karst landscape is the fact that the catchment has no surface channels to the sea (Drew and Daly, 1993). The absence of surface channels means that all the water extending an area of over 500km² has to eventually flow through an underground system until it drains into the Galway Bay (*ibid*). The flow of water in the underground system is limited by the dimensions of this underground conduit, which is estimated to be 25 m in diameter at an altitude of 0 to -10 O.D. (GSI, 2004a; Drew and Daly, 1993). The underground conduit is approximately 10-15 kms in length and flows on north-westerly direction towards the Galway Bay (Murray, 2010b). During periods of heavy rainfall the underground system can become overwhelmed and the water begins to back up and cause severe floods upstream, where turloughs and other karst features are abundant (Chandler and Wheeler, 2002; GSI, 2004a). These large sized underground drainage conduits that drain the entire catchment can also have the inverse effect during high tides as there is a proven tidal influence stretching a few 10 to 15 kms inland (GSI, 2004a, Murray, 2010b). Empirical material based on interviews and discussions with local communities in the catchment reveals that many impacted people in this area support the creation of an artificial overland channel to divert flood waters from the lowlands to the Galway Bay area in Kinvara.



Figure 4.5 Kinvara rising, Galway Bay, Kinvara Catchment (Source: Nick Ghee, 2009)

The 1998 South Galway Flood Study Report deemed this overland channel solution not viable due to high environmental impacts, expense (an estimated £22.500.000) and overall negative cost-benefit analysis. Subsequently local farmers and landowners attempted to carry out the necessary works to get the surface channel to Kinvara, using their own land and resources. These works were never completed and restrictions from the OPW and conservation regulations limit the possibility of local land landowners carrying out the work. A review of this structural solution was carried in 2010 after the extreme floods in November 2009. The solution was rejected again based on high environmental impact and expense which has deemed the construction of this engineered channel unfeasible. The grassroots initiative to create an overland channel to the sea and its rejection by local and national authorities is a key example of ongoing differences between the various stakeholders in this area. The high environmental significance of many sections of this catchment and the current conservation regulations in place are perceived by some members of the community and in particular farmers (but not only) to be in direct conflict with the interests of local people. Government agencies often term this idea and discard this idea as simplistic. The lack of a forum of participation that would enable greater communication between the different stakeholders has not facilitated the development of alternatives for this area.

It has been noted on previous research work related to complex geomorphological landscapes by McEwen (2001) that policies fail to address the sensitive relationship between the landscape and the human environment. In the case of the Kinvara Catchment while there has been a concern with accumulated knowledge regarding the geomorphological and hydrological characteristics of this site the link between these and its interaction with the human systems is largely unexplored. Furthermore at present groundwater flows cannot be reliably determined. Evidence based flood risk management plans face the challenge of mapping out a complicated underground network system that is not fully understood. Flood risk management decisions are being made based on assessments which are at best incomplete. While the necessity to produce knowledge that enables decision making can be important, in this instance the high level of uncertainty is arguably taken for granted which raises concerns over the reliability of current assessments and the level of vulnerability that they can generate by providing a ‘false’ sense of certainty. Furthermore, the expense of producing these thorough assessments has been questioned, particularly in terms of the solutions and tangible outputs that these studies have generated. Overall, local communities feel that most of the studies produced (which in some instances replicated understandings already part of the local knowledge of these communities) did not produce any beneficial outcomes for the catchment. These issues are further discussed in Chapter 6.

4.6.2 Local flood risk management measures in the Kinvara Catchment: the dominance of technical assessments and consultancy reports

Flood management practices in the Kinvara Catchment are strongly associated with extensive technical assessments and reports in the area and a considerable number of studies have been carried out. These include (most notably) the *South Galway Flood Study* of 1998 commissioned by the OPW, the subsequent *Review of the South Galway Flood Study Report* (2011d) commissioned by the OPW after the extreme events of 2009 and the on-going Western CFRAM plans, again commissioned by the OPW and which are being carried out to fulfil requirements from the Floods Directive (2007). There are also numerous smaller reports. The South Galway report of 1998 cost the Irish Government approximately €1.5 million and at the time a press release sent by the OPW

promoted this report as ‘an extremely complex and extensive publication’ which was ‘thought to be the largest inter-disciplinary research study of a karstic environment ever undertaken anywhere in the world’. This study attempted to capture and detail the complexity of the catchment, but it can be argued that it mostly failed to provide solutions for the ongoing problems. Some vital recommendations were made in terms of planning and development practices which were largely disregarded by planning authorities. Furthermore, while there was extensive technical detailing in the report, local authorities in 2009 still experienced difficulty in identifying culverts and other structures which they were supposed to maintain. Contrary to the recommendations made in the 1998 report, substantial developments were carried out in these areas. Local communities interviewed for this research expressed dissatisfaction with these reports, particularly with the large sums of money expended on creating this data, which they claimed self-contradicted the cost-benefit assessments of solutions for the area. Many claimed that the money spent on reports should have been used to create tangible solutions instead.

As noted above, another study is currently being carried out under the national CFRAM (Catchment Flood Risk Assessment and Management) programme that was officially started in 2011. It is part of Western CFRAM study. The study is subdivided into smaller units and South Galway is included under Unit of Management 29-Galway Bay South East. The Programme includes three main outputs:

1. 2011 Preliminary Flood Risk Assessments
2. 2013 Flood Hazard Mapping
3. 2015 Flood Risk Management Plans.

Flood risk assessments include fluvial and coastal flooding, as pluvial flooding is outside the remit of the CFRAM national strategy. The CFRAM process entails initial stages of assessment and mapping which aim to culminate in the development of flood risk management options. Areas for Further Assessment as (AFAs) have already been identified in the CFRAM for the Kinvara Catchment which include the coastal areas around the Kinvara coastline and Gort. Several hinterland areas which are more sparsely populated but also

vulnerable to flooding (namely Ballylee, Caherglessaun, Kiltartan and Peterswell), have not been identified as AFAs. The CFRAM culminates in the development and implementation of a Flood Risk Management option (both structural and non-structural) which is subject to further assessments via Strategic Environmental Assessment procedures and cost-benefit analysis criteria.

Alongside the CFRAM process there is also the Minor Flood Mitigation Works and Coastal Protection Scheme. The scheme was introduced in 2009 and it is also administered and overseen by the OPW. The scheme offers the provision of funds to local authorities to carry out flood mitigation projects under the value of €500,000. The allocation of funding is subject to assessment which includes the process of cost-benefit analysis (OPW, 2014). Work under the Minor Mitigation Work Scheme in the Kinvara Catchment includes:

- Channel Maintenance
- Surveys
- Clearing of urban drainage
- Reinstatement of culverts
- Placing of new culverts
- Bridge maintenance
- Commissioning new studies

4.6.3 Socio-economic profile in the Kinvara Catchment; significance for institutional flood strategies

Census records indicate that the population in the Kinvara catchment is approximately 12,000 people (CSO, 2011). In comparative terms the number of people living in South Galway relative to the space area occupied is low. The major towns in this prevalently rural catchment are Gort and Kinvara. Although there have been considerable changes in the occupational characteristics of the area, South Galway remains highly influenced and based on agricultural activities. Over 21% of the population is engaged in farming activities which is twice the average in Ireland (ibid). The main towns of Gort and Kinvara provide a range of important services; these include retail, education, community services and health (Galway County Council, 2006).

Farming is a major economic activity in this area. Farming practices in this catchment are dominated by livestock raising namely cows and sheep. Grass crops for feeding the cattle are also a very important farming activity, and there are also some minor dairy farms in the area. The impact of floods to farming communities is significant. Dairy farmers in particular have found it difficult to deal with flooding impacts as they require daily access to animals and equipment for milking the animals. Cattle can also become marooned and pasture lands are compromised in a number of ways. It has been documented that flooding impacts in this catchment has limited farmers' access to animals and land (OPW, 1994). Waterlogged soils and pollution can compromise grass growth and increase the risk of disease to livestock (De Bhailis 1991). For this reason, there was extensive land reclamation activities carried out in the 1980s. These were mainly financed by Western Drainage Scheme (1983, 1984, 1985) and the Western Development Scheme (1985). The activities include arterial drainage carried out by the OPW and field drainage carried out by landowners (De Bhailis, 1991). The impact of these extensive drainage practices to ongoing flood problems is not known or documented however the extensive amount of work carried out is likely to have unknown implications.

4.6.4 History of Flooding in the Kinvara Catchment: recent building on flood plains

South Galway is characterized by a mild temperate climate which is significantly influenced by its proximity to the Atlantic (De Bhailis, 1991). The Atlantic Ocean has strong effects on the local climate. Abundant precipitation, frequent gale force winds and moderate temperatures during the winter months are strongly associated with the influence of the Atlantic west coast (De Bhailis, 1991) Most flood events in area have been linked to extreme rainfall periods particularly during the autumn/winter months (OPW, 1997), the highest records being in 1995 and 2009 (OPW, 2011b). The history of flooding in this area can be dated back to the 1800s where there is detailed evidence of flood areas identified on the first mapped survey of the whole island commonly referred to as the 6 inch maps. Records from the OPW also show that this area is exceedingly liable to flooding and the most extreme episodes occurred in

1924, 1959, 1990, 1991, 1994, 1995 and 2009 and more recently January 2014(Chandler and Wheather, 2002; OPW, 2011b).

In recent years the area has been the subject of substantial growth and development which can be associated with the economic boom of the late 90s and mid-00s. Residential and commercial growth is easily identifiable as is the development of road and transport infrastructure. Energy infrastructure in the form of 71 wind turbines in the mountains is also a key development in the catchment. Local residents associate most of these developments with increased flooding. Most notably, local perception is that the complexity and the sensitivity of this highly karstified landscape have not been recognised by planners and local authorities. Houses were given planning permission in areas well known to flood. An industrial structure such as the Lidl supermarket building in the town of Gort was given permission on a floodplain. The same could be said for the construction of a new M18 motorway line and the refurbishment of the western rail line passing through Gort and Kiltartan (Murray, 2010b). This development legacy has in local people's perspective increased the burden of flooding on a rural community which is in terms of current cost-benefit assessments deemed too small to save.

4.7 A PROFILE OF THE DODDER CATCHMENT AREA

The profile of the Dodder Catchment is divided into 5 parts and similar to the previous profile of the Kinvara Catchment it aims to provide a contextual background to some key elements and characteristics of this specific location. Subsection 4.3.1 focuses on the physical characteristics of the Dodder catchment. subsection 4.3.2 looks at the physical characteristics of two additional rivers included in this study. Subsection 3 looks at local flood management measures. Subsection 4.3.4 provides an overview of the population profile of the Catchment and subsection 4.3.5 provides an overview of the history of flooding in the study areas.

4.7.1 Physical profile of the Dodder Catchment: flash floods and the significance of rescue services in the catchment

The Dodder catchment is a mainly urban area which includes many parts of inner city Dublin as well as other suburban areas such as Tallaght, Jobstown

and Dundrum. The River Dodder is the river that gives its name to the catchment and it is also one of the major rivers in Dublin (Dodder CFRAM, 2012). However the catchment also includes other rivers and water systems, namely, the Tallaght Stream, Ownedoher, Whitechurch, Little Dargle and Dundrum Slang (Dodder CFRAM, 2012). These are mostly tributaries of the River Dodder (Mac Cárthaigh, 2003). The Dodder catchment boundaries as defined in the Dodder CFRAM plans includes the Bohernabreena Water Reservoir system. The Bohernebreena dam is subdivided into two reservoirs known as the upper and lower Bohernebreena reservoirs. These were built in 1886 and are used now as a source of water supply for Dublin city and as a water control mechanism to compensate for downstream impoundments respectively (Mac Cárthaigh, 2003).

The Dodder originates in the Kippure Mountains near Lough Bray and flows northwards through south Dublin; its relatively short twenty seven kilometre journey ends at Ringsend in the estuary of the River Liffey where it enters the sea (Cawley *et al.*, 2005, Dodder CFRAM 2012). The catchment of the River Dodder is 120.8km² in total. This catchment size comparative with the length of river is big (Dodder CFRAM, 2012). The river flows through some rural areas near the mountains where it rises in Kippure (Mac Cárthaigh, 2003) and afterwards it passes through suburban areas such as Tallagh and Rathfarnham and it enters inner city Dublin in Donnybrook and Ballsbridge. (Dodder CFRAM, 2012) This catchment has been identified as vulnerable to a large number of flood sources. It is susceptible to coastal flooding, river flooding, and pluvial flooding; there is also the potential of dam failure mainly from the Bohernabreena reservoir system (Dublin City Council, 2011; Strategic Policy Committee, 2012).

The Dodder Catchment is characterized as being prone to flash flooding events (Cawley *et al.*, 2005). This is mainly due to soil type made up of impermeable rock and soils that increase runoff (Dodder CFRAM, 2012). The upper reaches of the catchment consist of granite and sandstone with peaty podzol and brown earth soils while the lower part of the catchment is composed of carboniferous limestone and the soil is mainly man made composites (ibid). Land use changes and in particular the increased paving over garden areas are seen to

contribute to decreased absorption of water across the catchment and particularly in the lower reaches of the Dodder which leads to increased water flow (Dublin City Council, 2011).

Weather forecasting and early warning is regarded as very important in this catchment. The River Dodder responds very quickly to periods of heavy rainfall which greatly challenges the response capacity of local people and rescue services to react to these events. It is estimated that it takes as little as six hours for flood waters to travel across the catchment from the Mountains in Kippure to inner city Dublin (P68, Interview Dublin City Council Official, Dodder Catchment). While warning is vital it is also extremely difficult due to the flash flood characteristics associated with the Dodder River. This issue is very pertinent for this catchment as personal safety was identified by people in the fieldwork as a greater concern in the Dodder Catchment than it was in the Kinvara Catchment. The speed at which houses flooded in this catchment have led to dangerous circumstances. One elderly participant with an extremely frail build (interviewed as part of the fieldwork) reported having to flee from a window in her house as the door was blocked by the volume of water. Interviewees indicated that the emergency services were visibly overwhelmed and were not able to cope with the volume of emergency calls made by flood impacted people. Most participants reported failed attempts to contact emergency services. Dublin City Council records show that in Dublin City alone there over 560 flood emergency calls made on the 24th of October, 2011 from 14:00 to 23.59 hrs. (Dublin City Council, 2011). However empirical evidence suggests that the number of people trying to reach emergency services may have been much greater as there were many reports made of failed attempts to reach the emergency line.

Towards the end of the catchment area in Ringsend where Dodder River eventually meets the sea exposure is further increased by the possibility of tidal flooding and storm surges. These storm surges are associated with Atlantic atmospheric depressions which can significantly increase water levels (Dodder CFRAM, 2012)



Figure 4.6 River Dodder at Ringsend, 2012 (source: author)

4.7.2 Profile of the River Poddle and Swan: challenges of managing a highly urbanized landscape

For the purposes of this research two other rivers that are not officially part of this catchment have also been included. These are the Rivers Poddle and Swan. They are two highly engineered and culverted rivers which pass through many areas within the boundaries of the Dodder catchment area (Eastern CFRAM, 2012). The boundaries established in this study were initially based on the Dodder CRFRAM study alone. However, the limitations established by CFRAM boundaries became problematic. The CFRAM process does not include within its remit pluvial flooding which was difficult to determine during fieldwork, and in many instances people were flooded from both pluvial and fluvial sources. Making the decision to include communities impacted by pluvial flooding led to the added decision to include those impacted by the Swan and Poddle Rivers, because both issues were frequently interrelated. As stated, these are extremely engineered rivers, to the extent that there are ongoing disputes over the status of the Swan River which is now considered a sewer line (Deasy, 2012). Another reason to include these two rivers in the Dodder case-study is that historical records show that they have been intimately linked physically to the Dodder River and intersect at some points in Dublin city where the fieldwork was carried out (M’Cready, 1892; O’Brennan, 1940; Fitzgerald, 1973, Dublin City Council, 2005). Furthermore, some

members of the community impacted by the Poddle and Swan Rivers volunteered to participate in the study and these were deemed a valuable and important addition to the fieldwork for the reasons outlined above.

The River Poddle originates in Northwest Tallaght and it flows through Tymon, Harolds Cross, the Liberties, Dublin Castle and discharges from here into the River Liffey (Dublin Corporation, 1986). The area where the River Poddle used to discharge into the Liffey Harbour known in the 9th Century as *Dubh-linn* in Gaelic meaning ‘black pool’ eventually gave its name to the city of Dublin (Fitzgerald, 1973). In spite of the substantial historical heritage of the River Poddle, Sister Ann Dominica Fitzgerald in 1973 coined the Poddle as a doomed River which has been little by little buried under the city of Dublin. There are presently very few locations in Dublin City where the Poddle emerges over ground. The Poddle is culverted along various sections and it also receives storm water discharges from the surrounding sewer network (Eastern CFRAM, 2012). Many residents living in these areas are not aware there is a river running under their homes. Image 4.7 shows the River Poddle at Mount Jerome Cemetery, one of the last places it emerges over ground in Dublin City. The Poddle flooded extensively in October, 2011; residential locations such as Harold’s Cross, St. Clare’s Avenue, Greenmount Avenue, Limekiln Lane and Parnell Road were impacted. It also flooded some areas of Our Lady’s Hospice in Harold’s Cross. One of the fatal victims of the 2011 floods in Dublin was drowned in her home located at Harold’s Cross. (Eastern CFRAM, 2012; Environment and Engineering Strategic Policy Committee, 2012). Latest records indicate the Poddle has flooded in 1993, 2000 and 2011 (Eastern CFRAM, 2012). The Poddle has been established as a high priority watercourse in terms of flood risk management. (ibid).



Figure 4.7 River Poddle, Mount Jerome Cemetery, Harold's Cross, Dublin City. 2012
(source: author)

The River Swan is technically not considered a river in terms of flood risk management strategies. Because there are on-going challenges in terms of determining the status of the River Swan the OPW has not taken the lead in terms of including this river in the CFRAM process. The Swan is currently included in the Rathmines and Pembroke Drainage Scheme which is in the process of being developed. This river has been the subject of many engineered modifications and it is presently composed of a network of pipelines which form part of the Rathmines and Pembroke sewage network. The river is approximately seventeen kilometres in length and is now fully culverted (Dublin City Council, 2005 and 2011). The Swan is linked to both the Poddle and the Dodder. It originates from the River Poddle as a small overflow near Kimmage and drains the areas of Terenure, Rathgar, Rathmines and Ballsbridge where it discharges into the River Dodder close where the Aviva Stadium is located (Dublin City Council 2005 and 2011). Flooding from the Swan River in 2011 included properties in Chelmsford Road, O'Connell Gardens, Palmerstown Villas, Grosvenor Place, Havelock Square, Kennilworth Square, Effra Road, Derrynane Gardens, Leinster Road and Leinster Square. Flooding in this area is associated with overflowing of the underground drainage system which, combined with the fact that residential and commercial

buildings in the area have basements, has led to increased vulnerability. Furthermore, many of these basements have been converted into flats since 1970s both by legal and unapproved means (Dunne and Ewen, 1985), which generates added concerns for the safety of residents living in converted basement flats in this area.



Figure 4.8 Culverted section of the Swan River, Mount Pleasant Avenue, Dublin, 1986 (Author: Patrick Healy, Source: South Dublin County Council)

4.7.3 Local Flood Management Measures in the Dodder Catchment: the relative advantages of the CFRAM process

The Dodder CFRAM plan was part of the three pilot CFRAM studies carried out before the program was rolled out nationally in 2011. This means that the CFRAM process is more advanced in the Dodder Catchment than in other areas where mostly they started in 2011/2012 and are due for completion between 2015/2016. The more advanced stages of the CFRAM process grant slight advantages to the Dodder and the other two pilot studies as they have already been allocated funds for future measures, whereas the other studies will arguably have to compete much more for funds as measures are identified at a national scale. The Dodder CFRAM plans initiated in 2007 and were finalized

in 2012. Although there were previous studies carried out in relation to the Dodder these plans form a first cohesive strategy in terms of flooding for the whole catchment. The study was funded by the lead flood risk management agency, the OPW, and carried out by Dublin City Council. The key outcomes of the study are:

- Identification of viable measures and flood risk management options
- Prioritizing of necessary measures and identification of further work and knowledge gaps
- Development of a monitoring and review practice for carrying out flood risk management work.

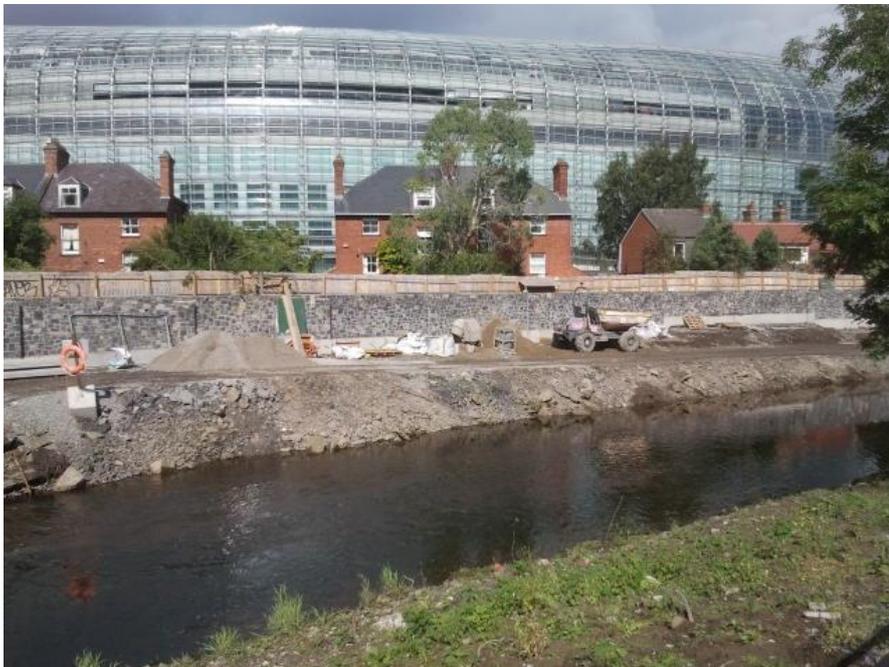


Figure 4.9 Flood relief in the Dodder in the aftermath of the 2011 flooding. Ballsbridge/Dublin, 2012 (Source: author)

There are also a number of additional flood management activities and practices within the Dodder boundaries. These are:

- Dublin Flood Initiative: created in 2002, has focused work development of sustainable urban drainage systems (SUDS)
- Flood Resilient City project which is funded by the EU project ‘Flood Resilient Cities’ and aims to increase enhance adaptation measures in terms of extreme flood events. The Scottish Flood Forum has been invited to help develop a Community Resilience Group in the city of Dublin.

- SAFER Project (Strategies and Actions for Flood Emergency Risk Management): part of EU funded INTERREG project involving Dublin City, Germany, Scotland and Switzerland. The project promotes emergency risk management and prevention measures in the area of water and flood related issues.

4.7.4 History of Flooding in the Dodder Catchment: planning and legacy issues

Historical records show that the Dodder is prone to flooding. The most notable events occurred in 1905, 1912, 1915, 1931, 1946, 1958, 1965, 1986 (Hurricane Charlie) and 2011 (Mangan, 1999; Cawley *et al.*, 2005, OPW, 2013).

A very important factor in terms of flooding relates to the fact that the catchment contains sections of river which are highly engineered. Engineering work has been done over centuries and very intensely during the Celtic Tiger period to access valuable land for development. The legacy of centuries of river drainage is compounded by the fact that most of the existing drainage systems in Dublin have not been adequately maintained and upgraded to respond to increased demand over the years (Dodder CFRAM, 2012). There are also problems related to new developments and increased encroaching in flood prone areas. The Dundrum Shopping centre is a recent example of this type of activity which can be directly linked to increases in flood vulnerability. Many of the older structures are either in need of repair or unable to cope with current water flow demands. Overall the Dodder Catchment is characterized by varied legacy issues (recent and more ancient) deriving from urban development which has led to increased exposure to flooding.

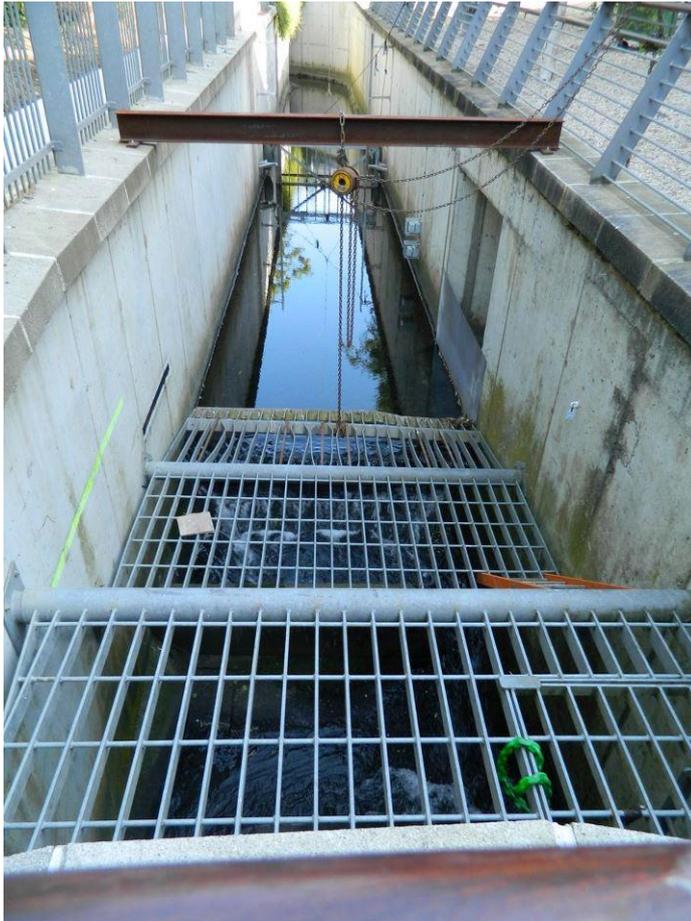


Image 4.10 Dundrum Slang River. Newly culverted section of the river located at the back of Dundrum Shopping Centre. 2012 (Source: author)

4.7.5 Population profile in the Dodder Catchment: specific demographic patterns associated with Dublin

CSO figures indicate that the Dodder Catchment area includes approximately 180,000 people. One of the most striking features of the population profile of Dublin is the relative high proportion of 20 to 34 year olds living in the City which stands at 33% compared with the national average of 25% (Redmond *et al.*, 2012).

The population profile of Dublin has been recently marked by both demographic growth and urban sprawl (Redmond *et al.*, 2012). This can be explained by the growing significance of Dublin as a centre of economic activity in Ireland. These population trends are associated with a growing number of commuter belts and suburban areas. Some of these were built on flood plains such as some of the new residential areas in Tallaght, Dundrum and Jobstown which are part of the Dodder Catchment. Both residential and

infrastructural properties in the catchment are considered to be vulnerable to flooding, particularly in the Lower Dodder area which is a much urbanised part of the catchment and includes the area of Ballsbridge (Dodder CFRAM, 2012). As discussed earlier in this chapter the centralized powers of government and the existence of relatively weak institutions at local level may have deterred a more measured and place sensitive approach to planning and population growth (McGuirk and MacLaran, 2001).

4.8 CONCLUSION

Flynn (2007) argues that the most crucial limitation hindering the development of environmental policy in Ireland is not the lack of legislation or resources but the weak institutional capacity to ensure an effective and committed policy cycle. As is illustrated by the shortcomings of the OPW as a lead agency in flood risk management in Ireland it is clear that tackling flooding issues is not a solely technical problem. The real value and impact of policies is dependent on the way they are translated into successful operational plans (Rosenbaum, 2008); in other words, unless water management institutions are able to carry out the key tasks underlying policy strategies, the plan as whole is ineffective. The limitations of local authorities are a recurring issue in environmental policy and one that requires considerable restructuring of the way the government operates at national and local levels (Flynn, 2007).

The specific way in which flooding issues play out at local level underlines the necessity to have a policy process that is responsive to the contextual complexity in which social, environmental and cultural factors have a bearing in the capacities and the vulnerabilities of people. Comparing the national flood policy approach to the local context it can be seen to translate into very different realities and policy commitments in each circumstance. Furthermore while there is a body of work linked to each catchment overall data strongly suggests that implementation of strategies has been poor and importantly marked by extremely expensive and demanding technical based reports and strategies which are not matched by effective and collaborative institutional arrangements at the local level. The substantial growing flood exposure legacy issues linked to planning and development choices and vulnerability in these

particular catchments which have an extensive history of flooding further stress the weakness of transposing policy into working strategies.

Chapter Five

Searching for participation: uneven and contingent realities

“To the best of my knowledge it was each man for himself, each person for themselves. There didn’t seem to be any great community coming together. “. (P52, Interview, Community group member, Dodder Catchment)

“Well something to say to you, there is nothing like an emergency or a flood to unite people to create a sense of community so it created a marvellous sense of solidarity and community. It certainly did that... “. (P71, Interview, Resident, Dodder Catchment)

5.1. INTRODUCTION

This chapter offers a rich contextual account of participation processes occurring in the face of increased flood management challenges at the local community level. It draws on evidence from the two case study explorations. This provides significant insights into participation in three specific ways: a) the implications of perceptions of flooding to the process of community participation; b) a critical appraisal of grassroots leadership as a driver of participation; c) flood management governance practices in terms of their implications for local communities.

Evolving substantially from being a problem of rural people working the land, this evidence indicates exposure to floods is now experienced by a much larger portion of the population. Businesses, schools, residential areas, and neighbourhoods of varying affluence also have to face up to this growing vulnerability. Exploring this as an emerging social problem from the point of view of communities provides a very informative account of how this issue is currently evolving. It also reveals an alternative set of perspectives on how to expedite stronger flood management solutions. In the first instance, this research has identified that the many peculiarities associated with any local, place-specific community are an inherent and indeed key component of the flood management context. The manifold ways in which the community as a ‘public’ has collectively been able or sometimes unable to address this emerging challenge is another key issue in understanding and in determining future ability to respond to flooding in Ireland. This research emphasises the

fact that above all community involvement in flood management matters is an extremely uneven process.

The discussion develops a critical perspective on how communities in different circumstances come together and act towards similar goals, through constructing a detailed profile of community activity in this area, informed by the perspectives of local people and businesses, non-governmental organizations as well as the points of view of different statutory organizations. The empirical material and the interpretations provided in this chapter use thematic analysis to map out a variety of factors such as activities performed, type of relationships developed and the drivers behind participation in the respective study areas. These are enhanced by the added urban and rural perspective which offers both comparative and contrasting perspectives on community relationships with its surrounding environment, stakeholders and statutory organizations. The variety of social elements explored in this chapter provide empirical based insights which demonstrate how flooding issues intersect with cultural, identity and political factors and in this way how it creates a particular experience that is at many levels a socially constructed and experienced phenomenon

5.2. LEVELS OF PUBLIC PARTICIPATION: A TRANSITION HURDLE FROM SHORT TO LONG TERM PARTICIPATION

The different manifestations of community involvement identified in both case studies explored in this research are illustrative of local capacities to address problems associated with flooding. The purpose of Table 5.1 developed below is to provide a comprehensive outline of the main activities carried out by communities with regard to the growing challenges of flooding. The table derives primary evidence collected from the case studies. It is based on the interviews, observations and focus groups conducted with actors from different groupings such as residents, SMEs, community groups, NGOs and statutory organizations at both local and national levels. The table divides activities based on different stages of a flood management cycle. These stages to an extent also reflect issues around time. Flood response and reconstruction in relative terms are considered shorter-term activities, while flood prevention,

mitigation, recovery and preparedness reflect mostly longer-term objectives. There are also observations specific to each case study area that highlights significant differences in the way communities took action with regard flooding issues.

Table 5.1 Community Participation Activities	
Disaster Phase	Community Activities
Prediction and Warning	<p>Activities: Informal community assessment of flood exposure based on local history and local knowledge.</p> <p>Catchment observations: Relevant for both case studies</p>
Flood Relief	<p>Activities:</p> <ul style="list-style-type: none"> • Helping neighbours by removing furniture and personal belongings; • Calling on neighbours for evacuation and assistance; • Calling rescue services on behalf of affected vulnerable individuals in the community; • Offering alternative accommodation for discommoded victims; • Cooking meals for relief workers and residents (KC³ only) • Providing alternative travel arrangements for marooned individuals (KC only); • Community led victim support group (KC only); • Community led road closure and traffic control (KC only) • Fundraising at local, national and International levels (largely KC) • Moving cattle and providing feed for animals (KC only); • Setting up a flood committee to distribute, monetary donations, goods, human and material resources and a helpline for distressed victims (KC only); • Water pumping system co-managed by local people and local government • community meetings with local councillors and local government agencies <p>Catchment observations: Although community flood response was evident in both case studies the supports identified in the Kinvara Catchment were more varied and more evenly available while in the Dodder Catchment there were areas which availed of little or no community support.</p>
Reconstruction	<p>Activities:</p> <ul style="list-style-type: none"> • Calling statutory organizations on behalf of vulnerable victims; • Helping clearing out and cleaning; • Organizing statutory supports on behalf of the community

³ KC Acronym signifying Kinvara Catchment

	<ul style="list-style-type: none"> • Free counselling for impacted victims (KC only) • Gifts, hand crafted quilts and Christmas hampers sent out to some impacted people in the community (KC only) <p>Catchment observations: Same as above</p>
Mitigation, Prevention and Long Term Recovery	<p>Activities:</p> <ul style="list-style-type: none"> • Community led liaison with local authorities and the OPW for the implementation of structural solutions; • Grassroots land use changes and minor improvements in land drainage through channelling, raising roads and removing fencing and hedging (KC only); • Mobilization by impacted victims to secure greater resources and action in these localities; • Creation of community groups to deal with flooding problems and other neighbourhood issues • Networking with other flood support groups(DC only); • Commissioning independent reports • Grassroots mobilization against organizations seen as accountable for flood exposure (DC⁴ only) • Watchdog group looking at impacts of planning and development on flood risk and environmental quality (DC only) <p>Catchment observations: The inverse tendency was observed in this stage of flood activities and communities in the Dodder Catchment were much more active in long-term mitigation and prevention measures in comparison with local communities in the rural case study. Some people identified lack of leadership as a reason why there was no greater proactive engagement after the initial stages of flooding.</p>
Preparedness	<p>Activities:</p> <ul style="list-style-type: none"> • Upkeep and maintenance of pumping system ensured by local communities; • Community resource procurement for flood preparedness measures (DC only); • Development of websites and other material to increased awareness and mobilization with regard flooding issues (DC only); • Involvement in local government led pilot project 'Flood Forum' (DC only) <p>Catchment observations: The majority of preparedness measures identified were observed in the Dodder catchment as well.</p>

Table 5.1 Community participation, capacities, perceptions and observations (Source: Based on case-study fieldwork findings from flood episodes in Kinvara Catchment 2009 and Dodder Catchment 2011)

Empirical evidence summarised in Table 5.1 suggests that a much greater number of grassroots activities is directed towards short term, localised

⁴ DC Acronym signifying Dodder Catchment

community responses in times of crisis. Thirty different initiatives were identified in the Kinvara Catchment and twenty seven in the Dodder Catchment, they include both formal and informal levels of support and interaction at community level, some of these activities are interlinked with each other but they represent different levels of support. Of note in this instance is the emergence of newly developed community groups as a consequence of the stated flooding events. In the Kinvara Catchment one community group was created as a direct response to the flooding in 2009 and in the Dodder Catchment there were three new reported community groups emerging as a response to the flooding impact of 2011.

The initiatives identified here do not claim to be fully representative of the scope of community activities on the ground; nevertheless the in-depth exploration of the two catchments strongly suggests that public participation in this field has been largely reactive to date. Short-term activities were typically self-organized, community led collaborations of local people supporting those in difficulty during the floods. Although the material is qualitative in nature and therefore insufficient for providing a reliable estimation, indications based on the empirical evidence tentatively suggest that three out of five initiatives are focused on short-term objectives.

Taking the Kinvara Catchment in isolation this figure increases to four out of five initiatives being targeted at shorter term goals. Looking at the activities identified on Table 5.1 in terms of the numbers of people supported, the evidence also indicates that overall short term responses addressed the needs of a wider portion of the community whereas the longer term strategies consisted of much smaller groups pursuing specific objectives that catered particularly to their identified flood related event. The Kinvara Catchment displayed both a more varied scope of flood relief support initiatives as well as having a greater number of people benefiting from community supports during the more immediate flood relief stages. The expectation that some of these activities in urban areas would have been carried out by emergency services (as rescue services would be anticipated to be more readily available in higher density populations) was not confirmed by field evidence.

In the Dodder area many people reported several attempts at contacting emergency services such as the fire brigade and the local council but the majority were not successful at availing of statutory rescue and relief supports. In fact, evidence from the field highlights that most statutory supports became relevant only in instances of extremely high exposure to flooding and posing a threat to people's lives. In these instances road closures and population rescue activities took place. Difficulty in contacting rescue services, in acquiring support and information regarding the initial response to a flood is illustrated in the following quote:

“I rang 999 and everybody was ringing 999 because you see the roads were flooded, cars were flooded on the streets.... I was put on to Kildare they said ‘Oh I am putting you through to the Kildare emergency’, because Dublin couldn’t cope. So I was put on to Kildare and they said ‘what do you want? Do you want air, sea or what rescue do you want?’ I said ‘we are flooded I want to know where I can get sandbags’. Which was totally stupid at that stage right, I just wanted to talk to somebody to see is there anything that we can do. But we were in the middle of a panic really and like we didn’t know when it was going to end because it was our first time. We had no experience of it. So I had no idea... was it going to go to 8 inches was it going to go 2 feet you know, what was it going to go to? You know, we had no idea. We were frantically getting things off the floor and in the mean time I quickly rang and said, you know ‘what can we do, etc.’, and it took ages for them, I have to say, to even answer, and then we eventually got through to Kildare and you know they said they would ring back, and you know. Nobody rang back so they were totally overwhelmed”. (P65, Group Interview, Resident and Community Group Leader, Dodder Catchment

5.2.1 Interpretations in relation to catchment based findings

It terms of observations on community led flood support activities, it would be simplistic if these findings led to the narrow interpretation that the rural catchment displayed a larger number of community supports. There are difficulties in comparing the data in these terms because the two catchments are very different. The Kinvara Catchment faced a prolonged flood episode which persisted in some areas for over 3 weeks. The Dodder Catchment on the other hand was confronted with a destructive flash flood episode which lasted only a few hours. One interpretation of these responses based on the type of flood encountered would be that communities in Kinvara had more time to respond to the people in crisis. However, additional findings suggest that there are more elements at play on this particular issue. For one, looking at the

Dodder case study in more depth reveals that community responses were unevenly distributed around this highly urbanised catchment and some areas benefited from huge community support while other neighbourhoods showed very poor community response. Interviews with affected residents and especially knocking on doors revealed that in many instances around the Dodder Catchment people dealt with flood issues at an individual level. Individualized responses were highest among SMEs and residents of Rathmines, Ranelagh and Harold's Cross areas. Along these areas community awareness of flood issues was comparatively lower than community awareness in other neighbourhoods such as Ballsbridge, Ringsend and Tallaght. The disparate levels of flood awareness as well as community interaction observed in the Dodder Catchment indicate that there are a number of factors determining community participation. The next section expands further on the irregular pattern of community supports found in the Dodder Catchment as well as the tendency for reactive actions on the part of the public in both catchments associated with awareness and perceptions factors. The remainder of the chapter focuses on teasing out further the dynamic that has driven to this largely reactive characteristic of community involvement in flood management issues in the two catchments. A number of important elements are identified which are seen to have a bearing on this matter.

Before further discussion proceeds in relation to community reactive approaches it is pertinent to point out that existing literature on disaster management highlights the fact that in general mobilization rates tend to be higher at the initial stages of an emergency, particularly because communities respond to the more immediate crisis posed by disasters but after this initial response collective supports tends to fizzle out (Pyles, 2007; Norris *et al.*, 2008). The trend towards reactive patterns of community involvement identified in this research can reflect this trend to an extent. However, this disproportionate propensity to reactive flood measures also seems to be the product of other context specific factors. The data captured during fieldwork suggests that there are at least three context specific elements adding to this trend. The first relates to community perception and awareness of flood risks; the second concerns community leadership issues and the third examines state-

community relationships as a determining influence in the reactive character of public participation in flood policy development.

5.3. EXPERIENCE, REACTION AND VULNERABILITY: EVOLVING PERCEPTIONS OF FLOODING

The case study sites were chosen specifically because they both had a history of flooding. It was expected that communities and research participants in these areas would have a degree of awareness and experience in relation to flooding issues. However, this degree of awareness in communities varied substantially and a very low level of awareness pertaining to flood problems was identified in some areas of the Dodder Catchment as a substantial issue inhibiting proactive involvement. Furthermore looking beyond a more general cognizance of past flood issues, the evidence also reveals that in some areas local perceptions of flood exposure and vulnerability underestimated the long-term implications of flood issues which in turn stifled individual and community action. The following quote from an interview with a resident from the Dodder area illustrates the low levels of awareness found in many places and specifically in some parts of the Dodder Catchment:

“We had no idea, I remember being in town the day before, we had gone into Stephen’s Green and the rain was really heavy on the walk home and we both commented ‘God it’s raining an awful lot’ but didn’t realise anything was going to be happening. So anyway we had no idea the next day that it was going to be flooding and when we got back I was here with Lilly on my own and the rain just kept coming and coming and coming. And my husband, I think he was delayed; he got stuck in traffic because of the rain so he was home quite late- by the time he got here it was pretty bad. It hadn’t started coming into the house yet and we still were pretty naive and didn’t realise it was going to. Then it just started pouring in and by that stage it was too late to... We didn’t have sandbags or anything like that and because we are in a basement and where we are on the road we are downhill so everything was going to pour in here, so the preparation side of things, we just weren’t prepared at all...” (P50, Group Interview, Resident, Dodder Catchment).

The significance of several remarks, particularly the emphasis on the fact of having “*no idea*” strongly conveys how unfamiliar this participant was to the notion of flood exposure. Similar observations from other participants suggests that being unaware of a flood threat often goes deeper than not knowing or not having information about the flood history of a place. The participant emphasised this view further by saying “*It hadn’t started coming into the house*

yet and we still were pretty naive and didn't realise it was going to". The 'naivety' expressed here seems telling of many instances during fieldwork where people reported not having an understanding of what flooding is as a real physical force. The link between lack of awareness and inaction is subsequently expressed in the comment that by the time they realised the gravity of the situation, they were too late to react. Numerous similar statements were made by respondents in both study locations and reflect that awareness issues and 'naivety' with regards to flood exposure are a factor which is suppressing the emergence of timely and proactive responses, especially during the flood relief and response stages. This next quote from an impacted resident in the Kinvara Catchment with no previous experience or knowledge of flooding expresses a similar perspective.

"...the field around us was filling up... we still didn't think that it was going to flood, until about maybe two hours before it actually happened... we were so slow to react because we just didn't think that it was going to come in..." (P1, Interview, Resident, Kinvara Catchment)

This passage makes a link between lack of awareness and absence of proactive measures against flooding. Later on in the interview this same participant is prompted to comment on her previous awareness and perception of flooding issues and goes on to expand on the implications and the extent of this lack of awareness.

"No, I wouldn't even have been interested or understand about flooding or I didn't even know there was a swallow hole at the back of the house so I was completely unaware of anything to do with flooding or you know, I remember there was flooding in Dublin a number of years ago and some houses flooded and I remember feeling, you know, thinking oh god, that's terrible. But not having any sense of what it was really about..." (P1, Interview, Resident, Kinvara Catchment)

Again the narrative suggests that awareness issues go beyond superficial information about flooding; this is expressed clearly with the claim of, '*not having any sense of what it was really about*' and at this juncture the interviewee also implicitly makes a link between awareness and experience of flooding. Overall, the fieldwork revealed that there are a significant number of individuals and communities living in flood prone areas with little or no

knowledge of flood issues and this is adding to vulnerability and exposure to flood impacts. Furthermore research has shown that existing experiences in more fragmented and individualized communities do not promote future collective ‘flood memories’ which could potentially enhance the resilience of communities for future events (McEwen and Jones, 2010)

By way of contrast the following quote reinforces the fact that awareness and experience can be enabling tools for coping with flooding issues more successfully. Farmers were identified during fieldwork in the Kinvara Catchment as a group significantly exposed to floods due to the extensive area of farmland prone to flooding in this specific catchment; however, overall evidence suggests that this group has been comparatively better equipped to handle the challenges imposed by flood exposure. In the course of an interview with a local community representative when speaking about vulnerable groups and preparedness to flooding, farmers were identified as a singularly prepared group for tackling flood issues:

“There were others, mainly farmers who saw this as a problem and they would have known that their fathers and grandfathers had experienced this... there is a certain doggedness I would say that they faced it with.”
(P19, Interview, Local Community Leader, Kinvara Catchment).

The quote above suggests that farmers in this catchment are a more flood aware and determined group. It is highlighted in the quote that past experiences of flooding have made the farming community generally more attuned to the problems of flooding. This notion reinforces the role of flood awareness in adequate flood management practices. Additionally farmers also benefit from a range of other resources which other groups in the community such as residential neighbourhoods or business do not. This is the ownership of land and machinery. Overall farmers also showed a very keen and practical understanding of the topography and the hydrological behaviour of rivers and water sources which derives from their working relationship with the physical environment. The following quote exemplifies some of the work that farmers can do which other groups in the community would find more difficult to carry out.

‘They [Local government] don’t have a lot of resources to do major work, rising roads and widen roads and things like that. I know of an area above, near Tubber, they [farmers] rose the road themselves. ... They got permission from other farmers ... and rose it themselves.’ (P11, Interview, Resident and Farmer, Kinvara Catchment)

This indicates that the farming community has access to resources which enable greater involvement in flood relief and prevention measures and which in turn may also lead to a more proactive attitude towards flooding issues whereas groups might feel more dependent on local government resources as was the case illustrated by the quote above. The literature consistently highlights that disasters are catalysts for change; disaster impacts usually expose existing vulnerabilities and inadequacies which prompt communities to action (Folke *et al.*, 2005; Johnson *et al.*, 2005; Pelling and Dill, 2006; Tierney, 2007). The extreme intensity and impact on local communities leads to a much greater level of involvement. This fact was very relevant in the two case studies. It can be argued that community involvement in the two catchments is driven primarily by the experience of flooding. The next two quotes illustrate this point:

“The committee that we have on our residents’ association, we are the only house that suffers flooding. None of the others do, so when I go to a meeting and I start talking about letters I have sent I can hear the sort of general group go ‘Zzzzzzz’ ... One of our other members suffered last year three or four different bouts of flooding from the sewer line where she had contamination all around her garden and suddenly her interest was kindled. Wow! I thought ‘Right. At long last the committee is awake’...” (P74, Interview, Community Leader, Dodder Catchment)

“It is hard to get participation from those that are not affected. Those that are affected will gladly participate and do what is needed”. (P2, Interview, Kinvara, SME, Community group member)

The link between community flood awareness and experience has been established in the literature as a determining factor in individual and community behaviour with regard to disasters such as flooding (Norris *et al.*, 1999; Viscusi and Zeckhauser, 2006; Botzen *et al.*, 2009). In particular Botzen *et al.*, (2009) highlight the fact that views on flooding are shaped by experience mainly because those with previous experience find it easier to imagine that a flood will happen again (Fordham, 1998; Ketteridge and Fordham, 1998, Botzen *et al.*, 2009).

5.3.1 Awareness and context specific vulnerability patterns

Previous research conducted by Bradford *et al.* (2012) as well as O’Sullivan *et al.* (2012) reinforces the finding that there is a low level of awareness of flood issues in Ireland and that this has resulted in limited proactive action. The two case studies presented here illustrate some of the contextual and place specific factors determining awareness and perception issues. In Dublin city centre responses obtained from knocking on doors in particular revealed that in some areas transient population patterns led to a lower than average awareness of floods. In these areas there was a high number of rental properties and most people were foreign workers, students, or young people and young families with no previous link to the area and little knowledge of local issues (specifically flooding). It is significant that one particular site in the Dodder case study was one of the most flood prone areas in the whole study area and yet it displayed the lowest level of flood awareness. Interestingly people here were also more concerned speaking with researchers and even installing flood protection system because this would decrease the value of their homes. City Council officials revealed many people sell their property after being flooded; this may lead to a cycle where people just keep moving once they are flooded and because it is Dublin City it is perhaps easier to sell even in a flood prone area due to lack of awareness.

Moser *et al.* (1996) have demonstrated that both urban and rural societies experience different forms of vulnerability. Research in this matter also stresses that urban areas are more exposed to environmental danger due to social fragmentation (Moser *et al.*, 1996; Pelling, 1999, Quarantelli, 2003). The lack of awareness highlighted in this particular area of the Dodder Catchment emphasises the fact that particular patterns, more associated with urban environments such as transient populations and fragmented community relationships, are directly creating a specific form of vulnerability associated with lack of awareness. This less cohesive level of interaction between individuals also does not create the ideal circumstances for the development of long term community collaboration. It has been noted in the literature that the capacity of communities to cope with disasters is linked a varied range of circumstances which leads to various levels of vulnerability, dependency,

empowerment and mobilization (Cupples, 2007). The empirical evidence in the two catchments demonstrates that there is significant difference between communities which impacts on how individuals and groups experience and address the many short and long term challenges posed by floods. Low levels of awareness were more prevalent in the Dodder catchment and specifically as stated, in some specific areas where transient population patterns seemed to enhance this problem.

There are, however, other cases where reactive community responses appear to be linked to perceptions of flooding and exposure. It has been well established in the literature that perceptions of exposure and vulnerability can vary substantially within communities (McEwen, 2011). In this instance findings reinforce two specific factors. One is that perceptions may be mitigated by the expectation and a level of trust that there would be support and protection forthcoming from formal institutional sources, particularly local government and specifically the County Council. The second factor that seems to influence flood exposure perceptions is linked to knowledge of past events. The following two quotes exemplify these instances of perception of flooding issues:

“Well I only bought that property three, four years before the flood. So even though I was aware it had flooded but the council told us that they had solved the problem and they had put something in place to solve the problem, but they hadn't and if we knew that, we would have put pressure to do what we have done now. But we didn't know it and the damage is done...” (P2, Interview, SME, Community Group member and Farmer, Kinvara Catchment).

This quote above highlights that perceptions of flooding are often mitigated by expectation that the problem is being addressed by the government. Additionally perceptions can be shaped by local knowledge and past experiences. The next quote below taken from a focus group with farmers and local residents in the Kinvara Catchment, illustrates this point:

“(P22) Ya, this was considered a safety area, here...it was grand, cars were left here. You got up in the morning and went to work... in ‘ninety five it didn't come into the house so we took it for granted that it wouldn't come in.

(P23) never believed it for a second.” (P22 & P23, Focus Group Interaction, Resident and Farmer, Kinvara Catchment).

The first quote shows that although the area had been flooded previously communities relied on local government action to prevent recurring episodes. It also suggests that prior to this particular event the community had not engaged fully with the issue. The participant expresses this when emphasizing '*the council told us they had solved the problem*'. This subtly indicates that the expectation and a level of trust on the local council served to mitigate against a more acute awareness of future flood exposure and it also in turn maintained a more passive attitude to the problem. We can see that when the flood re-occurred there was a major shift in attitude and perception, '*if we knew that, we would have put pressure to do what we have done now*'. This is arguably the turning point when the community becomes more proactive and when key stakeholders frequently emerge to drive forward the development of solutions, which was the case in this instance. Pelling and Dill (2006; 2010) have termed this pattern of action as 'tipping points' where the disaster event drives the political and wider mobilization process by temporarily exposing vulnerabilities and destabilizing the normal day social order.

The second quote speaks of a different form of perception which is linked to local knowledge and past experiences of flooding and in this regard it is interesting to note that the respondents from this focus group had in fact had experience of other floods in this area. The location in question had flooded considerably in 1995 and there were also earlier accounts passed on from older generations which helped develop a sense of place and of how floods impacted and behaved in this particular locality. UK based studies have established local knowledge as a valuable resource which provides skills, a means to transfer knowledge to other people and to enhance the understanding of complex systems (McEwen and Jones, 2010; McEwen *et al.*, 2012). In the case of this research there was evidence showing the positive influence of local knowledge in enhancing people's awareness of flood issues. The farming community in the Kinvara Catchment is a fitting example of the benefits of local knowledge and shared skills sets and experiences over the years. In relation to a learning and enabling process derived from the actual experience of flooding, the evidence is mixed; some people reported that the experience of flooding made them more able to cope, especially psychologically with future flood impacts

while a large number of people reported the opposite and said that the experience of flooding has led to no lessons on how to cope better in the future and left an enduring feeling of vulnerability.

In some instances the fieldwork evidence showed that awareness of past events undermined the ability of communities to assess adequately flood exposure. This was clearly expressed by those Kinvara Focus Group respondents who based their assumptions about the risk of flooding on what had happened in a flooding episode that had occurred several years previously. Speaking with a number of people on both case studies revealed that this particular notion of relying on past flood patterns is an important factor which is influencing and informing existing perceptions of flood exposure. It was surprising to find on many occasions that people believed they had no problem with flooding because their specific house or property had not been flooded during previous episodes even though the flood waters had been very near the place and that in different circumstances it could potentially affect them. This was the case in the Dodder Catchment where neighbours living adjacent to affected properties believed that flooding was not an issue for them. It was also exemplified in the case in the more rural catchment of Kinvara where houses adjacent to serious and extensively flooded areas were deemed safe from flooding due to past flood patterns, and people therefore argued that the problem did not apply to them. In fact knocking on doors and talking with many of the communities surveyed, this perspective based on past flood episodes was observed on many occasions and proved a challenge for gaining more insightful contributions from some people in flood affected localities. This raises some concerns over awareness of flooding in light of changing environmental circumstances such as land use changes and climate change. It suggests that some communities are possibly underestimating the level of exposure to flooding due to past experiences

5.3.2 Assessing data and findings relating to awareness and perceptions factors

The findings are not exhaustive in terms of identifying the full depth and range of flood awareness and perception factors and in particular how it influences collective action. However, the fieldwork material strongly suggests that there

is considerable variability in local perceptions and awareness of flood issues and that these have a bearing on community and individual choices to take proactive measures against flooding. Previous research conducted in this area highlights the significance of understanding perception and awareness as grounded on place specific contexts which can lead to a greater and more effective understanding of specific patterns of community engagement and indeed community vulnerability (Motoyoshi, 2006; Cupples, 2007). These results have highlighted that social fragmentation associated with urban environments is a barrier towards greater awareness and collective action. In addition expectations of state led solutions have also emerged as a factor feeding into existing perceptions of flood exposure. The importance of experience was established as a factor in making communities more sensitive to the problems associated with flooding. Finally the research has identified that reliance on historical patterns of flooding in a perhaps changing environmental context (due to land changes and climate change) can lead to people underestimating exposure to flooding.

5.4. LEADERSHIP: A VOICE AND DRIVE BEHIND COLLECTIVE ACTION

Leadership issues are the second factor discussed as a potential influence on the dominance of reactive approaches observed throughout this research. There were a number of telling instances where effective community strategies intersected with leadership issues. This points to a crucial dynamic between driving and sustaining the process of community engagement with flooding challenges, and again there are place specific factors which point to the strong link between leadership and the ability of groups to engage in longer term objectives in terms of flood management. On both case studies the data suggests that leadership at grassroots level results in more successful outcomes for the community. The fieldwork evidence indicates in a number of ways that the persistence and focus required to tackle long term flood issues is critically dependent on leadership to drive the process forward.

One visible element within the Kinvara case study which contrasted with the overall more reactive and short-term character of community mobilization

encountered was the greater strategic involvement of community members in Crowe Street located in the town of Gort, a section of the town which experienced very severe flood impacts to properties and businesses. This group stood out in the catchment as being highly proactive, from commissioning independent reports to liaising and lobbying intensely with local authorities in order to secure solutions. In summary, the group was extremely successful at achieving desired goals and objectives. These included securing funding for a number of structural remedial solutions and the implementation of a water pumping system to offset the damages in the event of another flood episode. Strong leadership was one of the outstanding characteristics identified in this group. Speaking with five members within the group and other people from the wider community, evidence strongly suggests that leadership in this instance was a major driving force. However, the objectives of the group were largely targeted at securing structural solutions for the area which suggests that the group may have limited its engagement to obtaining a desired structural protection system and not engaged in other non-structural activities such as policy development, community preparedness or prevention activities.

Apart from the Crowe Street community group identified above, the other group engaging with flood management issues on a long term basis in the Kinvara Catchment was the Irish Farmers Association (IFA), which is a national non-governmental organization focusing on promoting and advancing farmers' interests across Ireland. Representing over 88,000 farmers in Ireland this very proactive group has secured a more privileged position and interaction with local and national decision makers. The association holds regular meetings with several of the agencies involved in flood risk management policy making and implementation, which includes the lead agency the Office of Public Works (OPW), Galway County Council, the Fisheries Board and the National Parks and Wildlife Services (NWPS). The leading role that the IFA has in representing the interests of farmers in terms of flood management in this catchment can be seen as a significant influence in an area where over 21% of the population is engaged in farming activities. The group provided much support during the floods to affected farmers in this largely rural catchment. Through the support of the large network of farmers

that donated goods, resources and time, the flood relief efforts and the many specific needs of the farmers in the Kinvara Catchment were largely coordinated and managed by the IFA. The organizational capacity of this group is substantial and has proved to be very valuable in providing support for affected communities in the area. However again we see that the policy approach adopted by this group remains focused on the development of structural solutions for flooding issues. Although the association has also challenged predominant views of risk, specifically risk management approaches to the environment (this issue is further discussed in Chapter 6) overall the strategy of the IFA is framed by the core objective of securing greater structural solutions for the area, reflecting their main occupational concerns about damage to agricultural land that constitutes their key working capital.

The IFA alongside the local farmers in the catchment have supported the construction of a surface channel to carry the flood waters to the sea. This measure has been rejected by local and national authorities due to the high environmental and financial costs involved. The struggle to secure major structural defences for the area has come to represent to a degree a conflict of interests between local people and government bodies. The development of alternative solutions for the area that could perhaps include a degree of non-structural work and initiatives is not visible in the Kinvara Catchment. Most measures are focused on flood prevention through the use of structural defences; flood management initiatives such as community recovery and preparedness are largely absent issues from community activities. The influence of the IFA or the Crowe Street group in advancing solutions has to date not led to the development of a broader range of initiatives in terms of flood management strategies. The findings therefore suggest limits to the range of long term activities in which communities have engaged, specifically in the Kinvara catchment. The frame of community engagement in this area is very much informed by structural defence and prevention ideas.

The two examples above from the Kinvara Catchment have identified strong leadership influences in the development of community led strategic flood management. By contrast most other places in the Kinvara Catchment showed

little strategic or long-term involvement with flood issues. As already established in the findings communicated on Table 3.1 (pp.3-4) the Kinvara Catchment benefited from a great deal of community supports in the more immediate stages of the last flood event that impacted the area in 2009. However, there is a marked decrease in activities targeted at long term recovery, prevention and preparedness measures. The following excerpt highlights a number of factors which reinforce the findings linking lack of leadership to low development on long term flood management strategies:

“(P6) I can't see the people around here. They are very meek and there is only one or two that would be able to....

(P4) Strong talkers

(P6) strong talkers you know. You need somebody... You need a community of some description

(P4) You definitely need a community of some sort in an area where there had been a huge impact like that.

(P6) Tragedy. Really it was a tragedy. That's the only way you can...

(P4) The huge impact it had on people's lives. Where houses, several houses were flooded not just one, do you know. But who would be the people to come forward, *the ones to do it? Do you know? Who would be the volunteers?*

(P6) There are... a lot of those are country people, are people that just would be ah...

(P4) just keep to themselves. Just quiet people.

(P6) Ya, they are, they are not...

(P4) They wouldn't be talkers, they wouldn't be political minded at all like, they wouldn't be...

(P6) oh you would want somebody, you would want somebody [to lead]

(P4) unless there was somebody assigned to each area that would help get people together. Someone that was the leader that would do the...

(P6) the initiative to get going

(P4) Ya. (...)

(P6) That's what you need, you need that...put their teeth in and not let go. That's the type of people you need.” (P4 and P6, Residents, Kinvara Catchment)

This excerpt highlights the fact that not only is there an absence of community activities in this area but also that community engagement is complex and intersects with many place specific social and cultural issues. The participants express and identify a lack of community mobilization and further suggest that

some areas are not very politicised and might lack the leadership and confidence to articulate their problems in a public forum. Particular vulnerabilities and limitations associated with rural spaces can be a factor in inhibiting greater community involvement and mobilization. Although rural areas are increasingly understood as heterogeneous areas with varying degrees of interconnectedness with urbanized environments (Mahon, 2007) there are some characteristics of note for this research. Factors such as lack of resources, inadequate social infrastructures and limited channels of collective action have been established in previous research as barriers for greater participation in rural areas. (Wilkinson, 1991; O’Cinnéide and Cuddy, 1992; Morris and Wheater, 2007). Furthermore the fluidity and complexity of spaces and relationships developed in both urban and rural areas makes the process of participation less obvious and more embedded in specific local circumstances (Tapsell and Tunstall, 2008). The significance of leadership for example suggests that involvement is linked with a degree of chance, i.e. some localities have the advantage of having motivated, skilled leaders in the community while others might not, and this will have repercussions in subsequent participation levels.

5.4.1 Uneven patterns of participation: diverging social networks and disparate skill sets

The notion that participation can be determined by place specific circumstances is reinforced further in the next observations shown here which speak of the uneven patterns of long term participation observed. The exploration of the two case studies reveals that there is a noticeable distinction between the rural and urban catchments in terms of strategic involvement and leadership. Long term community initiatives and in particular strategies which require engagement with government at local and national levels appeared on both study areas to be limited. However, in both case studies, urban areas displayed a higher level of engagement with longer term strategic activities. Interestingly also is the fact that the most proactive community groups engaging with local political representatives, local authorities, commissioning reports and mobilizing other members of the community appear in the more affluent parts of the Dodder case study in the areas of Ballsbridge, Rathmines and Ranelagh. The next quote

taken from an interview with a local newspaper reporter who had extensive experience of speaking with flood affected communities in the Dodder Catchment emphasizes some of the points made above. In this part of the interview the local reporter is referring to a meeting that occurred in a local pub in October 2011 just after the flood event which impacted many areas in the city centre:

‘...So now the area to be affected is the upper class area, so there was a big difference there I found on that meeting. People were very articulate they were very able to argue with the TDs there was no deference there to the authority if you like. They were very angry with their TDs and with the local authority for not coping better...and it’s interesting that these people were so articulate because these were people who were living in 2 million euro houses and 3 million euro houses and they were amazed they had been affected...a lot of people as well were reading and they were well up on the flood reports and planning decisions that were affecting flooding in the area. So they know a lot of what was going on. Compared to the say, the river that was flooded down in Kilmainham, the Poddle. I don’t know if people around there would have been quite as informed about things, you know. It’s interesting, they kind of knew what the problems were and they had very strong ideas about how to deal with them but they wanted their leaders, their local councillors and TDs to liaise with the Department of the Environment and with the insurance companies because they felt as individuals they couldn’t do anything. Some of the individuals commissioned reports by hydrologists - they were able to afford to have their own reports commissioned...’ (P63, Local reporter, Dodder Catchment)

The reporter in this quote also attempts to provide a form of explanation to the types of strategic mobilization identified. The notion of people being ‘very articulate’, being ‘informed’, being ‘able to afford to have their own reports commissioned’ and having ‘no deference there to the authority’ are elements that can offer a degree of understanding as to why long term mobilization might be present in some areas and not in others. The higher organisational capacity observed in the urban neighbourhoods suggests that leadership is facilitated by specific social supports more easily accessible in urban areas. Borrowing from insights from Moser *et al.*, (1994) we see that while relationships and circumstances associated with urban environments can create specific forms of vulnerability as was highlighted in the previous section in relation to observed patterns of community fragmentation leading to lack of awareness, in urban environments there is also strong potential to facilitate public participation in flood management issues. As a function of population density and the particular profile of people working in urban centres coming

from a professional background there is more availability of resources and leadership skills which can result in informal networks of cooperation being more readily available in these areas.

5.4.2 Participation and leadership: Process, demands and change

The notion of strong leadership and the potential for driving the process of community participation appeared on two other interesting dimensions. The following two quotes offer some insights into community development as a process which is both demanding and complex. The internal and external dilemmas that are highlighted in these quotes reinforce the notion that problems and barriers associated with participation are both common to, and intrinsically linked to, the social and environmental context in which they occur. The following quote from an emerging community leader illustrates the dilemmas and issues faced by community leaders and the possible barriers to long term participation. The context in question is a very specific one; that of pursuing a semi-public organization for accountability over flood damages perceived to have been the consequence of negligent practices. On this particular matter the participant expressed his view of participation by stating:

“We’re getting flooded because of them, directly because of what they did and we haven’t the money to fight it... We put together a residents committee afterwards and we tried and we are still trying but it's difficult to fight a big organization...what do you do? Do you sit back and take it or do you make it your mission in life to try and solve it? But if you do that it will just engross your life totally do you know what I am saying? So what do you do? And they know that. Unless you have someone really really strong to put so much time into it and try and fight it what are you going to do, you know? What are you going to do?...” (P68, Interview, Resident and Community Group Member, Dodder Catchment)

The next quote comes from an interview with a community leader from the Dodder Catchment. This passage is taken from a part of the interview where the discussion is focused on emerging community groups and associated concerns of the demanding nature of this process in terms of time and emotional commitment.

“... I think your psyche makeup is such that either you are tenacious and you look at injustice going on around you and you can’t take it and therefore you will push and kick ass till you get somewhere.... but people do wear out and get exhausted...If you win a little bit... somebody else will take up the fight when you’ve had enough...” (P74, Interview, Resident, Community Group Member, Dodder Catchment)

Participation, leadership and mobilization are thus portrayed as a difficult process which is often demanding and requiring time and resources as well as commitment. Cornwall (2008) emphasizes this point when discussing the process and drivers of participation.

“Participation takes investment, time and persistence [it] cannot be achieved by waving a magic participation wand, convening a workshop or applying a few PRA tools” (Cornwall, 2008, p.278)

The following quotes further illustrate two other significant factors adding to the complexities and difficulties associated with participation in flood management practices. The Irish Farmers ‘Association (IFA) commenting on the process of involvement in flood management matters, emphasises the difficulties associated with this process:

“we had to take on the mantle of being the lead organization at the time to drive forward this... and get something done after years of neglect and it has been an extremely slow nail biting, bit by bit process” (P18, Interview, Kinvara Catchment).

Another community leader with extensive experience in community environmental matters adds:

“An awful lot of people now just won’t come if you call a meeting tomorrow morning, they just wouldn’t attend. So I don’t know how you break that. Unless and until people see that they are making a difference or a change or something is done that they attend and they made this point and you know it came through. Until that happens, people are just switched off, and that is a major problem for the system as we move along” (P3, Community Leader, Kinvara Catchment)

These observations signal that although leadership is a significant factor in advancing community led initiatives and promoting inclusive channels for the management of flood problems, it is also a process that is compounded further by other important factors such as confidence and trust in the process of participation and its capacity to achieve change. This is discussed further in Section 5.5 in terms of governance strategies and the relationship between the state and other stakeholders in dealing with flood management matters. The results discussed in this section on leadership have demonstrated that participation is a process that carries a number of demands depending on the specific problems encountered and some of which the community is not adequately equipped to address. To a large degree communities are still crucial and have been a consistent source of support for affected populations but there

are limitations of note such as belief and ability to achieve change which evidence suggest has resulted in reactive forms of community participation in flood management.

5.5 FLOOD MANAGEMENT IN PRACTICE: A QUESTION OF PERSPECTIVE

Learning about the institutional structures that make up flood management in Ireland is a challenging task. There are few secondary materials available that provide clear cut information as to how flood strategies are institutionally organised in Ireland. This fragmentation also meant that the more integrated perspective on flood management adopted in this research was more difficult to apply in an analytical sense. International best practice guidelines on disaster management suggest that addressing issues such as flooding within a cyclical framework is a desirable approach (Alexander, 2002; Wisner and Adams, 2003; UN/ISDR, 2004; UNESCO, 2012). Although this cycle expresses disasters in a way that is largely artificial (see Figure 5.1) this categorization is very valuable in terms of appreciating the several phases that complex events such as floods go through (De Smet and Lagadec, 2011). However the OPW's overall strategy and the catchment plans that it is developing have a much narrower approach and understanding of flood management. The OPW as the leading agency is mainly focused on mitigation and prevention measures. Outside of this area state engagement becomes fragmented and unreliable. Flood response and reconstruction activities are left to a confusing array of state agencies such as local authorities, the emergency management services unit, the social welfare office and a varying range of NGOs. Most of the impacted participants in this research claimed flood response services to be largely unresponsive and the majority of participant expressed a great surprise at this low level of response.



Figure 5.1 ©UNESCO 2012/Disaster Cycle (<http://www.unesco.org>)

Coupled with a strategy that can be characterized as limited to prevention and mitigation measures, people also expressed confusion in terms of communication and access to support. The main structural issue identified by research respondents was the large number of statutory agencies with a role in flood management matters. This excerpt from a focus group conducted in the Kinvara Catchment with residents from the Kinvara Catchment expresses this idea. The discussion here was prompted by a question on how to access support and resources:

P23: “I don’t know where you would go...There are too many bodies involved in it that is for a start“;

P24: “That is the problem. Where would you go? Like it’s not clear cut, where to go and how to access it...There is actually no agency or person responsible or an agency that you could contact.” (P23 & P24, Focus Group, Resident and Farmer, Kinvara Catchment)

The initial and most overwhelming impression from speaking with communities on the field was the realization of how deeply fragmented and uneven the whole process of flood management in practice actually is; within this piecemeal structure the ability of communities to initiate and maintain effective interaction with governing bodies is made significantly difficult. Secondary and empirical evidence reviewed in Chapter 4 revealed that the capacity of the various state agencies to address flood management issues and respond to community needs is also curtailed by this internal divide. The way communities have interacted with various state bodies at different stages of the flood cycle illustrate that this is a deeply divided process which raises concerns over concerted action and accountability. The often fragmented way in which problems are identified, decisions are made, actions are taken, and strategies are implemented and evaluated results in an overlapping and cascading flow of

damaging consequences along the different phases of a flood. It potentially also leads to conflicting positions with regard to responsibility and accountability structures. The links that bind one specific agency to the complexity of problems associated with flooding are weak and communities ultimately find little positive change in engaging with any particular agency.

Mason (2008) has argued that governance ‘diffusion’ of responsibility makes up for lack of coherence even at community level because there is much fragmentation to contend with. The concept of ‘institutional trap’ is useful again here (as discussed in Chapter 2) in terms of exploring the particular vulnerabilities that emerge from this situation and also understand why these dysfunctional structures endure often in the face of failure (Polterovich, 2001; Lebel *et al.*, 2011; Polterovich, 2014). With responsibility being diffuse it becomes difficult to allocate responsibilities and accountability to any one agency. The following example is a practical illustration of how accountability and responsibility are undermined by structural deficiencies at government level. It highlights a lack of influence over planning practices and the perceived growing impact that land use changes have on flood exposure and vulnerability:

“...I have seen houses built in flooded areas...It was common knowledge. The dogs in the road knew...and they still got permission...For instance Lidl being built on a swamp...if they continue with the new road, it’s going to even drown us much more...” (P12, Kinvara Catchment, Resident & Farmer)

In opposition to a predominant discourse of flood causality, which largely naturalizes the causes of flooding by linking them to extreme and unpredictable rainfall (this is evident in existing flood reports and government documents), current flood episodes are increasingly experienced by local communities as a consequence of inappropriate large scale developments in housing and road infrastructure. The ongoing role of government agencies in sustaining patterns of vulnerability linked to planning has been emphasized on numerous occasions by residents, farmers and SMEs in both catchments. This has led to a number of court challenges in Ireland, but none was identified in the two case studies.

5.5.1 Raising concerns over development: perceptions of accountability and responsibility over planning choices

The perception from some impacted communities is that developments in flood plains have had substantial social, environmental and economic costs in local areas. In the Kinvara Catchment people raised concerns over building houses on flood plains, on large scale road infrastructure, on intensive draining structures created to sustain new windmill farms and forestry activities in the mountains. All of these developed in a highly sensitive karst system whose hydrological behaviour is still not fully understood. Yet these developments remain largely unchallenged and there has been little recognition of the potential flood exposure associated with new developments in the Kinvara Catchment. One particular resident stated that he knew for a fact that his farm and home (which had been in the family for three generations), had been flooded because of developments and robust drainage activities in the mountains situated just above where his land is located. However he stated that because the karst system is so complex in this area and because the legal process is so expensive he believed he did not have the means to pursue the local authorities for damages. As noted in Chapter 4, the opinion of a hydrological expert about this situation in the Kinvara Catchment confirmed that the developments on the mountains could very likely impact people in the lowlands, but he re-emphasized that because this a very complex system it would be extremely difficult and expensive to generate evidence to support these claims. These developments in the Slieve Aughty Mountains and in particular the wind farm structures have generated considerable conflict and disagreement. A substantial landslide episode which occurred when workers were creating the foundations for the wind turbines in 2003 led to community mobilization and court procedures which culminated in the EU commission prosecuting Ireland in the European Court of Justice in 2005 (Collins, 2005). The process took more than 10 years to be resolved and some members of the community commissioned their own reports (Lindsay and Bragg, 2005) and went through an extremely demanding and expensive process to make local authorities and the developers accountable for damages. The European Commission in response to problematic planning practices in this area revised EU law in relation to procedures for carrying Environmental Impact

Assessments. The issue of flooding however was never addressed in this instance. The experience of individuals and communities, as communicated by two research participants involved in this process in this area reinforces the notion that local accountability for development practices is weak, and that in these circumstances community mobilization can be an extremely demanding and expensive process. Leadership is again seen as a crucial factor in what was a long and complicated process. Additionally one member stated that engagement with the EU was crucial in terms of arriving at a conclusion; before this the participant observed the process was continuously stalled by bureaucracy. Community ability to interact at different levels, including international levels has been signalled as a particular strength in mobilizing and achieving change (Larson and Soto, 2008; Brondizio *et al.*, 2009)

In the Dodder Catchment the same theme emerges from the interview data as respondents discussed developments such as the newly built Dundrum Shopping Centre and large residential areas in Tallaght and Jobstown. All were impacted during the last flooding events in 2011 and again local concerns over the links between these developments and growing vulnerability are largely unrecognised. In relation to the Dundrum Shopping Centre several objections were made identifying flooding as a particular concern. A representative from Dodder Anglers' Association (a local NGO which often raises concerns over environmental impacts in the Dodder Catchment), has stated that the engineered culverts that were put in place to build the Dundrum Shopping centre were built in a flood plain and the negotiation and agreements between the County Council and them were largely unheeded. Elite capture can be pointed as a potential source of the divide and unbalance in power relations between influential groups representing economic interest and the less powerful local communities experiencing these impacts (Pelling, 1998; Lebel *et al.*, 2011). Fragmentation and lack of accountability are largely perceived by communities as leading to planning decisions and developments without adequate consideration of environmental impacts and specifically flooding. This unchecked process arguably has allowed developments to occur in flood prone areas and has made communities more vulnerable to flooding. It also has sustained existing power relations of decision making through hierarchical

structures that inhibit greater participation (Pelling, 2008). In particular the findings suggest that the checks and balances deriving from an inclusive participation process that would have constrained development interests in recognition of environmental safety from floods were arrested through these institutional settings.

5.5.2 Potential gaps in flood management support delivery

Another source of vulnerability which was identified throughout this research originates from a considerable gap in the delivery of flood relief support services. Many respondents claimed that the rescue services provided were extremely inefficient. Problems ranged from complete unresponsiveness in time of crisis (possibly due to overload) to inadequate responses on the ground. These quotes illustrate some of the views on the ground in relation to rescue services:

“Well the rescue...The County Council came in alright with some sand and it wouldn't keep water out of a hen's house...” (P12, Interview, Kinvara Catchment, Farmer & Resident)

“...looking at the newspapers and you see all the other faces and they are all waiting around their houses in their wellies and there's stuff floating around... and you just get so locked up you don't see the agencies. You just see the lack of help. And it was the same in Dublin...two years later it was October and again they were on and they were 'oh. We provided sandbags' and you are like. 'Hello!' there is like a flood going through people's houses and it's up to the top of the door and they are talking about sandbags...you felt like saying 'Go down there and look at it and see what a sandbag is going to do'...” (P1, Interview, Kinvara Catchment, Resident)

The quotes above indicate that a perception exists that flood management institutions either lack the know-how or the experience to provide adequate rescue supports to the people affected by flooding. This might be a consequence of a lack of engagement with local experiences of flooding and the fragmented way in which supports are provided.

It seems fair to suggest that without a more holistic understanding of the different types of difficulties that are experienced and the existing provision of supports people will continue to be made more vulnerable due to the inadequacy of rescue supports. The comparative case study material emphasised the fact that flooding can impact areas in different ways. It is

dependent on the physical characteristics of the catchment as well as the social aspects of the places impacted. Communities are exposed to the hazard itself in different ways and local capacities are also very different. In the Kinvara Catchment, for example, the largely rural population, with sparse housing and a slow water draining system created long-term difficulties for residents and farmers. Some of the difficulties reported included stocking for food provisions, obtaining medical care, attending school, feeding cattle and travelling to work. This situation lasted for over three weeks in many instances. By contrast the Dodder Catchment is a largely urban setting with a high population density, a complex infrastructural system with engineered river systems and extremely prone to flash flooding. The rescue needs in the Dodder Catchment were very immediate; safety issues were a great concern in this instance as in many cases people had to be rescued from drowning. Two people were killed by the floods that impacted many parts of Dublin in October 2011. There were several other instances of people needing immediate rescue. The realities of inadequate rescue services were seen by many respondents as both a surprise and a concern.

5.5.3 Implications of current formal state-community interactions

In the face of mounting challenges in relation to providing adequate flood management solutions this research has looked to examine the existing role of public participation in handling floods as well as opportunities to enhance community involvement in on-going strategies. One of the important areas in which public participation should be examined is in its relationship with government and policy development. There are, however, many limitations in exploring this role because, to date, public participation in terms of formal interactions with government bodies has been minimal in both case studies. The initial impression from government documents that participation is a central focus of existing flood management strategies is steadily weakened by empirical evidence, based on interviews, focus groups and knocking on doors, that shows participation to be unsound, theoretically undeveloped and driven by the need to legitimize flood policy at local level.

This research revealed that the only participatory mechanism found to enable community-government interaction was public consultation meetings organised by commissioned flood experts compiling reports or local authorities in charge of developing the Catchment Flood Risk Assessment and Management studies (CFRAM). The field examination of the role of communities in flood risk management strongly suggests that there is no real critical assessment of the role the public can have in flood risk management or indeed there are no specific objectives linked to this involvement apart from a target of consultation meetings to be held at specific times to coincide with the various stages of the different CFRAM studies. Both local authorities and local communities have expressed concerns over this mode of engagement. Senior officials from Dublin City Council in charge of the development and implementation of the Dodder CFRAM, when interviewed stated that the consultation process has been limited namely because the only groups attending meetings are largely environmental groups concerned about structural impacts on river and green areas. It was also highlighted by the Dublin City Council that the attendance at these events was poor. Overall impacted residents and communities have not engaged in the consultation process that was put in place to devise the Dodder CFRAM plans. Asking around the many communities and community groups in the Dodder only one person had any recollection of this consultation process. The CFRAM is a significant policy document for local flood issues which defines the strategy for the catchment in terms of identifying problems and solutions. The Kinvara CFRAM study is still on-going and it is therefore difficult to comment but the process to date has many similarities with the consultation activities carried out in the Dodder CFRMS. i.e. mainly a two tiered consultation process privileging powerful stakeholders such as private organizations, interest groups, semi-state bodies with very little capture of community concerns and ideas.

The fieldwork data leads to the conclusion that the government by and large has been unable to secure greater cooperation or community commitment through these means. It has also been largely poor at capturing valuable local knowledge to enhance place specific flood policies and implementation. The public on the whole does not see consultation as an arena for voicing their

concerns nor is there any evidence of fruitful interaction which could enable a greater appreciation on both sides of the complexities in flood risk management practices.

Returning to the initial discussion on the largely reactive character of community involvement in flood management matters, the issues and limitations identified in government-community relationships can offer another level of explanation as to why this is the case. Flood management goes beyond the present institutional arrangements in place. The complexity of issues and problems that it encounters and generates is not represented in existing government plans. This limitation has diluted and undermined community involvement to a large degree. The next chapter provides a more critical analysis of the narratives, knowledge frameworks and discourses sustaining these strategies and provides alternatives based on a keener engagement with the concept of environmental rights. Furthermore evidence the field evidence also leads the conclusion that despite the increased exposure and vulnerability to flooding and the growing awareness of inadequacies by communities, flooding remains a local based issue and there is very limited evidence of community mobilization or interaction at different scales, i.e. regional, national or international (Cox, 1998)

5.6. CONCLUSION

This chapter gives evidence of many issues encountered during the in-depth exploration of the two case-study areas of the Dodder and Kinvara. The many stories, settings and circumstances identified in this chapter lead to an understanding of flooding issues that is both complex and context specific. The material that is portrayed here reflects an extensive engagement with the case study which leads to a rich and varied understanding of many issues encountered. Speaking in this chapter about the reactive character of community participation a number of explanations and understandings was offered to explain how and why this process has been limited to date to largely reactive practices. Awareness and perception influences on public mobilization are explored as a factor determining responses to flooding. Leadership is discussed as driver and a source of commitment to community mobilization.

And finally government-community relationships are scrutinised as well. These explanations enrich and complement the way in which community activities are understood and in terms of the links between research and policy development the findings show that context specific knowledge is crucial for the development of flood management at local level.

The interlinked way in which different findings interact with each other suggest that community practices are indeed complex and while the data and the findings suggests that some elements have a bearing in the type of activities encountered there is always the possibility that there are other elements that could either be working towards reinforcing the patterns identified or, indeed, could be conflicting and destabilizing the findings observed. There is a conscious effort towards maintaining the integrity of the data by highlighting possible conflicts between the different findings uncovered in this chapter. Drawing from the experience and perspectives of different people in the two case studies the field materials reveal some unique characteristics to each catchment but also many parallel and interesting connections between communities in the Dodder and Kinvara Catchments. The relevance of community participation is illustrated clearly in the many positive ways collective action manifested itself but there are also marked limitations of note namely in developing longer and more strategic solutions to flooding as opposed to the more reactive approach that characterizes most of the collective action in this area.

Chapter Six

Moving beyond contextual evidence: Discourse analysis of risk management and implications for communities.

6.1. INTRODUCTION

This final chapter of analysis offers a distinctive approach to handling the empirical material gathered in the Kinvara and Dodder case-studies. The theoretical underpinnings of the analysis produced in the previous two chapters were based on the constructivist perspective, in that they were focused on determining the social dimensions of a subject that, in Ireland, has been largely limited to hazard based accounts of flood impacts and capacities. Drawing meaning and understanding from a multitude of factors which include physical environment, social and political structures, the broad perspective adopted in the previous chapters attempted to depict some important dimensions at play in the issue of community participation in flood management strategies. The multi case study approach gave rise to an appreciation of how flooding is understood and experienced at local levels. It also revealed a complex dynamic between social and environmental dimensions which challenge statutory views of flooding and the tendency to naturalise the causes and consequences of flooding in Ireland.

Maintaining and further deepening the constructivist framework, the analysis that follows examines the perceived importance of risk management in this context. Using critical discourse analysis as the main tool of enquiry, the following sections delve into the social construction of meaning around flooding issues and the influence that risk based approaches have on these. Specifically, the focus is on the mechanisms of control and legitimacy that provide justifications at institutional and community levels (Hajer, 1995, Boltanski and Chiapello, 2005). Furthermore, utilising this method of analysis, the aim is to explore the several manifestations of risk management as a structuring influence which accords specific meaning and value to risk while containing and perhaps suppressing other perspectives and experiences of flooding, particularly in the development of policy (Hajer, 1995). The chapter has three key objectives: (1) to examine the role of risk discourse in the way flooding is understood by different stakeholders and how conflicting

perspectives or experiences are in turn negotiated; (2) to investigate the role of institutions in reproducing the risk management paradigm and to discuss issues of knowledge and trust with reference to risk management practices of government; (3) to consider how social justice issues are depicted in current flood risk management discourses and, specifically, how risk management discourses incorporate notions of social justice.

6.2. ESTABLISHING THE ROLE OF RISK MANAGEMENT DISCOURSES IN THE CURRENT CONCEPTUALISATIONS OF FLOODING IN IRELAND

This research is written during a critical period of transition in Irish experience and involvement with respect to flood management matters. From a state of relatively limited public awareness of flood events taking place most consistently in rural areas and principally affecting farmland, the current shift highlights a growing concern over widespread flood vulnerability in Ireland. This section examines the widening gap between the experiences of flooding as lived by impacted communities and what is included in public policy debates on the issue (Adger *et al.*, 2012). The accounts presented here aim to explore the differences between the government's approach, largely informed by risk management notions, and a public 'reality' struggling to give voice to issues which are conflicting and inconsistent within existing frameworks. The following discussion is directed at comparing the official risk-based approach with an approach that references the concerns and experiences of local communities, interest groups and other stakeholders. This is carried out by critically assessing the role of risk discourses and its growing dominance, and identifying the ways in which risk approaches constrain the debate around flood issues in Ireland. Consistent with the overall constructivist approach adopted in this research, the arguments expanded here reflect a desire to unfold the many processes of control as effected by dominant discourses which are both enabling specific forms of response while limiting others (Wynne, 1996; Chiapello and Fairclough, 2002; Boltanski and Chiapello, 2005; Hajer and Versteeg, 2005).

The argument proposed here highlights the dominance of risk management as a set of devices and logics which are used to explain and control the issue of

flooding in Ireland. The perceived benefits of the risk management approach have led to a widespread use of this instrument in a varied range of public policy arenas (Green, 2000; Johnson *et al.*, 2005; Rothstein *et al.*, 2006a; Krieger, 2013; Rothstein *et al.*, 2013). In the flood risk management policy process, the over-riding influence of risk management discourses is reinforced by the EU Floods Directive (2007) which has made explicit requirements that member states adopt this approach in the assessment and formulation of flood management strategies. The OPW as the leading agency in charge of policy in this area has overseen the creation of the nationwide Catchment Flood Risk Assessment and Management programme (CFRAM). In the course of an interview with an official from the OPW, the scope and rationale underlying this approach is articulated. The following quote sheds light into some of the important characteristics of this instrument for the leading agency in charge of risk management in Ireland:

“...at the moment the focal point for the OPW is engineering activities... focused on the CFRAM Programme running towards 2015-2016. OK? So that is, if you like, the core activity... This was a problem that has been reacted to. The CFRAM will allow us to be more proactive, and to provide a more considered basis for intervention, where do we intervene, to what extent we intervene. It’s more evidence-based. It’s more informed, more objective. Whereas up to now it’s ‘x location floods and we better sort it out, how much money have we?’”. (P98, Interview, National Government Body/ OPW Official)

Evidence-based decision-making, engineering activities and objectivity are considered key advantages in the adoption of the risk management approach. This is consistent with findings from international researchers in this field which highlight the appealing quality of risk management as an enabling tool by means of pre-identified rational and objective criteria and standards (Hood *et al.*, 2001; Krieger, 2013). Significantly, this form of decision-making is underlined by acknowledged limitations which rationalise the measured and targeted interventions of government (Wynne 1996; Rothstein *et al.*, 2006a; Krieger, 2013; Rothstein *et al.*, 2013). The next comment from the state OPW Official outlines some of the considerations involved in the risk management decision making process:

“...having gone through formal public consultations and so on, a robust evidence-based, very detailed survey and analysis of the flooding problems... having gone through a process of optioneering with preferred

solutions ... having regarded the evidence here and again mostly from an engineering point of view, the solution in x location is on the balance of all the options available, x or y, right? It [the decision] will be informed by an extrapolation of cost-benefit into it. So you would have to say, you know: "We can stop the whole island from flooding by putting a 15 metre wall completely around the country that would cost 7 trillion euro and we don't have it". (That is an extreme example but it means that there is a joining of the options available and the available resources to do it)... that combination of factors would inform the process as to what would be the suggested preferred solution, OK? So you might say in a rural area, there are too few people to justify putting in a very expensive engineering solution but you could consider a flood plain if the local farming community can live with that...". (P98, OPW Official, National Government Body)

The confidence in this process is thus expressed in the way it provides efficient and effective means of utilising finite resources. A key element of flood-risk management in Ireland is the overarching use of cost-benefit analysis as a key decision-making instrument. The dominance of cost-benefit analysis is also observed in England. Interestingly, however, is the fact that this is not a standard universally applied across Europe. Notably previous research has shown that other countries like France, Holland and Germany allocate resources and set standards using different criteria rather than cost-benefit rationales; this is in spite of the fact that all countries abide by the same EU floods directive, but with different interpretations of the risk model (Botzen and van den Bergh, 2008; Krieger, 2013). In the Irish context the findings presented here highlight the strong dominance of the cost-benefit culture in matters relating to flood risk management decisions which is visible across different agencies and bodies involved in the formulation and implementation of risk management strategies. This emerged clearly from a group interview with the leading project team of the Dodder CFRAM plan which emphasised the power of the Department of Finance to control the flood risk management process based on costs:

"...our powers are limited. With this new CFRAM process they are improving but even with that there will be maybe 10% of properties at risk in a 1 in 100 year event that there is no cost beneficial solutions. You know, there are some locations in the Dodder that there is no proposed solution because we try and balance the damages against the cost of the project and if the damages are not higher than the cost of the project then the Department of Finance tells us that we can't go ahead with it. So there are limitations and we can't protect everybody.". (P68, Group interview, Local Government/Dublin City Council, Dodder Catchment)

While the rationale of risk dominates the flood risk management policy arena discourse in Ireland by informing the assessments and the priorities that are set, it also justifies a limit to the scope of this involvement (Rothstein *et al.*, 2013). Interpretation of existing literature leads to suggest that through instruments such as cost-benefit analysis, it can be said that in this particular instance, risk discourse has adopted a specific political stance which accords a degree of tolerance for exposure to flooding and by default assumes that the public will have to absorb the impacts and costs of this acceptable degree of exposure (Hood *et al.*, 2001). Again, there are different interpretations of the risk approach. In Germany, for example, the use of other criteria such as the HQ Standard (a water level measure) in conjunction with risk assessment aim to provide flood protection to all citizens exposed to a 1 in 100 year event regardless of costs (Krieger, 2013). The next two quotes highlight how some factors can make the cost-benefit rationale appealing both to those implementing risk management strategies and also, interestingly, to some members of the community as well. A number of researchers have argued that the fact that the risk rationale resonates with some members of the community and appears consistent within their own values and experiences is a key indication of the stronghold it can have in the public policy discourse arena (Hajer, 1995; Chiapello and Fairclough, 2002; Boltanski and Chiapello, 2005). The first quote is taken from an interview with a community leader with extensive experience of liaising with flood risk management officials. In this excerpt the participant engages with the issue of risk-based decision-making and the invariable rationale of local authority representatives in charge of implementing flood risk management strategies:

“The guy said to me: “...Let me put this scenario to you. I have a development of 2,000 houses on the Esker River in Lucan and I have W..... Road. How many houses in your area are affected by the flooding?” I said: “Twenty, twenty-five”. (It has now risen to sixty something in the last flood.) But he said to me: “OK, so I have 2,000 in estates in Lucan. Where am I going to spend the money? I have only got €50. Where will I spend it? Will I spend it on you or will I spend it on them?” He says: “It’s a no-brainer. I’m going to spend it in Lucan and, of course, the Esker. (I don’t mean €50 but you know what I mean, an allocation.)”. (P74, Community Leader and Resident, Dodder Catchment)

This second quote reveals that cost-benefit forms of risk management as a discourse is not limited to the practices and values of government representatives but can also have a degree of resonance at the local community level. An important qualification in this regard is that the interviewee also acknowledges a personal resource advantage in being able to incur the cost of flood impacts to his/her livelihoods:

“Totally, yeah, I mean there isn’t a bottomless pit of money to go around everything, so yeah, I think you have to analyse the risk and make sure that the areas most at risk are protected first, for sure, yeah... I don’t think you can run a country any other way; that is fair enough. But that is from a privileged position, you know, if it happens again I can fix it, but a lot of families can’t, so it is not fair, not a fair situation.” (P54, Interview, Resident, Dodder Catchment)

While this statement signals a degree of identification with the rationale of targeted risk assessments and the efficient use of finite resources there are other perceptions and experiences which challenge the approach of risk and signal the fact that a large number of critical issues for communities are not countenanced within the dominant discourse of flood risk management policy. There are many stories and narratives of people affected by or concerned about flooding which appear at odds with the risk management policy agenda. This is reflected in the large-scale discontent of affected communities in the Dodder and Kinvara catchments, and their frustration and inability to effect change in what was perceived as growing vulnerability to flooding. The following extract taken from an interview with the chairman of the Irish Farmers’ Association (IFA) illustrates some of the issues which emerged on a number of occasions in both case studies. Principal among these is the fact that risk assessments and cost-benefit analyses largely disregard the extreme and complex ways in which people are impacted by flooding:

“I mean you are talking about the catchment flood risk management side of things? I think that one of the drawbacks and the biggest drawback from that is that everything today has to be cost benefitted... How do you cost benefit human suffering? You can cost benefit a flood going into a house as in the effects and the devaluation of a house or whatever; you know the cost of getting the house repaired again. And if it happens again, you can do the same but the weakness in the system is the OPW or some of the agencies say it’s 1 in 100 or 1 in 150 [flood return period] whereas in South Galway it’s more a 1 in 10 or 15 you know, that is one weakness in it. The other weakness is how do you cost benefit having to pull people out of houses that you have to carry out on stretchers and take

them away from their environment year in literally year out, you know? How do you cost benefit young kids going back into their own houses, and I don't care how well you dry your house... there has got to be an effect in relation to disease problems, as in chest problems, you know lung problems, things like that. They are not cost benefited. I mean and that is something that is a ferocious weakness in the whole system". (P.73, NGO - IFA, National Representative).

A number of interesting issues are highlighted in this quote. The IFA representative indicates an obvious challenge to the accuracy of the risk assessments being produced from within the institutional arena. This is evident in the clear challenge to what agencies say is a 1 in a 100 year event being more like a 1 in 10 or 15 and is extremely relevant in the context of risk discourse. There is compelling research which argues that risk management often treats uncertainty in terms of probability formulas and calculations which assume and command a degree of authority that is, in fact, based on artificial conditions (Ewald, 1991; Wynne, 1996; Green, 2000; Stanley, 2006; Rosenbaum, 2008; Yusoff, 2009). Furthermore, other researchers have also competently argued that the authority afforded to this particular technique of 'optimist' estimation and prediction is especially suited and responsive to the prevalent goals of the institutions that perform it (Ewald, 1991; Green, 2001; Stanley, 2006). This in a broad sense indicates that risk is not universally cohesive but malleable and responsive to underlying institutional values, goals and objectives (Raco, 2002; Krieger, 2013). The following two comments reinforce this perception among communities in both catchments:

"I think that politically they look at it, the financial analysts that look at it – to spend one million in emergency services and so forth every 15 years rather than spending 5 million on a particular system that would be done and dusted and gone out of the way and done for ever, and I am of the opinion that we have had that mentality that it was easier to throw everything at it for two or three months... and it's very easy to throw in enough stuff in a cost benefit analysis to make it unfeasible and telling you that it failed marginally when we see ourselves the logic of how some of these jobs can be done, on a much lower [sic].. and costing an awful lot less money than the 'spec[ification]. that they demand.'"(P18, Interview, NGO/IFA, Resident and Farmer, Kinvara Catchment)

The political rationale behind what is portrayed officially as 'objective' and 'evidence-based decision-making' is clearly challenged as a mechanism to direct risk management policy according to political goals and objectives. Another participant adds to this idea of risk performing different functions according to political objectives:

“...the event that happened in October of last year [2011] was well beyond the 1 in 25. It would have been closer to 1 in 100 event. The events of 1986 were probably closer to a 1 in 200 event. We are now facing government policy which has dictated that no flood protection measures greater than 1 in 100 will be provided in areas that are not tidal. 1 in 200 will only be provided in tidal areas and they are doing that as policy. Now the trouble is that the 1986 event was greater than a 1 in 100 event so if they produce a flood events’ measure it’s going to be 1 in 100 and it’s not going to be sufficient for what happened in 1986 which was a greater event plus we have increased rainfall.... Blame it on the global warming or blame it on climate change that happens anyway.... Am I bitter about it? Yes, extremely.... We have submitted our views to the Dublin City Council but the question is, will they take our submissions on board. The problem is that there is a cost implication for them from 1 in 100 to a 1 in 200. So they are looking to take the cheaper option...”. (P70, Interview, Community Leader and Resident, Dodder Catchment)

This questioning of the rationale behind the risk estimations reinforces the perceived notion that risk assessments reflect institutional goals as opposed to representing an objective portrayal of flood exposure. The link made here between risk exposures and the financial commitment necessary to address the problem could be seen as leading at best to a selective use of qualitative evidence to justify intervention measures (i.e. assessment of what constitutes a 1 in 100 or 1 in 200 event); at worst, it appears to endorse official underestimations of the flood vulnerability in this particular area because justifications around costs become the over-riding rationale. This participant goes on in the interview to state that their group intend on making this a very political issue. Again however as highlighted previously in Chapter 5 the focus of this group is mainly driven by the pursuit of structural solutions for their particular location and the challenges to the dominant risk based discourse are motivated by this specific objective.

Another significant point in terms of current risk discourse conceptualisations relates to a noted overemphasis on hazard-centred approaches to flooding, which is actually experienced as a considerably more complex phenomenon. The conventional pragmatic approach of public official decision-making is not only at odds with the perceptions of local people, but also, through its limited scientific boundaries, it fails to address the concerns and priorities of those that it is supposed to be protecting. A recurring theme in the Dodder and Kinvara case-study areas was that “human suffering” is a matter beyond quantitative and financial risk estimations. Previous research has shown that current risk

based assessments usually fail to consider the many ‘intangible’ social impacts of flooding such as health impacts which are experienced as a greater and more severe impact than economic loss (Tapsell *et al.*, 2002; Green and Penning-Rowell, 2007; Werritty *et al.*, 2007, Carrol, *et al.*, 2009). Werritty *et al.* (2007) as well as Bell *et al.*, (2013) make the distinction between tangible/direct flood impacts (i.e. structural damages, loss of life, injuries) and intangible/intangible impacts (i.e. stress, trauma, depression and suicide). Both papers argue that the intangible impacts are both wider and more damaging to impacted individuals. Bell *et al.* (2013) further argue that current international approaches based on risk based strategies are largely deficient in terms of addressing the impacts of disasters on health. Community responses in the two case-study areas reveal that there is a deficient level of direct engagement on the part of institutional actors with such social characteristics of exposure to flooding. The following quote illustrates that flood risk management in Ireland is characterized by largely hierarchical approach which is often unresponsive to local needs and impacts:

“Instead of the government... sitting above and saying well this is bad and that's bad and here we will send out this amount, you know, come around and ask us. Do you know, ask us what do we need.” (P4, Focus Group, Resident, Kinvara Catchment)

As noted, disasters such as flooding can affect communities directly and indirectly in many different ways. The evidence indicates that the existing level of engagement with these various emerging difficulties for communities is only fractionally represented and addressed in the current flood risk management public policy practices. The elderly population in both case studies was a group which proved to be markedly more vulnerable to the impacts of flooding. Underlying health conditions and mental distress have been identified in previous research in the UK as exacerbating factors to flood impacts which considerably affect elderly populations (Tunstall *et al.*, 2006 and Tapsell and Tunstall, 2008). Observations on the impacts on mental health have all been highlighted by the Irish Red Cross (2002) in relation to flooding impacts in the Dodder Catchment.

Krieger (2013) and Rothstein *et al.* (2013) suggest that risk management is appealing precisely because it exerts a degree of control and contains the level

of responsibility of state led strategies Using insights reinforced by previous research it can be argued that treating flood problems through this very specific risk management lens has separated the ‘natural’ from the ‘social’ domain; in these circumstances flood risk public policy is indeed by-passing public ‘realities’, by being both at odds with its surrounding social environment as well as denying these experiences a forum for voicing critical experiences and concerns (Hajer, 1995; Wisner *et al*, 2004).

6.3. INSTITUTIONAL PRACTICES AS AN EXPRESSION OF RISK

Flood risk management is characterised by a highly hierarchical relationship between expert policy-makers and the affected communities who depend on these judgements. The following discussion charts and scrutinises the centrality of scientific-based expertise in the contemporary flood risk management approach. There is specific reference to local perceptions of this form of expertise and, in particular, the strongly observed lack of accountability that stems from associated flood risk management processes and practices.

As highlighted previously, the risk-based approach that dominates the policy arena of flood management seeks out positivist forms of evidence-based decision-making which relies significantly on scientific assessments and expertise. It can be argued that the required strategies and associated measures for producing these assessments has been the major area of concern for the OPW, the relevant local authorities, and other associated environmental bodies and has been prioritised accordingly. Seeking to comply with the requirements and deadlines established by the Floods Directive (2007), the body of scientific knowledge around flood issues has increased substantially. Work in this area has been broadly dedicated to greater hydrological understanding of catchments, mapping out areas at risk and carrying out cost-benefit analysis of areas targeted for implementation of structural measures. The process of collection and development of this material has been both time consuming and extremely expensive. However important this form of knowledge is from a scientific perspective, its value and relevance has remained largely hidden from the public at large and particularly from populations for whom its benefits are presumably intended, i.e. those affected by flooding.

Many people in the Dodder and Kinvara catchments have expressed a number of concerns over the tangible benefits of this intensive endeavour. The following two interview extracts exemplify this sentiment described above:

“There has been more money spent on consultancy reports... you had a preliminary report of '95 and then you had the full report and Jennings and O'Donovan have been brought back again to look at some of those recommendations for Mannin Cross and for Termon out here and for the one in Caherglessaun. They have come back, they have been commissioned, they have been brought back in by the OPW to do a short report again. Like we seem to have a sizeable amount of reports built up over the years but we haven't executed anything, at the end of the day. I mean there is a press at home with the preliminary report and the full report and I mean there [are] other copies of reports that have come out, and I mean you seem, whether you take it across the world of health or industry or finance, we seem to be damned in this country by commissions and reports. But it's one thing to commission a report and make it a dust gatherer and it's one thing to commission a report and do something with it, and that is where we seem to have the problem.”(P18, Interview, NGO, Resident and Farmer, Kinvara Catchment)

In the Kinvara Catchment in particular, which is characterised by a highly complex karst landscape with fascinating underground water systems, the focus on detailed expertise with little outputs in the form of solutions for the communities in the area has been noted on numerous occasions as a concern in terms of policy focus, as well as resource accountability and allocation. The view expressed by this participant is strongly representative of the general sentiment on the ground:

“I think that when they did that big research... for the '95 flooding... there were so many meetings, so many people... and so much money in research... It's frightening the way that the government has wasted the money and with nothing done....”(P12, Interview, Farmer and Resident, Kinvara Catchment)

Moving away from the debate around the actual benefits of this type of knowledge, an interesting issue that arises from this overemphasis on generating knowledge relates to the institutional authority or the capacity of leading flood agencies to actually implement policy on the ground. A number of problems have been identified by communities in this regard:

“Yeah, but a lot of that planning has been done and there is a theoretical mathematical solution. Now, the problem is implementing that solution. That is the big problem.” (P52, Resident and Community member, Dodder Catchment)

While the plans created imply that solutions are being devised for the areas considered at risk of flooding, it is often the case that risk assessments and

cost-benefit appraisals fail to come up with solutions that are applicable on the ground. The time and expense taken to produce these assessments are seen as adding to the burden of creating effective solutions. There are also concerns over the ability of the OPW to enforce the recommendations coming out of the risk assessments produced. Since 2009, there are official guidelines based on the risk maps and assessments generated by the OPW which have been produced for planners and local authorities to inform decisions on future developments. However, the OPW has no authority to ensure that these guidelines are enforced. Challenges and concerns over developments following the creation of these guidelines have been highlighted in both case-studies as an issue:

“Go back to the 1998 report. Twelve houses were removed in ’95 after the flooding here in South Galway, in the greater hinterland here twelve houses were removed because they were built in a flood plain. One of the key recommendations in that report was that any future planning near a flood plain would have to be looked at by the OPW and their observations given on it. That was totally ignored, and where the twelve houses were taken away forty five houses were built and that is factual information.”. (P18, Farmer and NGO, Kinvara Catchment)

Implicated also in this observed tendency to focus on producing and working within the remit of scientific knowledge is a common divide and established hierarchy between expertise and local knowledge (Fischer, 2001 and Murray, 2010a). The reality of this unequal relationship is confirmed by the following comment which also highlights some of the potential consequences of this divide:

“Book learning is acknowledged and book learning is what it is. It’s not experience. I don’t think that you can replace experience. That’s one of the big mistakes that is going on and I think that for years we are paying for that.”. (P74, Interview, Community Leader and Resident, Dodder Catchment)

The following comment also exemplifies the lack of engagement with local knowledge but it is inserted in a specific context, that of environmental conservation criteria. This has been a growing issue of contention in rural areas between local people and environmental agencies. Farming communities in particular have raised concerns over the lack of communication with regard to these issues, as they have also implicated within this debate concerns over protecting their farmland and thus their livelihoods. A review, based on the

fieldwork material, exploring how statutory agencies have engaged with the potential exposure of environmental areas to flood impacts, points to the view that this has been an extremely unresponsive and reactive process on the part of the agencies. It also seems to be the case that local knowledge of these issues is overwhelmingly ignored. The OPW, the National Parks and Wildlife Services and the Fisheries Board as key actors have to date only marginally engaged with this problem. Crucially, the risk and impact assessments conducted focus mainly on the impact of floods in the built environment. Flooding in terms of environmental conservation objectives is widely considered as a natural occurring phenomenon and conservation practices are focused mainly on allowing the natural processes to occur without the interference of humans. A visible clash between mainly farmers and land owners and conservation authorities signals conflicting views on the impacts of flooding on the environment, the underlying approach to sustainable environmental relationships and the use of local knowledge and experience to identify worrying trends:

“...there is a massive amount of local knowledge available to everybody but I don’t see anybody wanting to use it, as in the Office of Public Works or any of the other bodies. I mean National Parks and Wildlife don’t want to listen to local people and I use that instance again because it’s 15 years ago since I remember meeting National Parks and Wildlife with a group of farmers in the river Shannon and we told them we would lose the corncrake in the next 10 years if we didn’t do something about the flooding in the summer. And we are just talking about summer flooding now. We have no problem with winter flooding. But they still didn’t listen to us. It’s still the same today. We have lost the corncrake, we will probably have to lose everything before they suddenly wake up and say: “God these guys had something alright you know””. (P73, NGO, National Representative)

In response to questions about this issue of greater participation mechanisms and the use of local knowledge in the development and implementation of policy, the OPW official contended that the hierarchical structures were justified as a necessity in order to ensure adequate action:

“...just because there are structures there, it doesn’t necessarily mean that is a bad thing, right. The structures provide an opportunity to actually move things along. Whereas in a totally egalitarian system I would suggest that it would fracture so much that... you would never get consensus...”. (P98, Interview, National Government Body/ OPW Official)

The emphasis on “consensus” and “moving things along” suggests that there is no particular strong added value to the idea of community knowledge and participation. As seen in Chapter 5 emphasis on a consultation two tiered process where local communities have little standing indicates that the state practices are internally driven and centralized within the OPW expertise.

6.3.1 Public risk perceptions: exposure to physical and social vulnerabilities

Wynne (1996) has argued that public risk perceptions are based not only on assessments of exposure to hazards such as floods, but are also importantly balanced by determining how capable are governing institutions in addressing and responding to the many challenges posed by flooding. In this sense, Wynne posits ‘the most germane risks are (social) relational’ (1996, p.52). The absence of a voice and influence over existing strategies was observed at many levels during fieldwork. As illustrated so far in this chapter, communities have struggled to articulate in a public forum concerns over planning practices, the use of scarce resources and inclusion of local knowledge and concerns in management plans. These limitations increase substantially perceived exposure to flooding as the experience of government strategy limitations and inadequacies are considered often more substantial than the actual exposure to natural hazards. While community representations of flood events contain a strong link with forces of nature, land use changes and government failure also are major influences in the experience and understanding of the phenomenon of flooding. There is overall a strong perception at community level that the government is not responding adequately to the many challenges of flooding. While discontent with government responses was widespread and noted in nearly every household and business interviewed, mobilisation levels remain low and there is little outward challenge of existing practices. This point was argued by the OPW during the interview:

“I will tell you that the public consultation process last year [2012], this is for the whole country now! The number of submissions was less than 100. Try and tell me that there is a vast wellspring of concern out in the general public on this issue and I will say “yes”, but less than 100 people, groups, went to the trouble of putting it [down] pen to paper. So there is a big disconnect there.”. (P98, Interview, National Government Body/ OPW Official)

Literature on the issue of mobilisation of the public against expert knowledge and governing practices has highlighted how lack of dissent can be equated with a sign of trust and confidence in the practices of government. However, alienation, identity issues and dependency are also factors which explain a degree of apathy and ambivalence towards what are privately considered inadequate structures of government (Wynne, 1996; Fischer, 2001). In the previous chapter, some of these factors were considered in specific contexts, such as cultural obstacles to political mobilisation in rural areas, and urban fragmentation in the urban context. In this section, they were again emphasized by the articulation of what is a perceived deficient institutional setting in charge of flood risk management issues which has been largely indifferent to local knowledge and input. In this sense it is argued that the social institutional structures are reinforcing a hierarchical and expert driven policy process informed and legitimized by risk which feeds in to existing community experiences of flood exposure and vulnerability (Birkholz *et al.*, 2014).

6.4. OBSERVATIONS ON SOCIAL JUSTICE IN REFERENCE TO RISK MANAGEMENT DISCOURSES IN IRELAND

The theme of social justice is extremely relevant in the current discussion of risk management discourses as it is argued that risk approaches in this instance represent a potential transition from a responsive government that has provided a number of vital supports (albeit in an ad hoc, reactive and informal manner) to a much stricter and contained form of government action informed and justified by the risk management paradigm (Raco and Imrie 2000; Krieger, 2013). As argued by Johnson *et al.* (2005) extreme flood events can be potential drivers of policy change. Additionally, it has also been argued that these disruptive moments can be taken as opportunities to promote and expand the logic of dominant approaches, in this instance, the risk management rationale (Oliver-Smith, 1996; Raco, 2002).

The final section of this chapter is used to explore the ways in which the related policies of risk management address the social justice and rights issue. By looking at particular instances and ideas around the rationale and practices informing current arrangements, this section seeks to position the risk

management policy within what is understood as a shifting set of values and relationships between the government and the wider public (Gready and Ensor, 2005). Scrutinising the way these questions are framed in the policy arena as well as at community level, the emphasis in this discussion is on ascertaining which safeguards are established, how they are established and also, reversely, what is being excluded in this process (ibid). The initial part of this evaluation looks at how risk-based management has worked in reference to social justice and equitable outcomes for the different communities increasingly impacted by floods. These are compared to historical practices in order to establish whether significant change is evident. The final part of this section considers alternative discourses and public participation capacities which are explored and weighed in reference to environmental justice and environmental rights concepts.

6.4.1 Situating flood risk management from a social justice perspective

Risk management has been established as the core government approach to flooding in Ireland since the publishing and adoption of the key recommendations of the influential *Report of the Flood Policy Review Group* in 2004. This also signalled a clearer role for government in flood management. Activities beforehand were largely targeted at extensive land reclamation practices and programmes in rural areas (De Bhailis, 1991; OPW, 2011a). As seen in Chapter 2 there has been a substantial shift in flood strategies in Europe from mainly structural based practices to measures which look to increase tolerance of flooding as in the case of DEFRA's strategy in the UK of 'Making Space for Water' (2004) . The relatively short and informal history of Irish involvement in flood management practices make it more difficult to create parallels with this experience. However, research conducted in this area comparing the UK policy approach to that of Ireland signals that there is a potential shift in the Irish approach to flood risk management (Adger *et al.*, 2012). There are, nonetheless, challenges in combining what is currently a fragmented policy process with relatively unconnected practices of government (the previous chapter showed that flood response, recovery and prevention are the remit of different organisations with varying degrees of responsibility) with an evaluation of its impacts as recounted via the recorded fieldwork experiences. This particular theme is given special focus in this

chapter because in the research process (in both the Dodder and Kinvara case-studies), a strong picture emerged of community expectations at odds with outcomes with regard to statutory flood risk management responses. The gap between action and expectations which was strongly felt by local communities can be indicative of lack of experience in dealing with disasters but also related to an uncommunicated and progressive shift to more contained and limited levels of support. The introduction into Irish policy of the risk management paradigm is explored in this sense as a potential driver of change, which in the Irish case signals a more central role for government action but also suggests a rethinking of existing supports in terms of humanitarian relief funds and relocation grants. The timely need to introduce this debate is reinforced by the growing number of social and environmental vulnerabilities which have been highlighted in the previous chapter as preventing communities from accurately assessing their risk exposure. The following quote is chosen to highlight the gap between existing expectations of state support and the experience of these on the ground:

“I don't know why you just presumed that maybe you would be helped. I don't know why that was. There was that bit of you just presumed. Well they know the floods are out, you know, everywhere is really bad, everything is bad and there is all this talk on the telly, and you could see them out helping people out. So I don't know why we just automatically presumed well they are going to come and help us too. Like do you know? Sure we are here as well, like... someone will come.” (P4, Focus Group Resident, Kinvara Catchment)

6.4.2 Experiences of loss and the role of the state: looking at humanitarian aid support services

The high degree of vulnerability and feeling of loss that people undergo when faced with floods has been during the field research often likened to a traumatic experience. In some instances participants used words such as bereavement and grieving to express the enduring impact that it had on their lives. Extreme experiences of loss and exposure can often strip community life down to the more basic fulfilment of needs such as food, shelter and security and at this very basic level it is not uncommon in relatively wealthy societies to expect a degree of support (Shue, 1996; Gready and Ensor, 2005). The expectations of communities in Ireland can to a degree be explained by this belief that basic needs are relatively well safeguarded. But they are also based

on social perceptions with regards to the role and duties of the government in these matters which is rooted in knowledge and narratives of past events. The realization that this was not a straightforward process was seen in the fieldwork to add considerably to exposure and vulnerability by delaying reaction and by adding frustration and stress associated with poor interactions between state support agencies and impacted communities. This experience was repeatedly observed in both case-studies, particularly for those experiencing flooding for the first time. The following participant highlights some of these points in the next quote:

“... in the beginning in the first couple of days I just thought that everybody would automatically come, and then I start to try and contact the county council and you know you could get through to anybody. People talk nonsense to you, you know. One of the famous quotes that I quote all the time is somebody said “if it’s flooded it’s flooded” and you are completely and utterly distressed... Access to information was terrible you just felt like you were hanging out there on your own... So the access to information was really poor... Except I think it was about week ten; somebody from the health board... She came and I always think if she had come on the first week it would have saved so much trauma. Because, she came she was the sympathy. Not sympathy but empathy. And I just thought if she had come in the first week it would have been great. But it was week ten, which is a long time really. You know ten weeks of not sleeping and upset and you didn’t, you know, insurance didn’t come for months and it was a huge big worry you know and ya really the lack of information and the lack of support was really terrible. It really added to it you know...”. (P1, Resident, Interview, Kinvara Catchment)

The support mentioned by this participant was part of the humanitarian aid scheme on offer by the Department of Social Protection in 2009. This task has been allocated to the local Community Welfare Officers (CWOs). This indicates a considerable shift as humanitarian aid was previously under the remit of the OPW, and locally it was delivered by the Irish Red Cross on behalf of the OPW. Since 1998 both the OPW and Irish Red Cross have ceased to have any direct involvement in State-led humanitarian flood relief. The practices associated with humanitarian support have consequently changed with this shift. For example, in the instance described above, the humanitarian officer called in directly to most people affected by flooding. An interview with a retired Irish Red Cross officer revealed that calling on people was an established practice carried out by the Irish Red Cross humanitarian officers until 1998 (Fieldwork diary, October 2012). However, in the Dodder Case-

study, during the 2011 floods, the process was very different and those looking for flood relief care would have to call into the welfare office to apply for flood relief funding. Only in Tallaght in the outskirts of Dublin City, were there reports of the CWO visiting impacted residents (Fieldwork diary, October 2012). Speaking with three CWOs/humanitarian officers from the Department of Social Protection (one in the Kinvara Catchment and two in the Dodder Catchment), evidence indicates that all the CWOs interviewed had little experience of flood relief work and no training or guidelines on how to provide humanitarian support. The monies were largely allocated on a case-by-case basis and the officers relied on their own judgement to provide support. In the Kinvara Catchment during the 2009 events, some guidelines were drawn up at the time for providing aid, but these excluded impacted businesses and the remit was seen to be extremely limited, so much so that from the allocated €10 million, €8 million were returned. This signals another policy shift as the Irish Red Cross did on occasion provide supports to SMEs up until 1998 (Fieldwork diary, October 2012). The following quote taken from an interview with a CWO demonstrates that current flood relief and humanitarian supports are provided on an unsystematic and reactive manner:

“When the money went back there was an outcry because loads of people who should have been helped didn’t get help. The 10 million... it didn’t matter whether they said 20 million it was only a figure plucked out of nowhere. Because when the floods came overnight they had no idea who had insurance”. (P14, Interview, Local Government/Community Welfare Officer, Kinvara Catchment)

The process of fund allocation described by the CWO above indicates that humanitarian aid is largely reactive, unorganised and very narrow in the type of assistance that it can offer. There were also many reported geographical discrepancies in the way humanitarian support was offered. In the Dodder Catchment, for example, after the October 2011 flash flood event, places with strong community and welfare office supports such as the Ringsend area seemed to avail of much greater financial assistance than other places such as Rathmines or Ballsbridge which availed of little humanitarian aid support. Although these last two areas are overall more affluent neighbourhoods, fieldwork research recorded several cases of people who were unable to recover adequately from the 2011 flood event. They were usually elderly

members of the community who were described as ‘property rich’ but in fact have little resources to cope with the substantial impacts of flooding. Case study evidence reveals that some residents returned to their homes without adequate clean up and there was also one instance of homelessness directly related to the flooding event in the Dodder Catchment. There are also various reports of elderly members of the community being put into nursing homes after the 2011 and never returning to their homes.

To date, there has been no review or report undertaken on behalf of the Department of Social Protection to assess how humanitarian resources were spent or the difficulties encountered in delivering humanitarian aid to communities (Diary Notes, September 2012). Two of the CWOs interviewed stated that their reporting to the Department of Social Protection after the event was limited to basic financial details on how much money was spent and the number of people supported. It seems that, at present, the humanitarian scheme is an intermittent arrangement that is only triggered by extreme events such as those of 2009 and 2011, with no established guidelines and a relatively short timeframe. The greater implications of this are that there are no clear guarantees of relief support from the government. For example, if there is only a minor flood event (one or two houses impacted), individuals might not be able to access support, whereas if the event is large enough then the scheme will eventually kick in and it will offer support to communities. This situation and the many uncertainties associated with it have led to ongoing discrepancies in terms of expectations of state commitment to flood relief and the actual experiences on the ground. It seems that the position of government in relation to this form of support will remain ambiguous and, furthermore, the risk management policy structures have since been contained in terms of scope which is directed at mitigation and prevention measures and therefore distanced from the debate around flood relief and reconstruction activities.

Evidence with regard to humanitarian relief efforts is not conclusive and more research needs to be carried out in order to understand the full implications of the transition from humanitarian support provided by the Irish Red Cross and those provided by the Welfare office. There were attempts to investigate this

issue further however it was impossible in the existing timeframe to contact leading representatives of both the Irish Red Cross and the Welfare Office. Several attempts were made but there no representatives forthcoming to speak on these issues. It can be argued however that this new separation of roles and responsibilities signals a transition in the way flooding is addressed at institutional level. During the Oireachtas enquiry in 2010 which led to the production of '*The Management of Severe Weather Events in Ireland & Related Matters*' Report (2010), the OPW was queried about ongoing concerns over flood relief and rescue efforts. During the hearing, the OPW emphasized that it is not the lead agency responsible for flood management response. Instead, it stated that it is the lead agency in charge of devising and implementing a flood risk management strategy (JCEHLG, 2010). This same argument was reiterated during a fieldwork interview with the OPW. From an environmental justice perspective this leads to concerns over a possible retrenching of State direct support to flood impacted communities.

6.4.3 Variations in risk management formulation and delivery

As discussed in the literature in Chapter 2 environmental rights and supports can be provided in many ways which include both formal and informal levels of support (Gready and Ensor, 2005) there are currently very few formal based entitlements with regards flooded communities and the informal supports that existed previously through the delivery of humanitarian aid from the Irish Red Cross have changed when the agency that used to deliver this was changed and the Welfare office took its role. Related to this issue is the matter of flood relocation funds still under the remit of the OPW. In 1995, in the Kinvara Catchment, approximately ten families were given relocation money to rebuild their homes and farm sheds on higher ground. In 2009, there were ongoing negotiations recorded during fieldwork of three families going through the relocation process. This process was extremely slow and, in September 2012, when the majority of this fieldwork research was completed, it was an ongoing issue with people still out of their homes and in rented accommodation for nearly three years, waiting on a final decision. The OPW does not officially acknowledge the existence of a relocation scheme and when 'relocation' is provided it has now since 2009 been termed 'compensation'. The growing

unease in terms of acknowledging the existence of this practice also indicates that, due to the increase in the number of people affected by flooding in the past 15 years, the government may be quietly withdrawing this form of intervention.

The focus of the OPW from a flood risk management perspective is targeted at the development of the CFRAM process, as seen in Chapters 4 and 5, it has a particular focus on flood mitigation and prevention measures, but does not include issues such as community preparedness, flood response or recovery. In an interview with the leading coordinator of the Dodder CFRAM strategy, these limitations are acknowledged:

“The CFRAM process seems to stop short of that. It seems to be with making people aware that they are in a flood risk area, providing what defences you can. It does mention early warning systems but it all seems to be before the event, or putting structures in place during the event. It doesn't seem to cover after the event. Ya, so whether that... the floods directive I don't think it's included ... so the CFRAM seems to be in the analyses of the rivers, finding out what the risks are and they only seem to go a certain distance in the full flood regime. Ya, they don't seem to cover calling out the emergency services, although the flood warning could possibly do that. But then it stops there, you know, it stops at that level. It's up to the people and the emergency services to deal....”. (P68, Group Interview, Local Government/Dublin City Council, Dodder Catchment)

In the examination of flood risk policy in different European countries Krieger (2013) has argued that the institutional structures and the traditions associated with it, deeply transform the risk approach. This leads to the conclusion that risk management is not a universal instrument but is very much moulded into existing working frameworks and institutional circumstances. The engineering ethos of the OPW in this instance has placed significant focus on determining areas for possible structural defences but for those areas where these projects are not viable no additional non-structural measures have been explored. In other words this means that the focus of flood strategies in Ireland remain linked to structural based solutions and that there is little evidence of the development of non-structural measures which in terms of a social justice perspective could ensure greater safeguards and support for communities. Furthermore, considering that structural measures are based on a cost benefit decision making process there are potentially many communities which will

not avail of any form of flood risk management solutions. The earlier observations on the resources spent on technical reports with no visible solutions reinforces this concern. From an environmental justice perspective it raises concerns that some people will remain indefinitely exposed to recurring flooding episodes. The focus on structural measures is stressed further by the following quote from the Dublin City Council CFRAM coordinator.

“...but the main thing for us, if you stop it and we are planning to stop it in 90% of the locations you know, there won't be an emergency, you know to respond to.” (P68, Group Interview, Local Government/Dublin City Council, Dodder Catchment)

Evidence from the CFRAM strategies and from the fieldwork interviews with the OPW reinforce the argument that, at present, flood risk management is focused on structural measures to deal with existing flood problems. When the OPW official was asked during the interview if there were plans to develop non-structural solutions, his reply was that at the moment it is *'not clear'* what type of strategies these would be because *'to get to a non-structural solution is sometimes an awful lot more difficult'*. It is possible that the skills and knowledge frameworks necessary to develop non-structural solutions are not available in the OPW at present. Furthermore, these potential alternatives (i.e. relocation, flood proofing, insurance schemes, institutional and legal frameworks as suggested by Petry, (2002) require greater interaction and cooperation with affected communities and other institutions. The governance patterns observed and explored in the previous chapters have revealed that this level of cooperation is not present at the moment.

6.4.4 Exploring the role of communities in flood risk management strategies

While there are boundaries to the way risk management is conceived and realised there is also present a particular notion of social justice which is instrumental in both reinforcing and legitimising the risk-based rationale (Chiapello and Fairclough, 2002; Boltanski and Chiapello, 2005). The risk-based approach addresses the issue of social justice through the notion that it provides the means for targeting scarce resources in areas at higher risk of flooding (Krieger, 2013; Rothstein *et al.*, 2013). This form of justification, as seen in the previous two sections of this chapter, gives legitimacy to the risk-

based approach and its rationale is coherent with shared values and ideals from both a government perspective and, to an extent, at community level. Alongside this particular form of social justice perspective is the idea of participation and individual responsibility. There is a degree of acknowledgement that the government expects greater involvement of communities in ensuring and safeguarding their own safety. This quote is taken from an interview with an OPW official and its content is based on a direct question about whether or not the government is expecting the public to take on more responsibility:

“...there is a sort of a growing trend to try and raise the perception of personal responsibility and, shall we say by association, community responsibility... The ‘Winter Awareness Campaign’... that started last year. It’s a booklet effectively, but it was in response to the winter snow events in 2010, where there was a lot of talk about people being snowed in, talk about people clearing their driveways and would they be held liable for people slipping and we had a whole load of cultural issues about, you know, how much do we help ourselves and if we do help ourselves do we suddenly find ourselves in court because of some crazy law? So there were a lot of discussions about that and so this booklet was launched somewhat in response to that. To try and show people the range of services that were available, but also to try and highlight that they needed to inform themselves about it and be prepared. So a preparedness raising exercise, so that people could be more resilient... that is being launched again next month this winter. So there is, I think, an approach of, yes, people generally need to be somewhat a little bit more responsible for things within their own control... and part of that responsibility is to inform themselves... because bad weather is going to affect everybody and there is no way that you can stop it and there is no way that any infrastructural or governmental structures can address everybody's requirements and situations.”. (P98, OPW Official, National Government Body)

This general trend towards making communities more prepared and more resilient to flooding is a relatively new phenomena and it is not clear at the moment exactly what the perceived role of communities and individuals should be in terms of flood mitigation, prevention and preparedness. Farming communities, for example, have extensive resources such as land, machinery and know-how, but in recent years through stricter environmental regulation, they are more limited in terms of what they can achieve through drainage or other land use changes. The growing anxiety with respect to these stricter regulations is illustrated in the next quote taken from an interview with the chairman from the Irish Farmers’ Association (IFA):

“...local farmers with their diggers came out themselves and they did the drains where drains were never done before, and they took the flood away from their houses. Now I think that we are going to see more of that going forward. Particularly in the vigour of assistance because you cannot say, “wait for the different agencies to make up their minds and governments to make up their minds”... There is a lot of frustration building among the communities in rural Ireland and I think that they are not going to stand back much longer and allow the government to dictate that you can’t clean a river despite the fact that the river is taking away our livelihood. I think that we are going to see action on the part of people .. irrespective of what the National Parks and Wildlife and the Fisheries Board think...”. (P73, Interview, NGO National Representative/ IFA)

As a way of comparison, the position of the OPW with regard to individual action in relation to land use is starkly different. The following quote taken from an interview with an OPW official notes this growing difference in position between the government and local rural communities:

“...in general terms, there has been a greater tightening of constraints with regards to environmental issues coming from Europe over the last decade... people haven’t come around to understanding the sort of the very constrained world we live in, in relation to environmental issues. The sceptic tank issue is an example of that in terms of, you know. “It is my sceptic tank. I have put it in, how dare you tell me that I have to get it licensed, or that you have some sort of monitoring control over it?” It’s that perception of private property being private property that I am afraid in the 21st Century is constrained in so many ways, but people are still living in a mind-set of 50 years ago of, “what I have I own and I can do what I like with it”. So I think there is a catch up there ... perception wise it has to be done.”. (P98, OPW Official, National Government Body)

There is a growing tension emerging, therefore, as the government reframes its position in terms of flood intervention measures and places growing emphasis on community resilience. Drainage and land use is an area in which tensions between landowners and statutory authorities are increasing, but there are other potentially conflicting trends emerging. In a bid to promote community resilience, there is a focus on encouraging people to invest in flood protection systems. In some instances, local authorities have suggested that people put in their own individual flood protections such as flood gates, non-return valves and pumps. This statement from the Dublin City Council illustrates this growing trend:

“We have a list of contractors and we have advised people in flood prone areas about defending their houses and also their sewage connection as well you know to put non-return valves and that. We have advised hundreds of people at this stage in ways of protecting their houses.”.

(P68, Group Interview, Local Government/Dublin City Council, Dodder Catchment)

Growing concern over this position and the effectiveness of individual flood prevention measures is prevalent in both case-studies. The majority of impacted residents interviewed during fieldwork raised doubts over the ability at community level to prevent flooding from occurring. The perception at community level is that without proper intervention from the government there is very little that can be done to adequately manage flooding problems locally. The following excerpt is taken from a fragment of a conversation between two impacted residents. These two participants are also highly involved in community mobilisation with a view to securing greater flood solutions in their areas:

(P65): “So nobody has given proper advice for householders, you know, really sound advice as to what we should do, whether or not we spend 3,000 on a flood prevention system, whether or not it is going to work. We will find out when the next flood comes. Some residents have got themselves flood gates and walls and whatever and we will find out. The ones that are always flooded right, we will find out when the next flood comes whether or not those measures have worked for those people. I don’t think that they will, but we will find out’.

(P66): ‘They said we should fit non-return valves you see, so if you want to fit non-return valves then you have to have your own drainage system, where the non-return valves are closed, stopping the water coming up the drain. So you have to still be able to drain the water that is falling. So OK, I would have that. I have that in place and in fact, what I have would probably take the rain that falls out of the sky. It’s the rain that comes up through the pipes that is the problem, if I got non-return valves in and all the other paraphernalia just like St. Louis did, they got non-return valves in and the water just washed through them’.

(P65): ‘They got retention tanks and everything’.

(P66): ‘70 thousand euro they spent on retention tanks and non-return valves and worked exactly as designed and still the place got flooded. So, why would you be bothered?’.

(P65): ‘Spending 70 grand when it’s not gonna work. If that system does not work then where do they go from there? They can do no more for their property. It really is a City Council thing so if that were to work for those people and were to subsequently to work for other people then everybody would have to have a system, a flood gate or whatever. But then the water would have to go somewhere, where would the water go? It would go further away in the city then. That is not the solution. The solution is a better drainage system’.

(P66): ‘If they put all the flood gates and all the anti-flood mechanisms the water will be directed around in a loop; it will go around in a loop and it will find some other way in. It will come in behind the flood gates’.

(P65): 'So the answer is investment'.

(P66): 'Ultimately it would require somebody starts taking legal action or somebody either goes to the courts in Ireland or goes to the courts in Europe... if there is no proactive response from officialdom to put in the infrastructure well then it's up to the communities to organise themselves to force the situation you know that is the only way you are going to get it done. Bring the City Council to court'. (P65 and P66, Group Interview, Residents and Community Group Leaders, Dodder Catchment)

From these findings it can be argued that there is a state led aspiration to reinforce a degree of community and individual preparation for future flood events which entails investment in individual flood mitigation and prevention measures. However, given the current tools and taking into consideration existing capacities at local level, these appear from a local perspective to fall very short of what is necessary to adequately manage the growing threat of floods. The debate over whether or not communities should have an increased role in flood risk management activities has not occurred in a public forum. Although there is a tendency for expecting communities to be more committed to self-reliance and resilience, this message is not obvious on the ground and expectations with regard to government action remain high. Terpstra and Gutteling (2008) also argue that if local resources and capacities are perceived to be low in relation to the level of threat, communities will be less willing to accept responsibility. This is very much the situation in both case-studies where the scale of the problem is considered higher than the capacity of local people. This shift in the balance of responsibility between the government and communities is very subtle and while it is being gradually reinforced by media channels and other means through a growing emphasis on personal responsibility and the reemphasizing of the risk of targeted and cost effective structural solutions it may be at the same it is making people more dependent through lack of tangible supports and resources to enable a more committed and integrated form of community commitment to flood mitigation and preparedness.

There are trends which signal growing concerns at grassroots level over delivery of supports and these reinforce the perceived need to obtain greater guarantees from the government in relation to flood management matters. The following examples aim to illustrate the on-going necessity to have clearer

established rights for impacted citizens and communities in Ireland. The next three quotes highlight some of the potential environmental justice issues which are gaining traction with growing exposure to flooding in Irish society. The first quote relates to the issue of humanitarian and flood relief supports which, as highlighted earlier, are unevenly distributed and fragmented:

‘I had to move my kids down the country, we had to try and find accommodation, you know. Everything is just upside down and you are not in a position to think of all these things, just what do you need to do next, you know? Would I do anything different? I would find out what I am entitled to, if there was something from Europe or whatever. Definitely, I would have done that.’(P.67, Interview, Resident and Community Group Leader, Dodder Catchment)

The second quote indicated here illustrates growing challenges in relation to how flooding is often portrayed by statutory agencies as a natural occurring phenomenon in order to deflect responsibility for taking greater action:

“...it’s not good in the context of a government saying, you know, it’s once in a 150 or 100 year event, and that it’s an act of God or whatever. Particularly in the light of the fact that we have neglected our river systems since our State was founded and I think that if this is then to occur in the aftermath of our government returning our river systems to the way that they were when the State was founded then we could accept it as being an act of God but certainly not in the light of the dilapidated state that our river systems are...”. (P73, Interview, NGO National Representative/ IFA)

The final quote was selected in order to highlight the on-going discrepancy between the supports provided and how they often fail to address the needs of people locally:

“I don’t have entitlements. They gave me free sandbags and I put them down myself, that’s an entitlement. That’s like giving hay to a dead horse.”. (P.17, Interview, SME, Kinvara Catchment)

Driven largely by the experience of flooding, community discourses around flood management issues are beginning to raise concerns over how this growing problem is represented in the political arena. As discussed in the this chapter 4 and in Chapter 5 there is some evidence that communities are collectively becoming more aware of gaps in the way flooding is represented and also how this problem should be interpreted in terms of social justice issues. This matter can be illuminated further by introducing some insights from the literature developed by Haugaard (1997) and Ryan (2008), mainly using the authors’ proposition of deep and shallow conflict (discussed in

Chapter 2) to analyse these findings in more depth. Of specific interest is the noted challenge to the underlying assumptions upon which flood risk management is based and potentially the development of these into more internalized understandings of the inadequacies of on-going strategies which are valuable in terms of achieving change and testing dominant positions. It has been observed on numerous occasions in this work that community mobilization has been largely driven by the direct experience of flood events and that collective action is usually focused in demands for greater structural solutions for the area. However the findings also reveal that there is an increased concern related to how flood issues are represented by government agencies. Furthermore while long term mobilization rates remain low, field evidence coupled with previous academic research in the field suggests that extreme events can be tipping points which rally and force communities into more political roles (Pelling and Dill, 2010) In fact taking all findings into consideration it would seem that at present communities are in a transition stage from a 'shallow conflict' position which focuses on lobbying the government for resources and structural solutions for specific areas to, a deeper conflict which challenges principally the dominant risk based understanding informing preferred solutions and the use of resources (ibid).

Although there is a growing concern at local level in relation to flooding and the ability of the government to address these growing problems, mobilisation remains low, as highlighted by this quote:

“...they cleaned up you see. That is what people do, they clean up. They don't agitate... You would imagine they would be screaming in here... They pay rates and household charges and I haven't heard enough noise about the flooding and I am astonished because I have only had it once. If I was to have it the second time I have to say I would be livid. I am already livid but I would be even more livid. Because that is simply unbearable, the thought of it happening again. So you just sit and think about it that people are just mopping up every two years, every three years...that is crazy...” (P65 and P66, Group Interview, Residents and Community Group Leaders, Dodder Catchment)

If the process of mobilization as described above remains linked to the experience of extreme events the political process associated with flooding will continue to be marked by sharp political shifts and discontinuities as suggested by Johnson *et al.* (2005). Flooding is currently a policy issue primarily

experienced by those impacted by it. Empirical evidence has shown however that there are emerging alternative discourses which aim to represent and give voice to issues that have been excluded either through design, by containing and rationalizing in financial terms the involvement and responsibility of the government, or by an uncritical understanding of key concepts such as community and risk.

6.5. CONCLUSION

Since 2004 the Irish government has taken on a much stronger and central role in developing policy in relation to flooding issues. As explored in this chapter, this new policy approach has been largely informed by the risk management paradigm which has led to the development of instruments such as risk assessment and cost benefit analysis to inform decision-making and, most importantly, to legitimise the actions of government in this area. It has been argued that the risk rationale is based on a specific framework and values which promote a more limited approach to the problem of flooding. This policy process however has raised a number of questions in relation to community welfare and entitlements. Empirical evidence illustrates a growing gap between the risk based approach adopted by the OPW and the experiences of people impacted by flooding. The intense and expensive focus on risk assessments for example are perceived by the public as having few tangible outputs in flood prone areas where solutions are seen as critically necessary. Additionally it has been argued that the CFRAM process is largely focused on developing engineered based solutions and has not adequately addressed problems related to flood relief and preparedness.

All the findings from Chapters 4, 5 and 6 consolidate the conclusion that there are substantial governance issues which restrict a more integrated approach to flood management. These limitations include the lack of statutory powers of the OPW, its limited expertise in terms of developing non-structural solutions and an absence of coordinated strategies to enable a greater involvement of communities and the many agencies linked to the flood management policy arena. Community participation, knowledge and experiences are seen not to fit within existing discourses of risk management. The dominance of technical

based assessments and the cost-benefit culture constrains any alternative positions in terms of identifying problems and arriving at solutions.

Although extreme events are increasingly pressurising communities into challenging on-going policy orientations, this form of grassroots participation is still limited. Insights from the literature (Garavan 2008; Ryan, 2008) suggest that the public faced increasingly with the extreme circumstances of flooding may develop strong alternative approaches to the issues of flooding which could enhance the political implications and shift a power balance which has been to date dominated by technical based discourses.

Chapter Seven

Conclusion

7.1. INTRODUCTION

The aim of this study has been to explore and evaluate the role of communities in ongoing flood management activities and practices. This aim is particularly relevant and topical given the continuing exponential increase of flood exposure and vulnerability in Ireland. The link between growing exposure and the associated limitations of current flood risk management solutions intensifies the need to research and debate more widely in this area. As outlined throughout this research the practices and ideas behind these policies are to a large extent far removed from the needs and experiences of local communities.

The process of achieving this overarching aim of evaluating the role of communities in on-going flood management practices led to the identification of a number of key objectives which enabled a greater understanding of the main influencing factors in this topic. These objectives are:

1. Identification and analysis of relevant conceptual and theoretical perspectives with regard public involvement in flood management;
2. In depth review of current institutional flood management structures and strategies operating in an Irish context;
3. critical evaluation of the role of public participation in flood management strategies in Ireland within a theoretical framework;
4. Development of a model that has the potential to enhance participation between all stakeholders through drawing on a range of conceptual and applied tools, with a view to improving flooding management strategies.

The necessity for developing a social based understanding of flood problems in Ireland was critically reinforced by the absence of this sort of evaluation in an Irish context. Indeed engagement with this topic has only recently gained greater attention from both the government and academic researchers. Additionally the policy gap deriving from a deeply hierarchical policy process

with little input from affected communities underpinned the need to address and explore the role of communities within flood management practices. Although the Irish government has over the past decade established a more central role in the management of flood issues, this process has not included any great form of community participation or involvement. While some localities benefit substantially from community supports and mobilization these activities are mainly grassroots driven and to date have been marked by reactive levels of support and a struggle to influence policy locally. The complex and context specific way in which communities experience the problems and impacts of flooding reveal a major gap between existing policy frameworks and the needs and expectations of impacted individuals. The limited role of public participation in this area is therefore linked to a fragmented governance apparatus which does not promote or sustain inclusive community interactions. Moreover the risk management rationale at the centre of government led flood risk management practices offers only a narrow window of activity to a far more multifaceted problem. Within this limited framework local knowledge, capacities and specific vulnerabilities have been generally overlooked. Consequently we have a policy process largely preoccupied with developing and promoting a risk based approach which does not sustain community based activities and furthermore is has been unable to engage with context specific problems of flooded communities. The development and promotion of a framework based on the constructivist model has led to an engagement with community participation which is sensitive to place specific circumstances and relationships and is also advancing and problematizing the use of risk based management frameworks. Social justice concepts are subsequently advanced as a deepening critique to the use if risk management and also as a potential alternative concept on which to frame flood management debates.

This concluding chapter is divided into 4 main sections. Section 7.2 briefly outlines and synthesises the core arguments and the most significant findings from the previous chapters. Section 7.3 evaluates these findings with regard to the core objectives of the research and links these to existing conceptual models and approaches. The theoretical contributions of this project are

evaluated within this discussion. Section 7.4 provides a wider view on the policy implications of this research which leads to a number of policy based recommendations and suggestions. The final section, 7.5, is focused on the identification of research limitations which leads to a number of recommendations for future research outlooks.

7.2. EMPIRICAL FINDINGS

Chapter 1 provided an overview of the dominant and intersecting aspects of disaster management research and it positioned flood management frameworks within this wider thematic. This particular exercise enabled a greater understanding of the main driving factors in international and national disaster management practices and also it provided a review of the dominant concepts informing research in this area and specifically how social based perspectives have been included within these practices.

This initial exploration found that disaster/flood management frameworks are considerably dominated by hazard centred concerns which are based on the development and implementation of structural solutions to flood problems and additionally it was found that risk management approaches have been adopted in terms of enhancing the decision making process within this hazard centred framework.

The noted lack of engagement and interaction with the complexity of social understandings inherent in flood management issues framed the need for adopting a constructivist perspective. The unravelling of the core aims and objectives of the research were based on this analysis. These subsequently informed the pursuit of theoretical ideas and methodologies which looked to arrive at a deeper understanding of community participation in flood matters by extending flood management research in Ireland to social based insights. Overall the introductory section established a clear alignment with views that stress the influence of social systems in the area of flood management.

Chapter 2 is the outcome of a reflexive and critical process which culminated in the critique of key concepts in terms of an understanding of disaster management from a constructivist perspective. Largely based on the conceptual

model introduced in chapter 1 which established a wide variety of intersecting factors and contexts within the theme of community participation in flood management. The approach of adopting a framework which was wide-ranging in its scope allowed for a more comprehensive understanding of the multiple factors at play in this area. This also led to an appreciation of how different actors and stakeholders understand and interpret the role of community participation within this field. Primarily the literature established a connection between participation, knowledge structures and the associated instrumental approaches that have been adopted in this context (particularly risk management). Additionally this literature review section also discussed environmental justice dimensions of flood risk management practices and potential implications for communities exposed to flooding.

The appreciation of community participation from diverging angles allowed for a number of normative and discourse driven aspects to emerge which emphasizes a more dynamic and fluid appreciation of what participation means in this particular context and how it can be measured. Overall the critical engagement with the literature led to a joining of important concepts with a view of creating a broader and more holistic understanding of flood management and community participation within this arena but at the same time adding a level of coherence and continuity to the subject matter.

The first key objective of the research as outlined above was fulfilled by the comprehensive review and development of a holistic model that enabled a clear and informed theoretical understanding of the role of community participation in flood management.

Chapter 3, the methodology chapter gives a detailed account of the several methods used to collect and analyse empirical data in a way that is consistent with the complex community participation framework developed in the literature review. The case study evaluation is used as the overarching methodological technique which provides beneficial outcomes in terms of the varied uses of methodological data collection and analysis instruments. The case study is shown to facilitate a continuous refining and development of theoretical ideas and concepts. The introduction of the multiple case study

evaluation with the added dimension of comparison between the rural and urban setting is used to further deepen the concept of participation that is grounded on place based relationships and understandings. Furthermore the use of different techniques of data collection allowed for a greater interaction with people within the communities studied. For example knocking on doors was highlighted as a particularly fruitful exercise which enabled a greater understanding as to why some people excluded themselves from concerns regarding flood management issues even though they were in close proximity to those directly impacted by flooding. Similarly the analysis of data entailed the use of different techniques, these were thematic and discourse analysis methods. This allowed for a more free hand approach to the emerging findings which was a suitable vehicle to successfully showcase the variety and richness of material collected during fieldwork. Of note also is the fact that the wide-ranging methodology process enriched not only the research project but enabled also the development of individual research skills.

Chapter 4 is the first of the three findings chapters, and it entails the detailed profiling of the Kinvara and Dodder case studies as well as an evaluation of policy development at local and national levels. This chapter situates flood management as a social and political process by contextualizing these within the two case studies under evaluation. The specific qualities and particular experiences in each case study helps develop a sense of place which is determined by the particular social and environmental circumstances present in each area. The policy review identifies the evolution of institutional responses to flood management and it uses the concept of ‘institutional traps’ as developed by Lebel *et al.* (2011) to explore a deep rooted fault linked to inadequate structures and practices of government, specifically related to environmental policy formulation and implementation. From a national policy perspective attention is given to the comparative weakness and ability of local government (relative to other European states) as one of the key problems identified in this context. The role of the OPW and the apparent lack of leadership in terms of flood management strategies is also identified as a weakness. The further implications for community participation are highlighted, it is noted that the focus on institutional based concerns and

demands leaves little opportunity for the adequate inclusion of community based inputs into policy formulations.

The second aim of the research which entailed the review of institutional flood management structures and strategies operating in an Irish context is achieved by the critical policy review offered in this chapter.

In **Chapter 5** Community participation was explored with reference to flood management and community experiences, knowledge and capacities of these strategies. The use of an added comparative dimension of the urban and rural setting helped further enrich this exploration. These findings emerged from an engagement with empirical evidence which was sensitive to context and from this exploration different depictions of community capacity emerged. This level of exploration provided a medium for understanding the complexity of factors at play in relation to flood management and also it provided the means for assessing the current role of community participation in flood management. (i.e. a relatively marginalised involvement which is largely reactive and limited in terms of long term engagement and influence, but that has proved nonetheless a strong source of support for individuals in local communities).

Engaging with community participation mechanisms and practices from the views of impacted individuals looking to effect change and improve overall exposure to flooding issues led to further insights into how the process of community participation is both limited and sustained by a complex number of factors. Some of the variables identified during fieldwork included awareness and perception issues associated not only with communication factors but also seen to be linked to interpretation of past events and dependency on government action. The notion of leadership is also as an influential factor in community mobilization and in particular the concept of community participation is considered in these terms as a challenging process.

To grasp the social complexity of a topic that has been to date very little researched and documented in Ireland was a core objective of the research project. Additionally in conjunction with **Chapter 4** it provided a comprehensive base from which to bridge the more 'real' depictions of flood

impacted communities with a deeper level of analysis that is followed in **Chapter 6**.

Chapter 6 involved a critical exploration and analysis of ideas concerning community participation by considering how discourse is implicated in community relationships and in the representation of flood issues as political and social problems. The link between participation and knowledge structures identified in the conceptual model are explored in this chapter. The findings provide evidence which reveals the influence of risk based understandings in leveraging debates and decisions in the flood management process. A trend towards greater tolerance for exposure to flooding and the associated culture of cost-benefit analysis is identified as a key characteristic of flood risk management strategies in the Irish context. The observable gap between dominant risk-based approaches and the experiences and expectations of communities on the ground leads to an exploration of the environmental justice implications of this dominant approach and it is further suggested that the concept of environmental justice is useful in terms of challenging the use of risk based solutions for flood management issues.

The last two key objectives of the research namely:

- a critical evaluation of the role of public participation in flood management strategies in Ireland within a theoretical framework
- Development of a model of knowledge production that has the potential to enhance participation between all stakeholders by drawing on a range of conceptual and applied tools, with a view to improving flooding management strategies.

These objectives are fulfilled from the continuing development of theoretical insights that are situated and contextualized within both a local and national context and which promotes practices of knowledge production that are both more accountable and more ambitious in the way in which they strive to represent the complexity of flood management issues on the ground. These processes culminate in the refinement and conceptual maturing of ideas during fieldwork and the data analysis process. Therefore the initial conceptual model

in Chapter 2 applied to methods identified in Chapter 3 and the refining and informative processes of Chapters 5 and 6 have led to the gradual fulfilment of these last two objectives. The constructivist perspective adopted has provided the means for capturing and reflecting upon the often ‘hidden’ social dimensions of flood management and flood risk management practices in the Irish context.

7.3. THEORETICAL CONTRIBUTIONS

This research, through the in-depth case-study evaluation of the Dodder and Kinvara Catchments, has attempted to engage with many of the context specific ways in which people are exposed to flooding and their collective abilities as a community to address these growing problems. The constructivist perspective enabled the means to explore and qualify the socially based characteristics of flood problems and local capacities in Ireland, which substantially enriches the dominant hazard based accounts of flood causality, experiences and solutions. To date these issues have been largely left out of both academic and policy debates. In addition, alternatives to the dominant flood risk management approach have been extremely limited. Problematizing the use of risk and the implications it has for the future ability of the state and communities to address flood problems is developed as the means to arrive at a deeper understanding of this approach and possible alternatives to this particular form of risk management. The notion of environmental justice is combined to the critical analysis of risk so that the strongly perceived gaps between state support and community expectations can begin to be understood as an expression of specific policy ideas and approaches. As the research has shown there is an emerging critical understanding of state led risk management but mobilization rates and direct challenges to these remain low. A number of specific insights into public participation practices in this area signal a process largely driven by extreme events and exceedingly uneven in terms of context specific vulnerabilities and capacities. The comparative dimension of the urban and rural setting allows for a further deepening of these insights which reinforces the need for context and local sensitive policy development.

7.4. POLICY IMPLICATIONS

This section explores the policy relevance and implications of the main findings of this research. A number of suggestions are put forward that propose two different levels of engagement with policy formulation in the Irish context. The first set of suggestions relate to adjustments in on-going policy development and implementation practices where the role of community participation can be enhanced and where particular vulnerabilities associated with place based understandings can be tackled. Empirical findings have shown that community participation is largely driven by the experience of extreme events which is associated with low levels of awareness and perception of exposure to flooding. As seen in chapter 6 this has reinforced the largely reactive character of community involvement in matters pertaining to flood management. Furthermore it is also noted that particular geographical patterns such as the existence of fragmented populations clusters linked to conditions associated to some urban areas in the Dodder catchment creates particular vulnerabilities which have led to a lower than average level of awareness of flood issues in areas highly exposed to flood impacts. In the rural context it was found that mobilization in terms of long term engagement with flood management policy may be inhibited by a number of issues linked not only to cultural traits and identity but also through a greater apprehension in engaging with the formal political process related to a perceived lack of resources, skills as well as lack of trust in the policy process. These are seen to be constraining the long term capacity of communities to have greater influence over matters that impact them directly. It is highlighted in this sense that in attempting to raise awareness levels and communicate better with local communities, place based circumstances should be acknowledged. This would enable a more attuned understanding of vulnerability and aid the development of more effective means of participation which is sensitive to the characteristics of each locality. The development of leadership skills at community level is explored in this context and evidence suggests focus on leadership as a particularly effective way to enhance participation and involvement of communities in flood management issues.

The second set of measures proposed for policy development entail a greater challenge to existing assumptions with regards the knowledge frameworks adopted and existing top-down beliefs with regards community participation and its role in flood management strategies. It has been noted that risk management is not a tool based on universal principles and ideas instead it is representative of particular values and institutional traditions and objectives. However risk based approaches are mainly portrayed and treated as objective and rational instruments and as such there has been to date not clear engagement with the specific limitations and deficiencies within this approach. Policy is made substantially less effective by not acknowledging the many limitations that arise from this particular form of flood risk management. Emphasis on structural based solutions is seen to be reinforced by this particular approach to the management of floods, the underdevelopment of non-structural solutions highlights a policy process that is incomplete by a lack of instruments which protect the population in a variety of ways not just through engineered based developments. The risk management paradigm can also lead to political turmoil; this may be triggered by the lack of engagement with a decision making process that is largely resistant to negotiating expert-based risk exposure assessments and allocating resources within the political process. These decisions have to date left some segments of population highly exposed to flood impacts and this will lead to greater challenges to the way the process is carried out. Policy development needs therefore to engage critically with the use of risk based frameworks and above all the process needs to be legitimized by acknowledging the many political dimensions of the management strategies being developed.

Equally the dominant institutional approach concerning community based capacities and involvement is based on a range of unchallenged and limited assumptions regarding communities. It has been shown that current participatory mechanisms such as consultation do not enable the forging of links which benefit substantially local people. This is because it does not open possibilities to engage with policy in helping struggling communities understand and make claims which both help them address their problems in relation to flooding and improve macro-level transformative capacity. As

depicted throughout the research the story of participation in flood risk management in Ireland as promoted by state led institutions is largely one of failed attempts to enhance policy through the use of participatory potential as a form of gloss giving effect in what can only be described as a highly technocratic policy development process. Participation is often associated with words such as empowerment, community, inclusion and democracy. On the issue of the of role community participation in development issues Botchway (2001) writes that “meaningful participation implies at a minimum the process in which local communities discover the possibilities of exercising choice and becoming capable of managing what they understand as development” (p.136). Putting this quote in the context of flood risk management policy in Ireland it is suggested that it is essential that future community interactions allow for a process where people are given the necessary political scope and influence to make sense of the growing problems associated with flooding in order to better meet the challenges they are faced with. Findings further suggests that given the large scale, complexity and impact of flood issues if communities are not given adequate tools (political and financial) to deal with these challenges it will reinforce a sense disempowerment and dependency on state led solutions and discourage innovative community led solutions.

7.5. RESEARCH LIMITATIONS AND FUTURE OUTLOOKS

The core aim of this project has been to explore and evaluate the role of community participation in flood management strategies in Ireland. This overarching aim suggests that the evidence and the materials that were collected during the research are applicable to the Irish region as a whole. In other words it assumes that the findings have a generalizable quality which enables an understanding of how the processes of participation play out in relation to flood management issues in Ireland.

Feedback by the Office of Public Work on the research methods employed (during a guest presentation at a conference dedicated to flood management policy makers in Ireland) argued that the case study evaluations were not fully representative of community experiences in this subject matter. The example of the city of Kilkenny was advanced as an area which had been previously highly

exposed to flooding. It was noted that new flood mitigation and prevention structures have considerably decreased the exposure of these communities to flooding. It was noted that these communities would be much more positive and supporting of current flood risk management approaches than would be the case for the communities in the Kinvara and Dodder catchments, where considerable work and resources are currently needed in order to make these catchments less exposed to flood problems as is the case in Kilkenny.

The use of case study evaluations do in fact provide very detailed and context specific understandings of community experiences, capacities and understandings of flood issues and some of these findings may not be applicable or representative of experiences in other parts of Ireland. However two issues arise from the feedback given by the OPW. The first is that the feedback offered assumes that the outcome of securing flood prevention structures far outweighs the value of a policy process that is inclusive and responsive to community needs. This indicates that as long as in the end there is a definite solution implemented (which normally means a flood mitigation or prevention structure) the process of achieving these goals as well as the process of community participation is outweighed by the final outcome. However the focus of this research privileges the processes that influence people's experiences of flooding and their capacity as a collective to support each other and to mobilize in order to influence the development of policy in this area. Of note also is the fact that the extreme weather pattern that was felt recently from December 2013 up until the end of February 2014 has again increased the exposure of communities to flooding problems which includes some communities in Kilkenny. This further highlights the necessity not to rely 100% on the protection measures offered by structural solutions but to ally these with a strong level of local capacity in the face of the structures not fully addressing increased exposure as is the case in this instance.

Secondly this same approach of emphasizing the process of participation in flood management leads to a form of theoretical enquiry (Flyvberg, 2006) which can add to more general understandings of how community participation should be conceptualized and further how it can be facilitated through policy

measures. Furthermore, Ireland as was highlighted in chapter 4 is characterized by a highly centralized state with weak local institutions therefore the influence of national strategies have a strong impact on local communities and so a greater understanding of how policy plays out is necessary for the review and development of future flood management solutions in Ireland. The use of the multiple case study evaluations with very different social characteristics also reinforces the validity of the findings reported, the multiple case study not only widens the contextual base of the empirical material it is also useful in terms of reinforcing findings through this added comparative element.

Future research in this area should continue to focus on the many social based variables implicated in flood management and flood risk management issues in Ireland. Namely there is a notable gap in current understandings of socio-environmental relations and growing exposure to flooding issues. This is extremely relevant in terms of potential challenges to land-use practices, conservation objectives and the long term living conditions of highly exposed communities. Another area which requires further investigation relates to the fact flood management and exposure is an ongoing problem that has been substantially marked by the more recent extreme events of December 2013 to February 2014 and as highlighted these events can represent substantial changes or developments in approached to flooding which benefit substantially from the in-depth evaluation of academic scrutiny.

7.6. CONCLUSION

Although there have been many limitations and problems highlighted in terms of community participation in flood management this form of interaction is seen as crucial to the ongoing ability of society to face the growing challenges of increased flood exposure. The many levels of support that people provide each other during the difficult times of experiencing a flood and recovering from its devastation are often a vital factor in people's ability to successfully survive this experience. While this is seen as an extremely uneven process and the long term potential of community involvement is weak the benefits and potential of this form of social interaction will continue to raise interest and offer many benefits to society.

List of References

- Association of American Geographers AAG (2009). Statement of Professional Ethics, Available online: www.aag.org/cs/about_aag/governance/statement_of_professional_ethics (last accessed: 9th October, 2014)
- Adger, W. N. (2000). Social and ecological resilience: are they related? *Progress in human geography*, 24(3): 347-364.
- Adger, W. N., Brown, K., Fairbrass, J., Jordan, A., Paavola, J., Rosendo, S., & Seyfang, G., (2006). Governance for sustainability: towards a thick 'analysis of environmental decision making. *Environment and Planning A* 35(6): 1095-1110.
- Adger, W N., Quinn, T., Lorenzoni, I., Murphy, C., & Sweeney, J. (2012). Changing social contracts in climate-change adaptation. *Nature Climate Change* 3:330-333
- Alexander, D. (2002). *Principles of emergency planning and management*. Harpenden, Terra Publishing.
- Alexander, D. (2005). An Interpretation Of Disaster in Terms of Changes in Culture, Society and Institutional Relations, in (ed.) Perry, R. W. and E. L. Quarantelli (2005). *What is a disaster? : new answers to old questions*. Philadelphia, Pa., Xlibris: 25-38
- Alexander, D. (2006). Globalization of Disaster: Trends, Problems and Dilemma. *Journal of International affairs* 59(2): 1-22.
- An Taisce. (2012). *State of the Nation: A Review of Ireland's Planning Systems 2011-2012*, An Taisce.
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American planning association* 35(4): 216-224.
- Arterial Drainage (Amendment) Act, 1995, *Irish Statute Book*, Office of the Attorney General, Number 14 of 1995
- Babbie, E. R. (2010). *The practice of social research*. Australia ; United Kingdom, Wadsworth Cengage Learning.
- Bakker, K. J. (2000). Privatizing Water, Producing Scarcity: The Yorkshire Drought of 1995. *Economic Geography* 76(1): 4-27.

- Bakker, K. (2009). *Water. A Companion to Environmental Geography*. N. Castree, D. Demeritt, D. Liverman and B. Rhoads (eds.). Chichester, U.K. ; Malden, MA, Wiley-Blackwell: 515-532.
- Barbour, R. S. (2007). *Doing focus groups*. London, SAGE.
- Barnes, M., Newman, J., & Sullivan, H. (2007). *Power, Participation and Political Renewal: Case studies in public participation*. Bristol, Policy Press.
- Bauman, Z. (1991). *Modernity and ambivalence*. Cambridge: Polity Press.
- Bauman, Z. (2001). *Community. Seeking safety in an insecure world*. Cambridge, Polity Press.
- Beck, U. (1992). *Risk society: towards a new modernity*. London, Sage Publications.
- Bednar, A. K., Cunningham, D., Duffy T. & Perry, J.D. (1995). Theory into practice: How do we link? In T.M. Duffy and D.H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation*. 17-34. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bell, E., Seidel, B., & Kilpatrick, S. (2013). Climate change: How scientism has neutralised health policy effectiveness for rural communities. *Journal of Rural Studies* 32: 365-374.
- Bennett, A. & Elman, C. (2006). Qualitative Research: Recent Developments in Case Study Methods. *Annual Review of Political Science* 9(1): 455-476.
- Berg, B. L. (2007). *Qualitative research methods for the social sciences*. Boston: Pearson/Allyn & Bacon.
- Betsill, M. & Bulkeley, H. (2007). Looking back and thinking ahead: a decade of cities and climate change research. *Local Environment* 12(5): 447-456.
- Birkholz, S., Muro, M., Jeffrey, P., & Smith, H. M. (2014). Rethinking the relationship between flood risk perception and flood management. *Science of The Total Environment* 478(0): 12-20.
- Blyth, K. and Inst. Hydrol. Eds. (1999). Report of RIPARIUS First Workshop, *Proceedings of the First RIPARIUS Workshop*, 31st, March 1999. RIPARIUS/ EN4302.

- Boltanski, L. and Chiapello, E. (1999). *Le nouvel esprit du capitalisme*, Gallimard Paris.
- Boltanski, L. and Chiapello, E. (2005). The new spirit of capitalism. *International Journal of Politics, Culture, and Society* 18(3): 161-188.
- Botchway, K. (2001). Paradox of empowerment: reflections on a case study from Northern Ghana. *World development* 29(1): 135-153.
- Boyce, J. K. (2000). Let Them Eat Risk? Wealth, Rights and Disaster Vulnerability. *Disasters* 24(3): 254.
- Boyce, J. K. (2002). *The political economy of the environment*, Edward Elgar Publishing.
- Botzen, W. J. W. & van den Bergh J. C. J. M. (2008). Insurance Against Climate Change and Flooding in the Netherlands: Present, Future, and Comparison with Other Countries. *Risk Analysis* 28(2): 413-426.
- Botzen, W.J.W., Aerts, J.C.J.H., & Van Den Bergh, J.C.J.M (2009). Dependence of flood risk perceptions on socioeconomic and objective risk factors. *Water Resources Research* 45(10):1-15
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology* 3(2): 77-101.
- Bradford, R.A. O'Sullivan, J.J., Van Der Craats, I.M., Krywkow, J., Rotko, P., Aaltonen, J. and Schelfaut, K. (2012) 'Risk perception Issues for flood management in Europe'. *Natural Hazards and Earth System Sciences*, 12(7): 2299-2309
- Breakwell, G. (1990) *Interviewing*. London, Routledge/BPS.
- Bridge, G. & Perreault, T. (2009). Environmental Governance, in: Castree, N. *et al* (eds.). *A companion to environmental geography*. Chichester, U.K. Malden, MA, Wiley-Blackwell. 474-497
- Brondizio, E. S., Ostrom, E., & Young, O. R. (2009). Connectivity and the Governance of Multilevel Social-Ecological Systems: The Role of Social Capital. *Annual Review of Environment and Resources* 34(1): 253-278.

- Brunckhorst, D. & Reeve, I. (2006). A Geography of Place: principles and application for defining eco-civic resource governance regions. *Australian Geographer* 37: 147-166.
- Bruton, R. & Convery, F. J. (1982). *Land Drainage Policy in Ireland*. The Economic and Social Research Institute, Dublin. Policy Research Series (4).
- Bulkeley, H., *et al.* (2007). Modes of governing municipal waste. *Environment and Planning A* 39(11): 2733-2753.
- Burn, D. H. (1999). Perceptions of flood risk: A case study of the Red River Flood of 1997. *Water Resources Research* 35(11): 3451-3458.
- Callanan, M. (2005). Institutionalizing Participation and Governance? New Participative Structures in Local Government in Ireland. *Public Administration* 83(4): 909-929
- Carabine, J. (2001). Unmarried Motherhood 1830-1900: A Genealogical Analysis. In. Wetherell, M. Taylor, S. & Yates, S. (eds), *Discourse as Data: A Guide for Analysis* London, Sage Publications Ltd: 267-307.
- Carroll, B., Morbey, H., Balogh, R. & Araoz, G. (2009) Flooded homes, broken bonds, the meaning of home, psychological processes and their impact on psychological health in a disaster. *Health and Place* 15: 540–547
- Castree, N. and Braun, B. (2001). *Social nature: theory, practice, and politics*. Malden, MA, Blackwell Publishers.
- Castree, N. (2005). Is Geography a Science?. In Castree, N., Rogers, A. & Sherman, D. J. (eds) *Questioning geography: fundamental debates*. Blackwell: 57-79
- Castree, N., Rogers, A., & Sherman, D.J. (2005). *Questioning geography: fundamental debates*. Blackwell.
- Castree, N. (2008). The Geopolitics of Nature. In. Agnew, J. A. Mitchell, K & Toal, G. (eds). *A companion to political geography*. Malden, Blackwell: 423-439.
- Cawley, AM, Fitzpatrick, J, Cunnane, C, & Sheridan, T. (2005). *A selection of extreme flood events—the Irish experience*. National

Hydrology Seminar 2005: Understanding & managing hydrological extremes.

- Chandler, R. E. & Wheeler, H. S. (2002). Analysis of rainfall variability using generalized linear models: A case study from the west of Ireland. *Water Resources Research* 38(10): 1192-1202
- Chanse, V. (2011). Contexts and Complexities: A Case Study in Evolving Participatory Watershed Stewardship. *Landscape Journal: design, planning, and management of the land* 30(1): 121-132.
- Chakraborty, J., Collins, T. W, Montgomery, M. C., & Grineski, S. E. (2014). Social and spatial inequities in exposure to flood risk: A case study in Miami, Florida. *Natural Hazards Review*.
- Chiapello, E. & Fairclough, N. (2002). Understanding the new management ideology: a transdisciplinary contribution from critical discourse analysis and new sociology of capitalism. *Discourse & Society* 13(2): 185-208.
- Chiu, L. & Knight, D. (1999). How useful are Focus Groups for obtaining the views of minority groups. In Barbour, R. S. Kitzinger, J (eds) *Developing Focus Group Research: Politics, Theory and Practice*, Sage, London: 99-112.
- Chon, C. (2009). Legitimation Strategies Used in Response to Environmental Disaster: A French Case Study of Total SA's Erika and AZF Incidents. *European Accounting Review* 18(1): 33-62.
- Clare W. (1999). 'Can Focus Groups Access Community Views' in R. S. Barbour, R. S. & Kitzinger, J. (eds.) *Developing Focus Group Research: Politics, Theory and Practice*, Sage, London: 47-63
- Clarke, J. and Cochrane, A. (2001). The Social Construction of Social Problems, in: Saraga, E. (ed). *Embodying the Social: Constructions of Difference*, London, Routledge in association with The Open University: 3-42
- Clayton, S, Koehn, A., & Grover, E. (2013). Making Sense of the Senseless: Identity, Justice, and the Framing of Environmental Crises. *Social Justice Research*, 26(3): 301-319.

- Cloke, P. (2006). Conceptualizing rurality. In Cloke, P., Marsden, T. & Mooney, P. H. (eds) *Handbook of rural studies*. London, Thousand Oaks, Calif., SAGE: 3-17.
- Cornwall, A. (2008). Unpacking 'Participation': models, meanings and practices. *Community Development Journal* 43(3): 269-283.
- Collins, M. (2005). Derrybrien: *The Struggle of a Small Rural Community to Have its Voice Heard*. In: The Woodland League. <http://www.woodlandleague.org/communities/derrybrien/> (Last accessed 01/04/2014)
- Collins, K. & Ison, R. (2009). Jumping off Arnstein's ladder: social learning as a new policy paradigm for climate change adaptation. *Environmental Policy and Governance* 19(6): 358-373.
- Council Directive. 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Commission of the European Communities: Brussels.
- Council Directive 2007/60/EC, D. (2007). On the assessment and management of flood risks. *Official Journal of the European Union* L 288/27. Commission of the European Communities: Brussels.
- Correia, N. F., Fordham, M., da GRA a Saraiva, M., & Bernardo, F. (1998). Flood hazard assessment and management: interface with the public. *Water Resources Management*, 12(3): 209-227.
- Couch, S. (2000) The cultural scene of disasters, *International Journal of Mass Emergencies and Disasters* 18(1): 21-38.
- Cox, K. R. (1998). Spaces of dependence, spaces of engagement and the politics of scale, or: looking for local politics. *Political Geography* 17(1): 1-23.
- Cupples, J. (2007). Gender and Hurricane Mitch: reconstructing subjectivities after disaster. *Disasters* 31(2): 155-175.
- Curtin, C. & Varley, T. (1995). 'Community Action and the State' In: P. Clancy, S. Drudy, K. Lynch, L.O'Dowd (eds). *Irish Society: Sociological Perspectives*. Dublin, Institute of Public Administration Dublin

- Cutter, S. L. (2005a). Are We Asking The Right Question, in: Perry, R. W. and E. L. Quarantelli (eds.). *What is a disaster? : new answers to old questions*. Philadelphia, Pa. Xlibris: 60-78.
- Cutter, S. L. (2005). The Geography of Social Vulnerability: Race, Class, and Catastrophe, Social Science Research Council, Understanding Katrina: Perspectives from the Social Sciences, [available online] : <http://understandingkatrina.ssrc.org/Cutter/>. Last accessed 16th October, 2014.
- Cutter, S. L., Emrich, C. T., Mitchell, J. T., Boruff, B. J., Gall, M. Schmidlein, M. C. & Melton, G. (2006). The long road home: Race, class, and recovery from Hurricane Katrina. *Environment: Science and Policy for Sustainable Development* 48(2): 8-20.
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global environmental change*, 18(4): 598-606.
- Dake, K. (1992). Myths of nature: Culture and the social construction of risk. *Journal of Social issues* 48(4): 21-37.
- Daly, J., Kellehear, A. & Gliksman, M. (1997). *The public health researcher: A methodological approach*. Melbourne, Australia: Oxford University.
- Daly, S. (2007). Mapping civil society in the Republic of Ireland. *Community Development Journal* 43(2): 157.
- Davies, A. (2013). Social Groups and Collective Decision-making: Focus Group approaches, in: Fahy, F. and H. Rau (eds). *Methods of Sustainability Research in the Social Sciences*, London, Sage: 53-71.
- Davies, K. (2011). Knocking on doors: recruitment and enrichment in a qualitative interview-based study. *International Journal of Social Research Methodology* 14(4): 289-300.
- Dean, M. (1999a). *Governmentality : power and rule in modern society*. Sage. London.
- Dean, M. (1999b). Risk Calculable and Incalculable. In D. Lupton (ed.), *Risk and sociocultural theory-New directions and perspectives*: 131-159. Cambridge, Cambridge University Press.

- De Bhailis, M. 1991. *Land reclamation in South Galway*. v, 115p. Galway: 1991. (NUIG James Hardiman Basement Collection)
- Deegan, C. (2002). Introduction: the legitimising effect of social and environmental disclosures—a theoretical foundation. *Accounting, Auditing & Accountability Journal* 15(3): 282-311.
- Deegan, C. Rankin, M., & Tobin, J. (2002). An examination of the corporate social and environmental disclosures of BHP from 1983-1997: a test of legitimacy theory. *Accounting, Auditing & Accountability Journal* 15(3): 312-343.
- DEFRA, Department for the Environment, Food and Rural Affairs (2004) *Making space for water: developing a new government strategy for flood and coastal erosion risk management in England and Wales* Consultation exercise Department for Food and Rural Affairs, London
- Delgado, L. E., Marán, V. H, Bachmann, P. L., & Torres-Gomez, M. (2009). Conceptual models for ecosystem management through the participation of local social actors: the Rão Cruces wetland conflict. *Ecology and Society* 14(1): Art.50.
- Demeritt, D. (2001). The construction of global warming and the politics of science. *Annals of the Association of American Geographers* 91(2): 307-337.
- Department of Environment Heritage and Local Government and OPW (2008). *The planning system and flood risk management*. Government Publications, Dublin. Draft Version [Available Online]:
http://www.offaly.ie/eng/Services/Environment/Publications/The_Planning_System_and_Flood_Risk_Management.pdf
- Department of Environment Heritage and Local Government and OPW (2009). *The planning system and flood risk management*. Government Publications, Dublin. Final Version [Available online]:
www.flooding.ie/media/The_Planning_System_and_Flood_Risk_Management.PDF
- De Smet, H. & Lagadec P. (2011) The Response Phase of the Disaster Life Cycle Revisited. In Doolen, T. & Van Aken, E. (eds.). *Proceedings of the 2011 Industrial Engineering Research Conference*.

- Dietz, M. G. (2003). Current controversies in feminist theory. *Annual Review of Political Science* 6(1): 399-431.
- Dodder CFRAM (2012). *Draft Flood Risk Assessment and Management Plan*, Dublin City Council, Document Number: IBE0064/AJ/005
- Drew, D. P. (2003). The Hydrology of the Burren and of the Clare and Galway Lowlands, in: Mullan, G. (ed.). *Caves of County Clare and South Galway*. Bristol, The University of Bristol Speleological Society, 31-46.
- Drew, D. P. & Daly, D. (1993). *Groundwater and karstification in Mid-Galway, South Mayo and North Clare*. Dublin, Geological Survey of Ireland.
- Drew, D. P. (2010). Karstic Groundwater Systems, in: *Proceedings of the Annual Groundwater Conference* (International Association of Hydrogeologists, Irish Group) Session 1, 13-21.
- Dryzek, J. S. & Braithwaite, V. (2000). On the Prospects for Democratic Deliberation: Values Analysis Applied to Australian Politics. *Political Psychology* 21(2): 241-266.
- Dryzek, J. S. (2002). *Deliberative democracy and beyond: liberals, critics, contestations*, Oxford University Press.
- Dryzek, J. S., Hunold, C., Schlosberg, D., Downes, D., & Hernes, H. (2002). Environmental Transformation of the State: the USA, Norway, Germany and the UK. *Political studies* 50(4): 659-682.
- Dryzek, J. S. (2005). Deliberative Democracy in Divided Societies Alternatives to Agonism and Analgesia. *Political theory* 33(2): 218-242.
- Dublin City Council. (2011). *Report No. 338/2011 considered by the Council at the Monthly Meeting held on 7th November 2011 on Dublin City Flood Risk and interim report on extreme pluvial flooding event affecting East Coast and Dublin City on 24th November 2011*.
- Dublin Corporation. (1986). *River Poddle-1986 Flooding Report*. Dublin Corporation, Engineering Department, Drainage Development Division.
- Du Bois, F. (1996). Social Justice and the Judicial Enforcement of Environmental Rights and Duties in: Boyle, & Anderson, A.

- (eds.). M. *Human Rights Approaches to Environmental Protection*, Oxford, Clarendon Press: 152-176.
- Dynes R.R. (2000). The dialogue between Voltaire and Rousseau on the Lisbon earthquake: the emergence of a social science view. *International Journal of Mass Emergencies and Disasters*, 18: 97–115
- Dunne, D. & Ewen, P. (1985). *Ranelagh, Rathmines and Rathgar District Study*. D. P. Section, Dublin Corporation Planning Department.
- Eastern CFRAM (2012). *Eastern CFRAM Study: HA09Inception Report, IBE0600Rp0008_HA09 Inception Report_F02*, Office of Public Works, Dublin.
- Edmondson, R. & Rau, H. (2008). *Environmental Argument and Cultural Difference: Locations, Fractures and Deliberations*. Oxford, Peter Lang.
- Elliott, J. R. & Pais, J. (2006). Race, class, and Hurricane Katrina: Social differences in human responses to disaster. *Social Science Research*, 35(2): 295-321.
- Ensor, J. (2005). Linking Rights and Culture- Implications for Rights Based Approaches. In Gready, P. and J. Ensor (ed.). *Reinventing development?: translating rights-based approaches from theory into practice*. London; New York, 254-277
- Etzioni, A. (2000). Creating good communities and good societies. *Contemporary Sociology*: 188-195.
- EPA, 2010, *Kinvara Water management unit action plan* [Available online]:
http://www.wfdireland.ie/docs/1_River%20Basin%20Management%20Plans%202009%20%202015/WRBD%20RBMP%202010/Water%20Management%20Unit%20Action%20Plans/Kinvara%20WMU_190310.pdf (Last accessed 02/04/2014)
- Evernden, N. (1992). *The Social Creation of Nature*. Maryland, JohnsHopkins University Press.
- Ewald, F. (1991). Insurance and risk. *The Foucault Effect, Studies in Governmentality*. Graham Burchell, C. Gordon and P. Miller. Chicago, University of Chicago Press: .197-201.

- Faber, & M. Giuliani, L. Revez, A. L. Suranga, J. Mendes, J. (2014). *Good Practice Review of Inter-Disciplinary Working in Disaster Resilience Education*. ANDROID Disaster Resilience Network, WP4, 2nd Deliverable.
- Fereday, J. and E. Muir-Cochrane (2006). Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. *International journal of qualitative methods* 5(1): 1-11
- Fern, E. F. (2001). *Advanced focus group research*. Thousand Oaks, Calif., Sage.
- Fischer, F. (2001). *Citizens, Experts and the Environment: The Politics of Local Knowledge*. Durham, Duke University.
- Fischer, F. (2006). Participatory Governance as Deliberative Empowerment: The Cultural Politics of Discursive Space. *The American Review of Public Administration* 36(1): 19-40.
- Fitzgerald, A. D. O. P. (1973). Down the Old Poddle. In *Clanbrassil Street* 2, 22-33. [Available Online]: www.projecthumedia.com/ucdcp/images/Clanbrassil_Street_2.pdf (Last accessed 02/04/2014)
- Flynn, B. (2003). Much Talk But Little Action? 'New' Environmental Policy Instruments in Ireland. *Environmental Politics* 12(1): 137 - 156
- Flynn, B. (2007). *The blame game: rethinking Ireland's sustainable development and environmental performance*. Dublin ; Portland, OR, Irish Academic Press.
- Flyvbjerg, B. (2001). *Making social science matter : why social inquiry fails and how it can count again*. Oxford, UK ; New York, Cambridge University Press.
- Flyvbjerg, B. & Richardson, T. (2002). Planning and Foucault. In I. P. Allmendinger & M. Tewdwr-Jones (Eds.), *Planning futures: New directions for planning theory*, London: Routledge: 44-63.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry* 12(2): 219-245.

- Folke, C. & Hahn, T. Olsson, P., & Norberg, J. (2005). Adaptive Governance of Socio-Ecological Systems. *Annual Review of Environmental Resources*, 30: 441–473.
- Forde, C. (2005). Participatory democracy or pseudo-participation? Local government reform in Ireland. *Local Government Studies* 31(2): 137-148.
- Fordham, M. H. (1998). Making Women Visible in Disasters: Problematising the Private Domain. *Disasters* 22(2): 126-143.
- Foucault, M. (1970). The order of things: An archaeology of the human sciences. *London: Tavistock*.
- Foucault, M. (1991). Governmentality. In: Burchell, G., Gordon, C., Miller, P. (Eds.), *The Foucault Effect: Studies in Governmentality*. Harvester Wheatsheaf, London: 87–104.
- Fritz C.E. (1961). Disasters. In Merton, R.K Nisbet, R.A. (eds). *Contemporary Social Problems* New York: Harcourt: 651–94.
- Fung, A. & E. O. Wright (2003). *Deepening democracy: Institutional innovations in empowered participatory governance*. London, Verso
- Funtowicz, S. O. & J. R. Ravetz (1993). Science for the post-normal age. *Futures* 25(7): 739-755.
- Garavan, M. (2008). Problems in Achieving Dialogue: Cultural Misunderstanding in the Corrib Gas Dispute. *Environmental argument and cultural difference: locations, fractures and deliberations*. R. Edmondson and H. Rau. Oxford; New York, Peter Lang: 65-92.
- Garavan, M. (2013). Local Lives and Conflict: Towards a Methodology of Dialogic Research, in: Fahy, F. and H. Rau. *Methods of Sustainability Research in the Social Sciences*, London, Sage: 72-89
- Garson, G. D. (2002). *Guide to writing empirical papers, theses, and dissertations*. New York, Marcel Dekker.
- Geis, D. E. (2000). By design: the disaster resistant and quality-of-life community. *Natural Hazards Review*, 1(3): 151-160.
- Golden-Biddle, K. & K. Locke, 2nd edition, (2007). *Composing qualitative research*, California, Sage.

- Gray, D. E. (2009). *Doing research in the real world*. Los Angeles; London, SAGE.
- Gready, P. and J. Ensor (2005). *Reinventing development? : translating rights-based approaches from theory into practice*. London; New York
- Green, S. (2000). Negotiating with the future: the culture of modern risk in global financial markets. *Environment and Planning D* 18(1): 77-90.
- Green, C. H. (2007). *Mapping the Field: The Landscapes of Governance*. SWITCH Project Report.
- Green, C. H. & Penning-Rowsell, E.C. (2007). Socio-economic drivers, cities and science. In: Thorne, C. R., *et al.* (eds) *Future flooding and coastal erosion risks*. London, Thomas Telford.:116-191
- Grove, K. J. (2010). Insuring Our Common Future? Dangerous Climate Change and the Biopolitics of Environmental Security. *Geopolitics* 15(3): 536-563.
- GSI, (Geological Survey of Ireland). (2004a). *Kinvara/ GortGWB: Summary of Initial Characterisation* (1st Draft Kinvara-Gort Description August 2004) Geological Survey of Ireland
- GSI, (Geological Survey of Ireland). (2004b). *Derrybrien/KilcreestGWB: Summary of Initial Characterisation* (1st Draft Derrybrien/Kilcreest GWB Description August 2004) Geological Survey of Ireland
- GSI (Geological Survey of Ireland). (2013). The western lowlands. *Ground Water Karst*. Retrieved 01/05/2013, 2013, Available online: <http://www.gsi.ie/Programmes/Groundwater/Karst+Booklet/The+western+lowlands.htm>.
- Hacking, I, (1999): *The social construction of what?*, Cambridge, MA: Harvard University Press.
- Hajer, M. A. (1995). *The politics of environmental discourse : ecological modernization and the policy process*. Oxford, Clarendon Press.
- Hajer, M. A.(2003). Policy without polity? Policy analysis and the institutional void. *Policy sciences* 36(2): 175-195.

- Hajer, M. A. & H. Wagenaar (2003). *Deliberative policy analysis: understanding governance in the network society*, Cambridge University Press.
- Hajer, M. & W. Versteeg (2005). A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy & Planning* 7(3): 175-184.
- Hall, S. (2003). *Representation: Cultural Representations and Signifying Practices*. London, Sage Publications.
- Hanley, N. (2001). Cost-benefit analysis and environmental policymaking. *Environment and Planning C. Government & Policy* 19(1): 103-118.
- Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist studies*: 575-599.
- Haraway, D. (1991). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective, in: (ed) Haraway, D. *Simians, Cyborgs and Women The Reinvention of Nature*. London: Free Association Books: 183-201
- Harding, S. 1991: *Whose science? Whose knowledge?* New York: Cornell University Press.
- Haugaard, M.. (1997). *The Constitution of Power: A theoretical analysis of power, knowledge and structure*: Manchester University Press.
- Haugaard, M. (2002). *Power: a reader*. Manchester, Manchester University Press.
- Haugaard, M. (2011). Editorial, *Journal of Political Power*, 4: (1): 1- 8
- Healey, P. (1986). Swan River, Mount Pleasant Avenue [Dublin]. *Patrick Healy Collection*, South Dublin County Council.
- Heaton, J. (2008) 'Secondary analysis of qualitative data: an overview', in: *Historical Social Research*. 33(3): 33-45.
- Hennink, M. M., A. Bailey & I. Hutter. 2011. *Qualitative research methods*. London ; Thousand Oaks, Calif.: SAGE.

- Heynen, N., McCarthy, J., Prudham, S., & Robbins, P. (2007). *Neoliberal environments : false promises and unnatural consequences*. London ; New York, Routledge.
- Hickey, Sam, & Mohan, Giles. (2005). Relocating Participation within a Radical Politics of Development. *Development and Change*, 36(2): 237-262.
- Hood, C., Rothstein, H., & Baldwin, R. (2001). *The government of risk: Understanding risk regulation regimes*, Oxford University Press.
- Hooghe, L. & G. Marks (2003). Unraveling the central state, but how? Types of multi-level governance. *The American Political Science Review* 97(2): 233-243.
- Howgate, O. R. & W. Kenyon (2009). Community cooperation with natural flood management: A case study in the Scottish Borders. *Area* 41(3): 329-340.
- Howitt, R. (2008). Scale. *A companion to political geography*. J. A. Agnew, K. Mitchell & G. Toal. Malden, Blackwell: 138-157.
- Hughey, E. P. & G. A. Tobin (2006). Hazard Response Capabilities of a Small Community: A Case Study of Falmouth, Kentucky and the 1997 Flood. *Southeastern Geographer* 46(1): 66-78.
- Hultman, N. E. & A. S. Bozmoski (2006). The Changing Face of Normal Disaster: Risk, Resilience and Natural Security in a Changing Climate. *Journal of International Affairs* 59(2): 25-41.
- Innes, J. E. & D. E. Booher (2004). Reframing public participation: strategies for the 21st century. *Planning Theory & Practice* 5(4): 419-436.
- Insurance Ireland (2013). *Insurance Ireland Advice to Policy Holders Affected by Floods*, [Available online]: <http://www.insuranceireland.eu/news-publications-and-events/news-press-release/insurance-ireland-advice-to-policyholders-affected-by-floods> (Last accessed 05/04/2014)
- Irish Red Cross (2002). *Report to the Minister for Finance, Government Humanitarian Aid Flood Relief Scheme*, February 2002. Dublin: OPW

- Irvine, K., Ireland. EPA, Trinity College (Dublin Ireland.). Department of Zoology, & Environmental Research Technological Development and Innovation Programme. (2002). *Review of monitoring and research to meet the needs of the EU water framework directive (2000-DS-5-M1): final report*. Johnstown Castle, Co. Wexford, Environmental Protection Agency.
- Jacobs, J. A. & S. Frickel (2009). Interdisciplinarity: A critical assessment. *Annual review of Sociology* 35: 43-65.
- Jasanoff, S. (2010) 'A new climate for society'. *Theory, Culture & Society*, 27, 233-253.
- JCEHLG (Joint Committee on the Environment Heritage and Local Government). (2010). Fourth Report of the Joint Committee: *The Management of Severe Weather Events in Ireland & Related Matters*. Oireachtas. Dublin.
- Jeffers, J. M. (2011). The Cork City flood of November 2009: Lessons for flood risk management and climate change adaptation at the urban scale. *Irish Geography* 44(1): 61-80.
- Johnson, C. L, Tunstall, S. M, & Penning-Rowsell, E. (2005). Floods as catalysts for policy change: historical lessons from England and Wales. *Water resources development* 21(4): 561-575.
- Johnson, C., Penning-Rowsell, E., & Tapsell, S. (2007a). Aspiration and reality: flood policy, economic damages and the appraisal process. *Area* 39(2): 214-223.
- Johnson, C. Penning-Rowsell, E., & Parker, D. (2007b). Natural and imposed injustices: the challenges in implementing a fair flood risk management policy in England. *Geographical Journal* 173: 374-390.
- Johnson, C. L. & S. J. Priest (2008). Flood risk management in England: A changing landscape of risk responsibility? *International Journal of Water Resources Development* 24(4): 513-525.
- Johnston, R. (2005). Geography- Coming Apart at the Seams? *Questioning Geography*. N. Castree, A. Rogers & D. Sherman. Malden, Blackwell Publishing: 9-25.
- Junker, B., Buchecker, M., & Müller-Böker, U. (2007). Objectives of public participation: Which actors should be involved in the

- decision making for river restorations? *Water Resources Research* 43(10).
- Kapucu, N. & M. Van Wart (2006). The Evolving Role of the Public Sector in Managing Catastrophic Disasters: Lessons Learned. *Administration Society* 38(3): 279-308.
- Kellogg, W. A. O'Brien, W. Kevin E.; Robey, C. & Toth, K., (2007). Commentary: The Use of Focus Groups for Design and Implementation of Collaborative Environmental Administrative Programs: A Comparison of Two State-Level Processes in Ohio. *Environmental Practice* 9(03): 166-178.
- Kelly, K. & T. Caputo (2011). *Community: A contemporary analysis of policies, programs, and practices*, University of Toronto Press.
- Kenyon, W. Nevin, C., & Hanley, N. (2003). Enhancing Environmental Decision-making Using Citizens' Juries. *Local Environment*, Routledge. 8: 221.
- Kenyon, W. (2007). Evaluating flood risk management options in Scotland: A participant-led multi-criteria approach. *Ecological Economics* 64(1): 70-81.
- Ketteridge, A. & M. Fordham (1998). Flood evacuation in two communities in Scotland: lessons from European research. *International Journal of Mass Emergencies and Disasters* 16(2): 119-143.
- Kitzinger, J. & R. S. Barbour (1999). *Developing focus group research : politics, theory, and practice*. London ; Thousand Oaks, SAGE Publications.
- Klein, N. (2007). Disaster capitalism. *Harper's Magazine* 315: 47-58.
- 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.
- Krohn, W. (2010). Interdisciplinary Cases and Disciplinary Knowledge, in: (ed) Frodeman, R. *et al.* *The Oxford handbook of Interdisciplinarity*. Oxford: Oxford university Press.
- Kruse, S. (2008). Structuring multiple perspectives in Environmental Decision-Making: Flood Protection in the Middle-Elbe Region.

- Environmental Argument and Cultural Difference: Locations, Fractures and Deliberations*. R. Edmondson and H. Rau. Oxford, Peter Lang: 37-64.
- Kumar, R. (2005). *Research methodology: a step-by-step guide for beginners*. London, Sage.
- Kütting, G. & R. D. Lipschutz (2009). *Environmental governance: power and knowledge in a local-global world*. London ; New York, Routledge.
- Lane, M. B. & T. Corbett (2005). The Tyranny of localism: Indigenous participation in community-based environmental management. *Journal of Environmental Policy & Planning* 7(2): 141 - 159.
- Larson, A. M. & F. Soto (2008). Decentralization of Natural Resource Governance Regimes. *Annual Review of Environment and Resources* 33(1): 213-239.
- Latour, B. (1990) 'Drawing Things Together', in M. Lynch & S. Woolgar (eds) *Representation in Scientific Practice*. Cambridge, MA: MIT Press.
- Latour, B. (1999). *Pandora's hope: essays on the reality of science studies*. Cambridge, MA: Harvard University Press.
- Lebel, L., Manuta, J. & Garden, P. (2011). Institutional traps and vulnerability to changes in climate and flood regimes in Thailand. *Regional Environmental Change* 11(1): 45-58.
- Lee, M. (2003). Conceptualizing the New Governance: A New Institution of Social Coordination. *Institutional Analysis and Development Mini-Conference*. Indiana University, Bloomington, Indiana, USA.
- Lemos, M. C. & A. Agrawal (2006). Environmental Governance. *Annual Review of Environment and Resources* 31(1): 297-325.
- Lewis, A. (1992). Group child interviews as a research tool. *British Educational Research Journal* 18(4): 413-421.
- Lindsay, R & Bragg, O. M. (2005). *Wind Farm and Blanket Peat: A Report on the Derrybrien Bog Slide* (2nd Edition), Published by the Derrybrien Development Cooperative Ltd, c/o V P Shields & Son, Gort, Co Galway.admin@derrybriendevelopment.org.ie

- Linhorst, D. M. (2002). A Review of the Use and Potential of Focus Groups in Social Work Research. *Qualitative Social Work* 1(2): 208-228.
- Lipschutz, R. D. & Kütting, G. (2009). Conclusions: Environmental Governance, Power and Knowledge in a Local-Global World in: (ed.) G. Kütting and R. D. Lipschutz, *Environmental governance: power and knowledge in a local-global world*. R.D. London ; New York, Routledge: 206-216
- Luke, T. W. (2009). Situating Knowledges, Spatializing Communities, Sizing Contradictions. In: (ed.) G. Kütting & R. D. Lipschutz, R.D. *Environmental governance: power and knowledge in a local-global world*. London; New York, Routledge: 13-37.
- Mac Cárthaigh, M. (2003). *Flooding in the Dodder Catchment: 26 August 1986 (Hurricane Charlie) & 2 December 2003*. Dublin: Environmental Protection Agency
- Mahon, M. (2007) New populations, shifting expectations: The changing experience of rural space and place. *Journal of Rural Studies*, 23(3): 345-356.
- Mahon, M., Fahy, F., O Cinnáide, M. & Gallagher, B. (2009). Civic Engagement and Governance in the Urban-Rural Fringe: Evidence from Ireland. *Nature & Culture*, Berghahn Books. (4): 57-77.
- Mangan, R. (1999). Flood risk assessment and communication. *Report of RIPARIUS First Workshop*. MEngSc, B. M. B.
- Mariyani-Squire, E. (1999). Social Constructivism: A flawed debate over conceptual foundations. *Capitalism Nature Socialism* 10(4): 97 - 125.
- Mason, M. (2008). The Governance of Transnational Environmental Harm: Addressing New Modes of Accountability/Responsibility. *Global Environmental Politics* 8(3): 8-24.
- Massey, O. T. (2011). A proposed model for the analysis and interpretation of focus groups in evaluation research. *Evaluation and Program Planning* 34(1): 21-28.
- McDowell, L. (1993). Space, place and gender relations: Part II. Identity, difference, feminist geometries. *Progress in Human Geography* 17(3): 305-318.

- McEntire, D. A., Fuller, C, Johnston, C. W., & Weber, R. (2002). A Comparison of Disaster Paradigms: The Search for a Holistic Policy Guide. *Public Administration Review*, 62: 267-281.
- McEwen, L. (2001) Geomorphological and hydrological assessment for the restoration of floodplain woodland: The Ettrick Water, Scottish borders. In: Gordon, J. E., (ed.) *Earth Science and the Natural Heritage: Interactions and Integrated Management*. TSO (The Stationery Office)
- McEwen, Lindsey. (2011). Approaches to Community Flood Science Engagement: The River Severn Catchment, UK as Case-study. *International Journal of Science in Society*, 2(4): 159-179.
- McEwen, L. & O. Jones (2010). The role of local/lay flood knowledge in building community resilience: the case of the 2007 floods, Gloucestershire, UK. Paper in *British Hydrological Society Conference*. Newcastle
- McEwen, L, Krause, F, Jones, O, & Garde Habsen, J. (2012). Sustainable flood memories, informal knowledge and the development of community resilience to future flood risk In: Proverbs, D., Mambretti, S., Brebbia, C. A. and De Wrachien, D., eds. (2012) *Flood Recovery, Innovation and Response III*. Southampton: WIT Press.
- McGuirk, P. M. & A. MacLaran (2001). Changing Approaches to Urban Planning in an 'Entrepreneurial City': The Case of Dublin. *European Planning Studies* 9(4): 437-457.
- McHoul, A. & Grace, W. (1993). *A Foucault Primer: Discourse, Power and the Subject*, New York University Press: Melbourne
- Merton, R., (1969). In: Foreword to Allen H. Barton *Communities in Disaster: A Sociological Analysis of Collective Stress Situations*. Doubleday, Garden City, NY, :. vii-xxxvii.
- Met Éireann, (2009) *Monthly Weather Bulletin, No. 283*, November 2009
- Met Éireann, (2011) *Monthly Weather Bulletin, No. 306*, October 2011
- Mileti, D. S. (1999). Disasters by Design. *The Changing Risk Landscape: Implications for Insurance Risk Management*. N. R. Britton.

- Morris, J. & Wheeler, H. (2007) Catchment land-use, in: (ed)Thorne, C. R., et al. *Future flooding and coastal erosion risks*. London, Thomas Telford: 64-95
- Moser, C., Gatehouse, M. & Garcia, H. (1996) Urban poverty research source book: volume II. Urban Management Program Working Paper No. 20. World Bank, Washington DC
- Mostert, E. & S. Junier (2009). The European flood risk directive: challenges for research. *Hydrology and Earth System Sciences Discussions* 6(4): 4961-4988.
- Motoyoshi, T. (2006). Public Perception of Flood Risk and Community-based Disaster Preparedness. *A better integrated management of disaster risks: Toward resilient society to emerging disaster risks in megacities*. Tokyo, Japan: Terrapub: 121-134.
- Moulaert, F., Swyngedouw, E., Martinelli, F., & Gonzalez, S. (2009). *Can Neighbourhoods Save the City?: Community Development and Social Innovation*, Routledge.
- Müller, M. M, & Clayton, Susan. (2013). Introduction to Environmental Justice. *Social Justice Research*, 26(3): 227-230.
- Murray, M. (2010a) *Participatory rural planning : exploring evidence from Ireland*. Burlington, VT, Ashgate.
- Murray, D. (2010b) *Kiltartan Underground River System*, October 22, 2010 David Murray [david.murray@duolog.com], Version 1.0
- Mustafa, D. (2002). To each according to his power? Participation, access, and vulnerability in irrigation and flood management in Pakistan. *Environment and Planning D* 20(6): 737-752.
- Neutens, J. J. & Rubinson. L. (2010). *Research techniques for the health sciences*. San Francisco: Benjamin Cummings.
- Nightingale, A. J. (2003). A feminist in the forest: Situated knowledges and mixing methods in natural resource management. *ACME: An International E-journal for Critical Geographies* 2(1): 77-90.
- Norris, F. H. Smith, T., & Kaniasty, K. (1999). Revisiting the Experience-Behavior Hypothesis: The Effects of Hurricane Hugo on Hazard Preparedness and Other Self-Protective Acts. *Basic & Applied Social Psychology* 21(1): 37-47.

- Norris, F. H, Stevens, S. P, Pfefferbaum, B. Wyche, K. F. & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology* 41(1-2): 127-150.
- Nozick R. (1974) *Anarchy, state and utopia* Blackwell, Oxford
- Nygren, A. (1999). Local Knowledge in the Environment–Development Discourse: From dichotomies to situated knowledges. *Critique of Anthropology* 19(3): 267-288.
- O'Brien, G. (1941). Arterial Drainage in Ireland. *Studies: An Irish Quarterly Review* 30(120): 555-570.
- O Broin, D. & E. Waters (2007). *Governing below the centre: local governance in Ireland*. Dublin, New Island Books.
- O'Donovan, G. (2002). Environmental disclosures in the annual report: extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal* 15(3): 344-371.
- Ó Cinnéide, M. & Cuddy, M. (1992). *Perspectives on Rural Development in Advanced Economies*, Galway: Centre for Development Studies Social Sciences Research Centre, University College Galway
- Oels, A. (2005). Rendering Climate Change Governable: From Biopower to Advanced Liberal Government? in: *Journal of Environmental Policy and Planning*, 7 (3): 185-207
- Oliver-Smith, A. (1996). Anthropological research on hazards and disasters. *Annual Review of Anthropology*, Annual Reviews Inc. 25: 303.
- Oliver-Smith, A. (1999). What is a Disaster? Anthropological Perspectives on a Persistent Question. In: (ed) Oliver-Smith, A. & S. M. Hoffman, *The angry earth: disaster in anthropological perspective*, Psychology Press: 18-34
- OPW (Office of Public Works). (1994) *Report on flooding in South Galway in 1994*, Engineering Services, May 1994. Government Publications. Galway
- OPW (Office of Public Works). 1997. *An investigation of the problems in the Gort-Ardrahan area of South Galway*: Final report.

- OPW (Office of Public Works). (2004). *Report of the Flood Policy Review Group*. Dublin, OPW: 1-235.
- OPW/ (Office of Public Works). (2010). 'Engineering proposal for the reinstatement of culverts on the N18 and the provision of new culverts on minor roads at Kiltartan- Feasibility os an overland channel from Coole to Kinvarra', from: *Review of South Galway Study Report*, Project No 4721, October 2010
- OPW (Office of Public Works). (2011a). *History of Flood Management in Ireland*. Dublin. [Available Online]:
<http://www.opw.ie/en/FloodRiskManagement/BackgroundPolicy/FloodRiskinIreland/HistoryofFloodManagement/#d.en.1381>]:
 (last accessed 18/07/2011)
- OPW (Office of Public Works). (2011b). *Overview of Flood Risk in Ireland*. Dublin. [Available Online]:
<http://www.opw.ie/en/FloodRiskManagement/BackgroundPolicy/FloodRiskinIreland/OverviewofFloodRiskinIreland/#d.en.1380>]:
 (last accessed 18/07/2011)
- OPW/ (Office of Public Works). (2011c). *History: development of Public works*. Dublin. [Available Online]:
<http://www.opw.ie/en/OurBusinessUnits/CorporateServices/AbouttheOPW/History/>]: (last accessed 18/07/2011)
- OPW (Office of Public Works). (2011d). *Review of the South Galway Flood Study Report: Engineering proposals for the Reinstatement of Culverts on the N18 and the Provision of New Culverts on Minor Roads at Kiltartan, Feasibility of an Overland Channel from Coole to Kinvarra*, Headford: Office of Public Works
- OPW (Office of Public Works). (2014). *CFRAM National Flood Policy*, [Available online]:
<http://www.cfram.ie/national-flood-policy/> (last accessed: 03/04/2014)
- Ostrom, E, Burger, J, Field, CB, Norgaard, RB, & Policansky, D. (1999). Revisiting the commons: local lessons, global challenges. *Science* 284: 278-282
- O'Sullivan, J. J., Bradford, R. A., Bonaiuto, M., De Dominicis, S., Rotko, P., Aaltonen, J. Langan, S. J. (2012). Enhancing flood resilience through improved risk communications. *Nat. Hazards Earth Syst. Sci.* 12(7): 2271-2282.

- Ozerdem, A. (2003) Disaster as Manifestation of Unresolved Development Challenges: The Marmara Earthquake, Turkey, in M. Pelling (ed.) *Natural Disasters and Development in a Globalizing World*: 199–213. London: Routledge.
- Paavola, J. (2004). Protected Areas Governance and Justice: Theory and the European Union's Habitats Directive. *Environmental Sciences* 1(1): 59-77.
- Pape, J., Rau, H., Fahy, F., & Davies, A (2011). Developing Policies and Instruments for Sustainable Household Consumption: Irish Experiences and Futures. *Journal of Consumer Policy* 34(1): 1-18.
- Pastor, M., Bullard, R., Boyce, J. K, Fothergill, A., Morello-Frosch, R., & Wright, B. (2006). Environment, disaster, and race after Katrina. *Race, Poverty & the Environment*: 21-26.
- Peet, R. (1998). *Modern geographic thought*. Blackwell Publishing: Malden
- Pelling, M. (1998). Participation, social capital and vulnerability to urban flooding in Guyana. *Journal of International Development* 10(4): 469-486.
- Pelling, M. (1999). The political ecology of flood hazard in urban Guyana. *Geoforum* 30(3): 249-261.
- Pelling, M. & K. Dill (2006) Disaster politics: tipping points for change in the adaptation of sociopolitical regimes. *Progress in Human Geography* 34(1): 21-37.
- Pelling, M. & K. Dill (2010). Disaster politics: tipping points for change in the adaptation of sociopolitical regimes. *Progress in Human Geography* 34(1): 21-37.
- Perry, R.W. (2005). Disasters, Definitions and Construction, in (ed.) Perry, R. W. & E. L. Quarantelli (2005). *What is a disaster? : new answers to old questions*. Philadelphia, Pa., Xlibris: 311-324
- Perry, R. W. & E. L. Quarantelli (2005). *What is a disaster? : new answers to old questions*. Philadelphia, Pa., Xlibris.
- Peters, B. G. & J. Pierre (1998). Governance without government? Rethinking public administration. *Journal of public administration research and theory* 8(2): 223.

- Petry, B. (2002). Keynote lecture: Coping with floods: complementarity of structural and non-structural measures. *Flood Defense*: 60-70.
- Pickering, A. (1993). The Mangle of Practice: Agency and Emergence in the Sociology of Science. *American Journal of Sociology* 99(3): 559-589
- Pierre, J. (2000). *Debating Governance*. New York, Oxford University Press.
- Polterovich V (2001) Institutional traps. In: Klein L, Porner M (eds) *The new Russia: transition gone awry*. Stanford University Press, Stanford: 93–116
- Polterovich, V. (2014). *Institutional Reform Design: A New Chapter of Economics*.
- Posthumus, H., Hewett, C. J. M., Morris, J., & Quinn, P. F. (2008). Agricultural land use and flood risk management: Engaging with stakeholders in North Yorkshire. *Agricultural Water Management* 95(7): 787-798.
- Power, M. (1997). From risk society to audit society. *Soziale Systeme* 3(1): 3-21.
- Quarantelli, E. L. (2003). Urban vulnerability to disasters in developing countries: managing risks. In: Kreimer, A. Arnold, M. & Caril, A. (eds) *Building safer cities: the future of disaster risk*: 211-232.
- Quarantelli, E.L (2005) A Social science Research Agenda for the Disasters Of the 21st Century: Theoretical, Methodological and Empirical Issues and Their Professional Implementation, in (ed.) Perry, R. W. & E. L. Quarantelli (2005). *What is a disaster? : new answers to old questions*. Philadelphia, Pa., Xlibris: 325-396
- Raco, M. (2000). Assessing community participation in local economic development—lessons for the new urban policy. *Political Geography* 19(5): 573-599.
- Raco, M. & R. Imrie (2000). Governmentality and rights and responsibilities in urban policy. *Environment and Planning A* 32(12): 2187-2204.
- Raco, M. (2002). Risk, Fear and Control: Deconstructing the Discourses of New Labour's Economic Policy. *Space & Polity* 6(1): 25-47.

- Rawls, J. (1971). *A Theory of Justice*, Harvard University Press, Cambridge, MA.
- Rawls J. (2001). *Justice as fairness: a restatement* Harvard University Press, Cambridge MA
- Redmond, D. Williams, B. Hughes, B. & Cuden, J. (2012). *Demographic Trends in Dublin*. D. C. Council. Think Dublin! Research Series
- Rhodes, R. A. W. (1994). The hollowing out of the state: The changing nature of the public service in Britain. *Political Quarterly* 65(2): 138.
- Rocha, E. M. (1997). A ladder of empowerment. *Journal of Planning Education and Research* 17(1): 31-44.
- Rogers, A. (1998). Key terms and Debates, in: (ed.) Rogers *et al.*, *The Students Companion to Geography*. Oxford, Blackwell: 233-252.
- Rose, G. (1997). Situating knowledges: positionality, reflexivities and other tactics. *Progress in Human Geography* 21(3): 305-320.
- Rose, N., (1999). *Powers of freedom*. Cambridge: Cambridge University Press.
- Rosenbaum, W. A. (2008). *Environmental politics and policy*. Washington, D.C., CQ Press.
- Rothstein, H. Irving, P, Walden, T. & Yearsley, R. (2006a). The risks of risk-based regulation: Insights from the environmental policy domain. *Environment International* 32(8): 1056-1065.
- Rothstein, H. Huber, Mi. & Gaskell, G. (2006b). A theory of risk colonization: The spiralling regulatory logics of societal and institutional risk. *Economy and society* 35(1): 91-112.
- Rothstein, H. & Downer, J. (2012). Renewing DEFRA': Exploring the emergence of risk-based policy making in UK central government *Public Administration* 90(3): 781-799.
- Rothstein, H., Borraz, O, & Huber, M. (2013). Risk and the limits of governance: Exploring varied patterns of risk-based governance across Europe. *Regulation & Governance* 7(2): 215-235.

- Ryan, K. (2008). Environmental Conflict and Democracy: Between Reason and Hegemony. In: (ed)Edmondson, R. & H. Rau, *Environmental argument and cultural difference : locations, fractures and deliberations*. Oxford ; New York, Peter Lang: 307-36
- Ryan, K. (2009) Power and Exclusion, in the *Sage Handbook of Power*, edited by Stewart Clegg & Mark Haugaard, Sage.
- Saraga, E. (2001). *Embodying the social : constructions of difference*. London (ed.); New York, Routledge in association with the Open University.
- Samuels, P. (2008) 'Journal of Flood Risk Management: Editorial'. *Journal of Flood Risk Management*, 1: 69-70.
- Saul, A. & Ashley, R. M. (2007) Urban Change. In: Thorne, C. R., *et al.* (eds) *Future flooding and coastal erosion risks*. London, Thomas Telford.:149-169
- Sayer, A, (2000). *Realism and social science*. London:Sage.
- Scanlon, J. (2005). Forward. In Perry, R. W. & E. L. Quarantelli. (eds): *What is a disaster? : new answers to old questions*. Philadelphia, Pa., Xlibris: 13-18
- Scoones, I. (1999). New Ecology and The Social Sciences: What Prospects for a Fruitful Engagement? *Annual Review of Anthropology* 28(1): 479-507.
- Sherman, D, Rogers, A, & Castree, N. (2005). Introduction: Questioning Geography. *Questioning Geography*. N. Castree, A. Rogers & D. Sherman. Malden, Blackwell Publishing: 1-6.
- Shrader-Frechette, K. (2005). *Environmental Justice: Creating Equality, Reclaiming Democracy*: OUP USA.
- Shue, H. (1996). *Basic Rights, Subsistence. Affluence and US Foreign Policy* (2nd Edition). Princeton: Princeton University Press.
- Simms, M.J. (2003). The Geomorphological History of the Burren and the Gort Lowlands. In Mullan, G. (ed.). *Caves of County Clare and South Galway*. Bristol, The University of Bristol Speleological Society. 15-30

- Skeffington, M, Moran, J, O Connor, Á, Regan, E, Coxon, CE, Scott, NE, & Gormally (2006). Turloughs–Ireland’s unique wetland habitat. *Biological Conservation* 133(3): 265-290.
- Smith, N. (2008). *Uneven Development: Nature, Capital and the Production of Space*. Athens, The University of Georgia Press.
- Smith, K. & Petley. D. N. (2008). *Environmental hazards : assessing risk and reducing disaster*. Abingdon, Oxon ; New York: Routledge.
- Spector M & Kitsuse J. I. 1977. *Constructing Social Problems*. Menlo Park, CA: Cummings
- Stanley, A. (2006). Risk, Scale and Exclusion in Canadian Nuclear Fuel Waste Management. *ACME: An International E-journal for Critical Geographies* 4(2): 194–227.
- Stoker, G. (1998). Governance as theory: Five propositions. *International Social Science Journal*, Blackwell Publishing Limited. 50: 17.
- Strategic Policy Committee, (2012) *Progress Report on Extreme Event Pluvial Flooding 24th October 2011* considered by the Environment & Engineering Strategic Policy Committee at a meeting in December 2011.
- Swyngedouw, E. (2005). Governance innovation and the citizen: the Janus face of governance-beyond-the-state. *Urban Studies* 42(11): 1991.
- Swyngedouw, E. (2009). Civil society, governmentality and the contradictions of governance-beyond-the-state: The Janus-face of social innovation. *Social innovation and territorial development. Farnham, England*: 63-78.
- Swyngedouw, E, & Moulaert, F. (2010) Socially Innovative Projects, Governance Dynamics and Urban Change. In Gonzalez, S., Martinelli, F., Moulaert, F. & Swyngedouw, E. (eds). *Can Neighbourhoods Save the City?*. London: Routledge
- Tapsell, S.M., Penning-Rowsell, E.C., Tunstall, S.M., & Wilson, TL. (2002). Vulnerability to flooding: health and social dimensions. *Philosophical Transactions of the Royal Society of London. Series A: Mathematical, Physical and Engineering Sciences* 360(1796): 1511.

- 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.
- Taylor, G. (2005). *Negotiated Governance and Public Policy in Ireland*. Manchester, Manchester University Press: 219 - 234
- Taylor, V. & Winquist E (ed). (2001). *Encyclopaedia of Post Modernism*, London, Routledge World Reference
- Terpstra, T. & Gutteling J. M. (2008). Households' perceived responsibilities in flood risk management in the Netherlands. *International Journal of Water Resources Development* 24(4): 555-565.
- Tierney, K. J. (1999). *Toward a critical sociology of risk*. Sociological Forum, Springer.
- Tierney, K. J. (2007). From the Margins to the Mainstream? Disaster Research at the Crossroads. *Annual review of Sociology* 33: 503–525.
- Tisdell J G (2003) Equity and social justice in water doctrines *Social Justice Research* 16 401–16
- Tol, R. SJ, Van Der Grijp, N., Olsthoorn, A. A, & Van Der Werff, P. E. (2003). Adapting to climate: a case study on riverine flood risks in the Netherlands. *Risk Analysis* 23(3): 575-583.
- Tunstall, S. Tapsell, S., Green, C., Floyd, P., & George, C. (2006). The health effects of flooding: social research results from England and Wales. *Journal of Water & Health* 4(3): 365-380.
- UNISDR, (2004a). *Living with Risk: A Global View of Disaster Reduction Initiatives Geneva*: UN International Strategy for Disaster Reduction. Geneva, Switzerland. Available at: http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm (accessed 02/04/2014).
- UNESCO (2012). *Managing Water under Uncertainty and Risk: The United Nations World Water Development Report 4*, Paris: UNESCO.
- Viles, H. (2005). A Divided Discipline? *Questioning Geography*. N. Castree, A. Rogers & D. Sherman. Malden, Blackwell Publishing: 26-38.

- Viscusi, W. K. & R. J. Zeckhauser (2006). National survey evidence on disasters and relief: Risk beliefs, self-interest, and compassion. *Journal of Risk & Uncertainty* 33(1/2): 13-36.
- Vogel, C, Moser, S. C., Kaspersen, R. E., & Dabelko, G. D. (2007) Linking vulnerability, adaptation, and resilience science to practice: Pathways, players, and partnerships. *Global Environmental Change* 17(3-4): 349-364.
- Vogel, D. (2012). *The politics of precaution: regulating health, safety, and environmental risks in Europe and the United States*, Princeton University Press.
- Weale, A., Pridham, G., Cini, M., Konstadakopoulos, D., Porter, M. & Flynn, B. (2003). *Environmental governance in Europe: an ever closer ecological union?* Oxford (2nd edition); New York, Oxford University Press.
- Wenger, Etienne. (2000). Communities of Practice and Social Learning Systems. *Organization*, 7(2): 225-246.
- Wengraf, T. (2001). *Qualitative research interviewing: biographic narrative and semi-structured methods*. London; Thousand Oaks, Calif.: SAGE.
- Werritty, A. (2006). Sustainable flood management: oxymoron or new paradigm? *Area* 38: 16-23.
- Werritty, A. (2007). Driver Impacts in Scotland. In: Thorne, C. R., *et al.* (eds). *Future flooding and coastal erosion risks*. London, Thomas Telford: 227-239
- Werritty, A., Houston, D. Ball, T., Tavendale, A., & Black, A. (2007). *Exploring the social impacts of flood risk and flooding in Scotland*, Scottish Executive Edinburgh.
- Western CFRAM (2012). *Western CFRAM Unit of Management 29: Galway Bay South East Inception Report, Final Report*, October 2012 Trim, Co Meath, Office of Public Works
- Western RBMP, (2010). *Water Matters, Our Plan. Final River Basin Management Plan for the Western River Basin District in Ireland (2009-2015)*. Incorporating Amendments of the Minister for the Environment, Heritage and Local Government, issued on 6th July 2010

- White, P. (2010). Making use of secondary data. In N. Clifford, S. French, & G. Valentine (eds.), *Key methods in geography*, Thousand Oaks, CA: Sage: 61–76.
- Wilkinson, K. P. (1991). *The community in rural America*, Greenwood Publishing Group.
- Wilkinson, S. (1998). Focus groups in feminist research: Power, interaction, and the co-construction of meaning. *Women's Studies International Forum* 21(1): 111-125.
- Wisner, B. & J. Adams (2003). *Environmental health in emergencies and disasters: a practical guide*, World Health Organization.
- Wisner, B, Blaikie, P, Cannon, T, & Davis, I. (2004). *At risk: natural hazards, people's vulnerability and disasters*, Routledge, London.
- Wynne, B. (1996). May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide. In Lash, S. Szerszynski B.& Wynne, B. (eds). *Risk, environment and modernity: towards a new ecology*. London, Sage: 27-43.
- Wynne, B. (2002). Risk and Environment as Legitimatory Discourses of Technology: Reflexivity Inside Out? *Current Sociology* 50(3): 459-477.
- Yin, R. K. (2003). *Case study research: design and methods*. Thousand Oaks, Calif., Sage Publications.
- Yusoff, K. (2009). Excess, catastrophe and climate change. *Environment and Planning D: Society and Space* [advance online publication](#).

Appendix A

Fieldwork Log and codebook

Code number	Date	Catchment	Type of Collection	Stakeholder description
P1	10th May, 2012	Kinvara	Interview	Resident
P2	14th May, 2012	Kinvara	Interview	Farmer/Community Group/SME
P3	14th May, 2012	Kinvara	Interview	Farmer/NGO
P4	16th May, 2012	Kinvara	Focus Group	Resident
P5	16th May, 2012	Kinvara	Focus Group	Resident
P6	16th May, 2012	Kinvara	Focus Group	Resident
P7	20th May, 2012	Kinvara	Group Interview	Resident
P8	20th May, 2012	Kinvara	Group Interview	Resident
P9	21st May, 2012	Kinvara	Group Interview	Resident
P10	21st May, 2012	Kinvara	Group Interview	Resident
P11	21st May, 2012	Kinvara	Interview	Farmer/Resident
P12	16th May, 2012	Kinvara	Interview	Farmer/Resident
P13	22nd May, 2012	Kinvara	Interview	Local Government (Cllr)
P14	25th May, 2012	Kinvara	Interview	Government (CWO)
P15	21st May, 2012	Kinvara	Interview	SME
P16	23rd May, 2012	Kinvara	Interview	Resident
P17	26th May, 2012	Kinvara	Interview	SME (
P18	29th May, 2012	Kinvara	Interview	NGO (IFA)
P19	29th May, 2012	Kinvara	Interview	NGO
P20	31st May, 2012	Kinvara	Interview	Local Government (Retired Sergeant in Gort Station)
P21	1st June, 2012	Kinvara	Interview/ Sharing Documentation	Local Government/Resident (Cllr)
P22	19th May, 2012	Kinvara	Focus Group	Farmer/Resident
P23	19th May, 2012	Kinvara	Focus Group	Resident

P24	19th May, 2012	Kinvara	Focus Group/ Field Exploration	Farmer/Resident
P25	19th May, 2012	Kinvara	Focus Group	Farmer/Resident
P26	3rd May, 2012	Kinvara	Narrative	Resident
P27	24th April, 2012	Kinvara	Narrative	Farmer/Resident/S ME
P28	24th April, 2012	Kinvara	Narrative	Farmer/Resident/S ME
P29	24th April, 2012	Kinvara	Narrative	NGO/Community Group
P30	26th April, 2012	Kinvara	Narrative	SME
P31	28th April, 2012	Kinvara	Narrative	Farmer/Resident/S ME
P32	28th April, 2012	Kinvara	Narrative	Farmer/Resident
P33	22nd May, 2012	Kinvara	Narrative/Field Exploration/Photos	Farmer
P34	10th May, 2012	Kinvara	Interview	Farmer/Resident
P35	8th May, 2012	Kinvara	Narrative	SME
P36	8th May, 2012	Kinvara	Phone Narrative	Resident
P37	25th May, 2012	Kinvara	Narrative/ Field exploration	Independent Expert (Cave Diver)
P38	26th May, 2012	Kinvara	Narrative	Independent Expert)
P39	29th May, 2012	Kinvara	Interview	Independent Expert (Cave Diver)
P40	1st June, 2012	Kinvara	Narrative	Resident
P41	May, 2012	Kinvara	Narrative	NGO
P42	8th May, 2012	Kinvara	Narrative	NGO
P43	June, 2012	Kinvara	Interview	Local Government (NWPS Park Ranger)
P44	June, 2012	Kinvara	Narrative/Aerial Photos/ Maps	Independent Expert (Cave Diver)
P45	June, 2012	Kinvara	Narrative	SME
P46	8th June, 2012	Kinvara	Group Narrative	Farmer
P47	8th June, 2012	Kinvara	Group Narrative	Farmer/Resident
P48	4th September, 2012	Dodder (Swan)	Interview	SME
P49	4th September, 2012	Dodder (Swan)	Interview	SME
P50	5th Septembe, 2012r	Dodder (Swan)	Interview	Resident
P51	5th September, 2012	Dodder(Sw an)	Interview	SME

P52	5th September, 2012	Dodder (Poddle)	Interview	Community Group
P53	5th September, 2012	Dodder (Swan)	Interview	Resident
P54	6th September, 2012	Dodder	Interview	Resident
P55	3rd September, 2012	Dodder	Phone Interview	Local Government/ CWO Parnell Road
P56	11th September, 2012	Dodder	Interview	Local Government/CWO Ringend
P57	12th September, 2012	Dodder	Phone Interview	NGO
P58	13th September, 2012	Dodder	Interview	Resident
P59	13th September, 2012	Dodder	Interview	Resident
P60	13th September, 2012	Dodder	Group Narrative	SME
P61	13th September, 2012	Dodder	Group Narrative	SME
P62	14th September, 2012	Dodder	Narrative	SME
P63	17th September, 2012	Dodder	Interview	Independent Expert (Local Journalist)
P64	18th September, 2012	Dodder	Interview	Resident
P65	19th September, 2012	Dodder (Swan)	Group Interview	Resident/ Community Group
P66	19th September, 2012	Dodder (Swan)	Group Interview	Resident/ Community Group
P67	19th September, 2012	Dodder	Interview	Resident/ Community Group
P68	20th September, 2012	Dodder	Group Interview	Local Government (Dublin City Council)
P69	20th September, 2012	Dodder	Group Interview	Local Government (Dublin City Council)
P70	21st September, 2012	Dodder	Interview	Resident/ Community Group
P71	21st	Dodder	Interview	Resident

	September, 2012			
P72	27th September, 2012	Kinvara	Interview	Government Agency (NWPS)
P73	28th, September, 2012	n/a	Interview	NGO (Chairman of IFA)
P74	3rd, October, 2012	Dodder (Poddle)	Interview	Resident/ Community Group
P75	3rd, October, 2012	Dodder	Interview	Resident/ Community Group)
P76	5th June, 2012	Dodder	Phone Narrative	NGO(Irish Red Cross)
P77	4th September, 2012	Dodder	Narrative	Resident
P78	4th September, 2012	Dodder	Narrative	Resident
P79	4th September, 2012	Dodder	Narrative	Resident
P80	6th September. 2012	Dodder	Narrative	Local expert (postman)
P81	7th September, 2012	Dodder	Narrative	Resident
P82	7th September, 2012	Dodder	Narrative	Resident
P83	7th September, 2012	Dodder	Group Narrative	Resident
P84	7th September, 2012	Dodder	Group Narrative	Resident
P85	7th September, 2012	Dodder	Group Narrative	Resident
P86	7th September, 2012	Dodder	Group Narrative	Resident
P87	7th September, 2012	Dodder	Narrative	Resident
P88	10th, September, 2012	Dodder	Narrative	Resident
P89	10th, September, 2012	Dodder	Narrative	Resident
P90	10th, September, 2012	Dodder	Narrative	NGO (Ringsend Community Centre)
P91	13th	Dodder	Narrative	Local (Taxi driver)

	September, 2012			
P92	13th September, 2012	Dodder	Narrative	Local (Taxi driver)
P93	4th October, 2012	n/a	Narrative	NGO (Irish Red Cross)
P94	17th September, 2012	Dodder	Narrative	Resident
P95	17th September, 2012	Dodder	Narrative	Resident
P96	17th September, 2012	Dodder	Narrative	Local Government (South Dublin County Council)
P97	6th June, 2012	Kinvara	Narrative	Local Government (Galway County Council)
P98	24th October, 2012	n/a	Interview	Government (OPW)
P99	14th September, 2012	Dodder	Narrative	SME
P100	14th May, 2012	Kinvara	Narrative	SME

Appendix B

Semi-scripted Interview guide

Question 1 What are your greatest concerns in relation to flooding?

Question 2 Has the last flooding event changed your views in relation to your own, your family's and your community's safety from flooding?

- How so?

Question 3 I am interested in your own knowledge about the history of flooding and flood management in your locality. Can you please describe to me past events that you are aware of and how they have been managed in the past?

Follow up questions:

- Do you think that there are flooding issues which are specific to the locality?
- Do you think that there is agreement or disagreement with regard the main causes of flooding in this area and other surrounding areas?
- How aware in your view is the wider community of problems associated with flooding?

Question 4: Government organizations make use of the concept of flood risk management. What does the idea of flood risk management mean to you?

Follow up question:

- Is it easy for you to access information regarding flooding problems and activities in your locality?

Question 5 What actions were you aware of by leading flood management agencies during the last event and how effective do you believe they were?

Follow up question:

- Is there any specific policy or regulation that has had a specific effect on you or your livelihood in terms of flood management?
- You mentioned the County Council; what about the OPW?
- Were there other groups or organizations active in helping people during the floods?

- How helpful do you think community groups and other organizations are with regards helping affected populations from flooding?
- After the floods, were you aware of any significant actions taken by the leading flood management agencies? What about before the event, were there any measures that you are aware of that were taken before the flooding happened?
- Is there anything else you would like to share?

Question 6 Flood management strategies in Ireland are based on requirements from the European Union which strongly recommend a high level of public participation in the all matters related to the management of floods. What comes to mind when you hear of public participation?

Follow up question:

- What is your opinion of current local participation activities in flood management plans and choices?
- In what ways to do you think public participation and engagement with communities could benefit flood management plans?
- What do you think are the possible obstacles to achieve meaningful participation from local people?

Question 7 When it comes to handling floods do you feel you have many choices available to you?

Follow up questions:

- Is there anything that you would do differently if you could?
- Is there a group or situation that has been particularly helpful?
- Is there a group or situation that has been particularly unhelpful?
- Do you feel you have learned more about flooding due to recent events?

Question 8 How confident are you that existing flood management strategies have plans in place to ensure people are protected from future flooding problems?

Follow up questions:

- Do you think there are some people more vulnerable to flooding?
- If so, why are they more vulnerable? (Age, financial situation, location, gender?)

Question 9 Can you comment on the level of coordination between different groups and how varied interests and concerns are represented in terms of flood management practices?

Follow up question:

- Are you aware of any problems relating to injustice or inequality in the way flood management is carried out?

Question 11: Representatives of leading agencies in charge of running flood management strategies in Ireland such as the OPW and local authorities have stated on a few occasions that individuals also have duties and responsibilities in relation to flooding and that more proactive involvement at this level is needed. I would like your opinion on this position that people should take more responsibility in relation to flooding issues?

Follow up question:

- What do you think are the implications for people living in flood prone areas?
- In your view what happens if these positions becomes more prevalent?
- Do you think that this is a new position or was it always the case that the government expects people to take some of the responsibility for flood management?

Question 12: does anything else come to mind? Did you want to say something about this topic that was not covered by these questions?

Appendix C

Interviews audio transcript (excerpt sample)

(Alex) What are your greatest concerns in relation to flooding?

(P1) Well having been through it once, you just have that little fear that it might happen again, that's the biggest thing, because nothing has been done to prevent it in our situation. So it is just the constant fear that it might happen again. You know, if you get a lot of rain, so that's really...

(Alex) and it is in relation to your physical safety that you would be most concerned

(P1) Oh no. not physical safety, just the whole trauma of having to, you know, have whole property, you know. Have to redo the whole thing again, just redo the home
(Alex) your home

(P1) Ya, and you know having to move out and all that went with it. It was just, it was a terrible experience. It took a long time to get over it you know. But you still have that little niggle at the back your brain even though you would like to think, Ya I am over it and that kind of thing, but you just do have that constant fear that it will happen again and you know you just feel that there is nothing preventative being done and you just feel that it's forgotten really. Ya it was on the news for a few days and then. I was thinking about it on the way up, and you think ya it's on the news for a few days and then it might have been revisited, you know a second or third times and that was it. And then it is forgotten you know

(Alex) How long did it take you to do you think to recover.

(P1) oh I would say, mentally two years, I would say, definitely, I would say nearly to the day two years Ya.

(Alex) Has the last flooding event changed your views in relation to your own, and you're own, your family's and your communities safety to flooding.

(P1) Again safety wouldn't be an issue no, you know, nobody is going to die in our situation, it was just the property and you know, your home and your belongings and your way of life was affected, but no there isn't any safety issue really

(Alex) no issue in relation to safety, I am interested in your own knowledge about the history of flooding and flood management in your locality, if you could describe to me past events that you are aware of a how they have been managed in the past.

(P1) this would have been. The oldest person, really that we know that would know the area is almost ninety and there has never been flooding like this seen in that length of time anyway, so there is no past knowledge or nothing. It was just this once off, so there is nothing to go by, well it happened twenty years ago, or fifty or hundred or

whatever, nobody has seen this before. So there is nothing to...this was the first time. This is the history now.

(Alex) Ya, so it came as a kind of shock

(P1) Ya a complete and utter shock, even that morning you know, the field around us was filling up, you know, we still didn't think that it was going to flood, until about maybe two hours before it actually happened, or maybe three. We thought, oh right this is actually happening. You know, it is going to come in and the house is going to get, you know, it was just a major.... The...It just we were so slow to react because we just didn't think that it was going to come in you know. Of course, by the time it gets... its actually under the foundation and everything and its actually coming in before you realise at all, you know, you only have a couple of hours, really.

(Alex) Do you think that there are flooding issues which are specific to your own locality? Do you think there is something very specific about the way it happened here.

(P1) ahh, it was definitely the severe rain fall and the water table was very high. Because we had had three wet summers that year and then we had that torrential rain in October, or November, sorry two thousand and nine. so, ahhh, I suppose it could happen again if the water table was high again and the... we could that amount of rainfall or even a little bit less, you know...it could happen again, so.. You just can never say, Oh ya that was a once off thing, because the water has come up, you know...round the house...up in the field, twice maybe three times since. So then it's a bit of a panic. You think oh god if it doesn't stop raining. And then you think Ok we need so many hours rain and ya its stopping now and...When its wet weather and you look out it does bring it all back to you, you know this type of weather is fine is not an issue you don't think about it, but seeing the winter months or even in the summer if its heavier rain, you do think, OK has it been wet recently and yeah... its something that you have to live with.

(Alex) do you think that there is agreement or disagreement with regard the main causes of flooding in the area and surrounding areas?

(P1) No, no, because ah we were the only house affected there, because.... Its...Ours is the lowest lying and... Yeah everybody agrees. There is a swallow hole at the back of the house and we all think that maybe somewhere along the way it's backed up, you know, you know its all underground system, that's a possibility. I mean we don't know and...The other thing is, is just that there was such a volume of water, because when it did eventually start to go down, you know it did work. So people think ya it must be broken down, you know, there must be a block somewhere along the way, but then you think. Well where did it all go when the rain stopped and it got a couple of days to flow? I suppose after one week and a half, within a week a half it was gone, but it did stay there for like five or six days you know in the house, you know there was five days where we couldn't even get in, you know, the water was so high, so... ah... I suppose...Its... it would be... yeah its... its... there is a blockage somewhere along the way that and the combination of the high volume of rains, so... it could be both or it could be just one of them must be the cause, so we don't know we really don't know

what caused it. It's not like there was a river nearby that overflowed, uh... so. It is just a weird thing. It's a weird case really....

(Alex) ah. Government organisations they use something called flood risk management.

(P1) all right

(Alex) Does the idea of flood risk management mean anything to you, are you aware of the...?

(P1) ahh, you hear it on the radio and it just... its odd you know... what they really need to do is just get down to the locals that know the area and talk to the people who have been flooded and whatever... But, you know, after it happened you think oh god everybody is going to come and help you but the initial reaction is very very slow and then you might have one or two meetings with you know the council or the OPW or whatever and then that's it we haven't heard anything since and then we had social services. Not social services... Ya social services isn't it? Ya social service they came and did an interview or whatever and...Then did... sent a report to the OPW and then they sent something to the council. So its all going around letters to letters but nobody is coming and telling us really you know, this is what we are going to do and the last letter we got was last November, which is exactly two years after the flood. Two years you know, and...That letter stated that funds had been given for prevention in our area... to... I think it was to the OPW or the council then, they had taken over. I am not quite clear exactly who now has the funds but that's all we know, but we haven't had anything from OPW or Social services to tell us this is the plan, this is the amount of money located, allocated...you know, what's your input or whatever. So we are at the stage now where my husband and his brother think they are going to have to try and do something. But I mean we are not qualified to do that and you might be doing the wrong thing, so ahh you just feel, God we can't live like this, you know ahh... have it happen again. You know and despite that it's on my husband's family land and like I mean his father isn't there and he doesn't want his land flooded either you know. But it would be nice to get a bit of help you know. Saying right this is the plan and what you think and you know... its all dead in the water, pardon the pun, you know, nothing ever came of these couple of meetings. [EXCERPT ENDS]

Appendix D

Research Information Sheet



Research from NUI Galway currently being carried out in the area of Gort Lowlands

Research is ongoing in the Geography Department in NUI Galway which focuses on the role of public participation in flood management in Ireland. Two case studies are being carried out; one in the area of Gort in County Galway and the second one in the Dodder Catchment area in Dublin. The research aims to:

- 1) Examine current participation practices in the area of flood management, in particular to look at the relationships between the public and state agencies involved in flood management such as local authorities, the OPW and political representatives. The research will also look at the importance of local knowledge in present flooding practices and perceptions of current strategies from a local point of view.
- 2) Improve participation practices by learning about existing problems and looking at opportunities and areas of strength between communities and their dealings with other stakeholders involved in managing flooding issues.

Based on the information gathered the research will seek to make a number of suggestions at policy level with the hope of strengthening the role of communities in flood management in Ireland.

The research began in September 2009 and is due to be finalised in September 2013. The project is funded by the Irish Research Council for the Humanities and Social Sciences and is being carried by Ms. Alexandra Revez as part of her PhD studies.

Alexandra is currently looking for volunteers for individual interviews and group interview sessions which will provide vital information to the research. Most sessions will be carried out in the Gort Community Centre. However other locations can be arranged to accommodate people. If you are interested in participating please contact Alexandra at: tel: 0877799434 or email: a.limarevez1@nuigalway.ie

About the researcher: Alexandra is a PhD Student from the Department of Geography in NUI Galway. She is originally from Portugal but has been living in Ireland for the last 10 years. For more details please see:

http://www.nuigalway.ie/geography/postgrads/lima_revez.html

Appendix E

Consent Form

Please consider this information carefully before deciding whether to participate in this research.

Purpose of the research: To understand the experiences of local people in relation to flooding issues and specifically the role of public participation in handling flooding problems.

What you will do in this research: If you decide to volunteer, you will be asked to participate in an interview. You will be asked several questions. Some of them will be about your individual experiences of flooding. Others will be about your perceptions of current flood management strategies. With your permission, I will tape record the interview. You will not be asked to state your name on the recording.

Time required: The interview will take approximately 40 to 60 minutes.

Risks: No risks are anticipated. However you are free not to answer any questions you that make you uncomfortable.

Benefits: This can be an opportunity to share your story about your experiences concerning the flooding issues in your locality. I hope to generate strong evidence based on local knowledge and experiences to highlight the ongoing problems associated with flooding and make suggestions at policy level.

Confidentiality: Your responses to interview questions will be kept confidential. At no time will your actual identity be revealed. The recording will be destroyed as soon as it has been transcribed. The transcript, without your name, will be kept until the research is complete.

The data you give me will be used for an extensive PhD thesis that I am currently undertaking and may be used as the basis for articles, policy reports and presentations in the future. I won't use your name or information that would identify you in any publications or presentations.

Participation and withdrawal: Your participation is completely voluntary, and you may withdraw from the study at any time without penalty. You may withdraw by informing me that you no longer wish to participate (no questions will be asked). You may also skip any question during the interview, but continue to participate in the rest of the study.

To Contact the Researcher: If you have questions or concerns about this research, please contact: Alexandra Revez, PhD Student, Tel: 0877799434, Email: a.limarevez1@nuigalway.ie

You may also contact the faculty members supervising this work:
Dr Marie Mahon, Vice Dean of Research in NUIG, Tel: 091 492376, Email: marie.mahon@nuigalway.ie

Or, Dr. Frances Fahy, Lecturer in Geography in NUIG, Tel:091 492315, Email:
frances.fahy@nuigalway.ie

Agreement:

The nature and purpose of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty.

Signature: _____

Date: _____

Name (print): _____