Exploring Disaster Recovery: Stakeholder Interfaces, Goals and Interdependencies

Raju, Emmanuel

2013

Link to publication

Total number of authors:
1

Exploring Disaster Recovery Coordination:

Stakeholder Interfaces, Goals and Interdependencies

Emmanuel Raju

Organization	Document name
LUND UNIVERSITY	DOCTORAL DISSERTATION
	Date of issue
	2013-11-21
Author(s)	Sponsoring organization
Emmanuel Raju	

Title and subtitle
Exploring Disaster Recovery Coordination: Stakeholder Interfaces, Goals and Interdependencies

Abstract

Disaster risk management has seen the importance of coordination at various levels of planning and implementation, ranging from preparedness to disaster response, and in planning for long term recovery and sustainable development. This thesis aims to develop a deeper and analytical understanding of stakeholder coordination for disaster recovery. The thesis is built on case studies from the mega –disaster of the Indian Ocean tsunami that affected India in 2004 and one case-study from repeated flooding in the Western Cape in South Africa. The key question addressed in this thesis is related to the factors affecting coordination for sustainable disaster recovery. The thesis presents the factors affecting coordination drawn from empirical data and its analysis. Finally, this thesis is an attempt to set the stage for more research to address recovery coordination as a governance issue.

Key words
Coordination, disasters, disaster recovery, interfaces, interdependencies, goals, stakeholders, values.

Classification system and/or index terms (if any)

Supplementary bibliographical information	Language
	English
Report 1053	
ISRN LUTVDG/TVBB—1053-- SE	

ISSN and key title	ISBN
1402-3504	978-91-7473-781-3 (Print)
	978-91-7473-782-0 (PDF)

Recipient's notes	Number of pages 148	Price
	Security classification	

Signature _____ Date _11th November 2013_

Exploring Disaster Recovery Coordination:

Stakeholder Interfaces, Goals and Interdependencies

Emmanuel Raju

LUND UNIVERSITY

Supervisor

Professor Kurt Petersen, Department of Fire Safety Engineering and Systems Safety, Faculty of Engineering, Lund University

Co-Supervisors

Associate Professor Henrik Tehler, Department of Fire Safety Engineering and Systems Safety, Faculty of Engineering, Lund University

Associate Professor Per Becker, Department of Fire Safety Engineering and Systems Safety, Faculty of Engineering, Lund University

Assessment Committee

Professor David Alexander, University College London (Opponent)

Associate Professor Björn Ivar Kruke,University of Stavanger, Norway

Associate Professor Fredrik Bynander, Uppsala University, Uppsala

Associate Professor Christine Wamsler, Lund University, Lund

Table of Contents

Summary

The number of disasters across the world have been increasing. With the increasing number of stakeholders taking part in all activities of disaster risk management, one of the key challenges is 'coordination'. There has been an immense focus on this issue in disaster response management. This thesis highlights a knowledge gap in disaster recovery, particularly referring to coordination.

This thesis explores factors affecting coordination, specifically in disaster recovery. It is based on cases from Tamil Nadu, India in the aftermath of the tsunami of 2004; and from repeated flooding from 2006 to 2008 in the Western Cape region in South Africa. The main findings of the thesis, the factors affecting recovery coordination are as follows: (1) Variety of stakeholders, and differing levels of participation; (2) The meaning of Coordination; (3) Values; (4) Goals and Mandates; (5) Role of the Government; and (6) Interdependencies between Stakeholders. Although there may be numerous factors affecting coordination, the identified factors are a result of a combination of themes emerging from the data itself and from the analysis of the author.

Coordination in disaster recovery presents a different set of characteristics in comparison to disaster response. Further, along with complexity of disaster recovery, the sheer numbers of stakeholders complicates the coordination problem. With different stakeholders having different meanings and opinions of coordination, it affects the nature of collaboration in recovery. Differing goals and mandates of stakeholders in disaster recovery, along with having different values presents an impact on the overall results of recovery coordination. This is reflected in minimal collaboration and lack of joint programming in disaster recovery. Further, the process is affected by an excessive number of parallel coordination structures that emerge in the aftermath of disasters. This is also exemplified by a general lack of institutionalizing plans for disaster recovery coordination. The findings also indicate that there are different types of dependencies between stakeholders involved in disaster recovery. The thesis elaborates that coordination in disaster recovery settings is primarily associated with information sharing. Therefore, the discussion lays emphasis on the need for coordination beyond information sharing and the need for more collaborative efforts.

Sammanfattning

Antalet katastrofer runt om i världen har ökat. Med det ökande antalet aktörer som deltar i katastrofriskhanteringen har en av nyckelutmaningarna blivit koordinering. Denna fråga har varit i fokus avseende hantering av katastrofer i den akuta fasen. Denna avhandling lyfter fram ett kunskapsgap avseende återuppbyggnaden efter katastrofer, i synnerhet utmaningen med koordinering.

Denna avhandling utforskar faktorer som påverkar koordinering, framförallt under återuppbyggnad efter katastrofer. Avhandlingen baserar sig på studier från Indien i efterdyningarna av tsunamin 2004 och från upprepade översvämningar mellan 2006 och 2008 i Västra Kapprovinsen i Sydafrika. Resultaten lyfter fram ett antal faktorer som påverkar koordinering. Dessa är: (1) Mångfalden av aktörer och olika nivåer av deltagande, (2) Betydelsen av begreppet koordinering, (3) Värden och värderingar, (4) Mål och mandat, (5) Statens roll, och (6) Ömsesidiga beroenden mellan aktörer. Även om det kan finnas andra faktorer som påverkar koordinering är det de ovan identifierade som framkommit direkt från data från studierna och författarens analys.

Koordinering under återuppbyggnaden efter katastrofer har andra karakteristika än koordinering under akut hantering. Vidare bidrar, jämte den inneboende komplexiteten i återuppbyggnad efter katastrofer, även det stora antalet aktörer som är involverade till problem med koordinering. Att olika aktörer lägger olika innebörd i begreppet och har olika åsikter om koordinering påverkar också. Olika aktörers skilda mål och mandat under återuppbyggnaden efter katastrofer tillsammans med att de har olika värderingar påverkar resultatet av koordinering, vilket speglas i låg grad av samarbete och gemensam planering under återuppbyggnadsskedet. Vidare påverkas koordineringen av förekomsten av parallella koordineringsstrukturer som uppkommer efter en katastrof. Detta visar sig också i en generell brist på institutionaliserade planer för koordinering under återuppbyggnaden efter katastrofer. Avhandlingens resultat visar också på förekomsten av flera olika typer av beroenden mellan aktörer som är involverade i hanteringen.

I avhandlingen lyfts fram att koordinering i samband med återuppbyggande efter katastrofer främst har att göra med informationsutbyte. Därför betonas i diskussionen behovet av koordinering bortom informationsutbyte i form av mer utvecklat faktiskt samarbete.

Acknowledgements

It would have been impossible for me to come this far without the support of many people. Many thanks to all my supervisors Kurt Petersen, Henrik Tehler and Per Becker who have been a great support from the beginning. Kurt, thank you for always being so positive and encouraging. Henrik, I owe a lot to you for guiding me through many reflections and for your patience especially during the last days of the thesis. Per, thank you for being a friend and supervisor; always open to discussions and for constant support through the PhD work. Very special thanks to Christian Uhr for leading the discussions during my final seminar and for all the constructive feedback.

Many thanks to all my friends and colleagues at Brandteknik for the wonderful working environment. The Risk Group has always been very supportive. Thank you for all the journal clubs and peer review sessions, after work discussions, and for reading the many drafts of this thesis.

The many visits to Tamil Nadu in India have always been inspiring with new thoughts and ideas. A special thanks to Annie George and Parivelan. Annie and your team, for always guiding me and for all the support, and interesting coffee conversations during my fieldwork. Pari, thanks for always being willing to help and for your constant support throughout. In South africa, it has been a pleasure working with Dewald and the team at the African Centre for Disaster Studies.

Friends have always been a great source of motivation. Many thanks to all of you in India in Hyderabad, Bangalore, Chennai and Mumbai. I would not have come this far if not for all the encouragment. Radhe, you are dearly missed! These four years have been amazing. Life in Sweden would surely not be the same without Naresh and Neenu. For all the conversations, the madness and for always being there, thanks a ton to the entire TC family.

This journey would not have been so exciting without the encouragement and love of my family. Amma and Appa, I fall short of words to express my gratitude. I am deeply grateful for all the smiles and for walking this path with me. Teena and Angelo, thanks a million for everything.

Thank you all.

Lund, November 10, 2013
Emmanuel

1 Introduction

In the wake of recovery…

Globally the number of natural disasters affecting us has increased in the last decades (Guha-sapir et al. 2012) and "the shape and dynamics of crises and disasters is changing" (Boin 2009: 367). Many at-risk areas have to cope with new disasters before they have recovered from previous ones (IFRC 2000). Disasters have become more severe and the challenge of integrating disaster risk reduction, climate change and international development has grown (Schipper and Pelling 2006). Consequently, international stakeholders have placed an immense focus on natural disasters and particularly on disaster response.

This thesis explores the factors that affect disaster recovery coordination specifically. It was inspired by personal visits and my experience of tsunami-affected regions in India in 2008. In the past ten years, Asia has been worst affected by disasters (Guha-sapir et al. 2012). One such disaster was the Indian Ocean tsunami of 2004. I visited Tamil Nadu in 2008. This was the worst-affected mainland state in India, and I met many stakeholders working in recovery operations. Personal conversations with stakeholders involved in the coordination of these activities drew my attention to the complexity of disaster recovery. As I travelled along the affected coastline, I listened to the different experiences of stakeholders involved in both relief and recovery. During this visit, the city of Chennai caught my attention; this is an urban context where disaster recovery issues seemed to be particularly complex, involving issues of land rights and housing.

Although the recovery effort that followed the 2004 tsunami is one of the best-funded in history (TEC 2006; Telford and Cosgrave 2007), my visit in 2008 (four years after the disaster) showed that there were communities in Chennai that were still waiting for a decision on issues of housing reconstruction. During this time, despite the involvement of many stakeholders and high levels of funding, communities had continued to live in temporary shelters or damaged houses. This observation has also been highlighted by Mulligan and Nadarajah (2012).

With so many stakeholders on board, disaster response and recovery requires many jurisdictions and organizations in planning and coordinating (Berman and Korosec 2005). There is a clear agreement between scholars and practitioners on the importance of coordination in disaster situations. However, the "lack of coordination between

agencies is one perennial finding of post-disaster inquiries" (Handmer and Dovers 2007: 152). Factors such as insufficient importance being given to local governance and a lack of participatory approaches have been identified as challenges for disaster recovery (IRP 2007). Coordination in such contexts is complex (Kruke and Olsen 2005; Comfort et al. 2001) and has not received much attention from disaster recovery scholars. "The complexity and diversity of these factors …as well as the interaction with many different types of actors being involved only begins to explain why there has been such neglect of disaster recovery in writing, policy and practice — typically, until after a disaster happens" (IRP 2007:22). With so many stakeholders, many important questions about coordination (e.g. who leads the process and to what extent) have only been raised after the disaster has happened (Bennett et al. 2006). Furthermore, reports have highlighted that it is not sufficient to organize coordination meetings, but the "ground rule of functioning" must also be formulated (ibid: 36). Although coordination has been identified as a critical element for success in all functions of disaster risk management, Moore et al. (2003) highlighted that there have been few attempts to evaluate inter-organizational coordination. Comfort et al. (2004: 63) raised a pertinent question: "Why is coordination so admired in theory, but so difficult to achieve in practice?"

Time and time again scholars have highlighted the challenges and problems of disaster coordination, but most studies have focused on coordination of the disaster response (e.g. Quarentelli 1997; Granot 1997; Drabek and McEntire 2002). The 2004 Indian Ocean tsunami (which I will look at in detail in this thesis) was one such example, and attracted massive attention (Telford and Cosgrave 2007). The sudden and overwhelming needs following a disaster lead to both international attention and vast challenges for coordination (Katoch 2006). In such situations, many public and private; national (also local and regional) and international stakeholders are involved in various disaster relief operations (Granot 1997; Scheinder 1992; Kory 1998; Katoch 2006), and there is even competition to be the organisation that responds first to the disaster (Stephenson 2005: 337). As multiple actors are involved in disaster situations, "institutional convergence and co-ordination at all levels is one of the biggest challenges" (Menon 2007: 48) and "global response aspirations mitigate against" linking relief and rehabilitation to long-term development (Telford 2006: 4). Although the Holy Grail of disaster relief is to coordinate and cooperate in an effective response (Quarantelli 1997; Granot 1997; Drabek and McEntire 2002), it is difficult to achieve in practice (Comfort 2004). Post-tsunami recovery was further affected by a lack of understanding of local issues and "insufficient coordination of resources" (Koria 2009: 129). The literature also raises another crucial issue; large-scale recovery projects are rarely systematically evaluated to check whether their goals have been achieved (Labadie 2008).

Although the literature encourages participatory reconstruction and recovery (e.g. Oliver-Smith 1991; IRP 2007; Duyne Barenstein and Iyengar 2010), my initial

literature review highlighted that research into recovery coordination is sparse. In the Indian context, the Gujarat earthquake in 2001 was one of the first disasters to establish coordination structures in collaboration with the government and civil society organizations. Coordination of the recovery process was largely understood as "information management and processing" (UNDP 2001: 5). During my preliminary visits for this thesis, stakeholders in Tamil Nadu said that coordination was a key factor in response and recovery, largely drawing upon the experiences and expertise of Gujarat. Conversations with stakeholders highlighted that coordination was one of the central themes for disaster recovery. Coordination structures were set up at all administrative levels by different stakeholders to facilitate effective relief and recovery.

Given that disaster recovery in general is an under-researched area (Smith and Wenger 2006), coordination is a theme that is rarely discussed. A study of the Mozambique floods in 2000 highlighted that "coordination worked better during the emergency period than during the recovery period" (Moore et al. 2003: 316), and stated the need for further research into disaster recovery coordination. There is greater need for research on "participatory planning specifically for post-disaster recovery" (Chandrashekar 2010: 15). In the light of the issues presented above, this thesis focuses on coordination in disaster recovery.

Therefore this thesis is driven by the need to understand and critically examine the facets of disaster recovery coordination.

2 Scope

Two roads diverged in a wood, and I— I took the one less travelled by, And that has made all the difference – Robert Frost

Aim and Research Question

Disaster recovery is a crucial aspect of disaster risk management. Although the boundaries cannot be clearly defined, the transition from disaster response to recovery raises questions about the nature and scope of coordination during recovery. This thesis is based on a case study from Tamil Nadu in India in the aftermath of the 2004 tsunami and a case study from the Western Cape region of South Africa, which was repeatedly affected by floods.

The Indian Ocean tsunami that devastated Asia in 2004 attracted massive international attention from the media and donors. In the wake of this disaster, and with the experience of the Gujarat earthquake of 2001, civil society organizations working in collaboration with the Government of Tamil Nadu and United Nations (UN) agencies set up an initial coordination body in the worst-affected district of Nagapattinam. Following the immediate impact of the disaster, coordination structures were established at the district and state level to facilitate relief and recovery activities. In South Africa, repeated flooding in the Western Cape region has led many governmental departments and non-governmental agencies to become involved in recovery efforts. Studies have highlighted that coordination has been a crucial issue in this region (Gows et al. 2005; Holloway et al. 2010).

Although there was immense media attention in the aftermath of the 2004 tsunami, in my earlier observations and notes from my visit in 2008 to Tamil Nadu, I had observed a quantitative decline in the number of organizations involved in these coordination platforms in comparison to disaster response. Similarly, in South Africa the government machinery has dealt with repeated flooding through ad-hoc planning bodies, and it is not clear how district municipalities can become involved and coordinate recovery efforts.

Following my visit to Tamil Nadu, and given the initial media reports of massive coordination efforts, I wondered what the level of coordination would be during recovery. What had happened to the coordination platforms that were established? How did coordination in 2008 compare to when the disaster struck in 2004? With these questions in mind, my research is aimed at building a better understanding of the factors affecting disaster recovery coordination. It aims to develop deeper knowledge in the field of multi-organizational coordination for disaster recovery. In order to understand the larger implications of coordination for the recovery process, this thesis aims to understand the various factors that influence or affect recovery coordination. To achieve this, my thesis aims to answer the following research question:

> *What factors affect coordination in the disaster recovery process?*

As the thesis is based on scientific articles, the specific research question of each of the papers is used to answer the above research question.

Appended Papers

In order to answer this research question, my thesis is based on a synthesis of five peer-reviewed journal articles. Three of the articles have been published and two have been submitted for publication.

Paper I

Raju, E. 2013. "Coordination from Disaster Response to Recovery in post-tsunami (2004) in India" *Submitted to an international peer-reviewed journal.*

Paper I is an exploration of operational differences in coordination during disaster response and recovery.

Paper II

Raju, E. 2013. "Housing Reconstruction in Disaster Recovery: A Study of Fishing Communities Post-tsunami in Chennai, India" *PLoS Currents: Disasters*, (5)

Paper II investigates housing reconstruction and relocation in disaster recovery and the interfaces emerging between the government and communities.

Paper III

Raju, E. and Becker, P. 2013. "Multi-Organisational Coordination for Disaster Recovery: The Story of Post-tsunami Tamil Nadu, India", *International Journal of Disaster Risk Reduction*, 4: 82–91

Paper III explores the factors affecting coordination in the specific case of the tsunami.

Author Contributions: As the main author, I was responsible for designing and conducting the study. Also, I played a major role in data analysis and writing the paper.

Paper IV

Raju, E. and Van Niekerk, D. 2013. "Intra-governmental Coordination for Sustainable Disaster Recovery: A Case-study of the Eden District Municipality, South Africa" *International Journal of Disaster Risk Reduction*, 4: 92–99

Paper IV investigates intra-governmental coordination following the flooding n the Eden District Municipality in South Africa.

Author Contributions: As the main author, I was responsible for designing and conducting the study. Also, I played a major role in data analysis and writing the paper.

Paper V

Raju, E., Becker, P., and Tehler, H. 2013. "Exploring Interdependencies and Common Goals in Disaster Recovery Coordination" *Submitted to an international peer-reviewed journal.*

Paper V explores interdependencies in disaster recovery with a specific focus on post-tsunami coordination in India.

Author Contributions: As the main author, I was responsible for designing and conducting the study. Also, I played a major role in data analysis and writing the paper.

Limitations

This thesis is an exploratory study of disaster recovery coordination. It is a small step forward in identifying the factors affecting coordination. Due to time constraints, I am aware that it contains a limited number of case studies. This gives rise to the need to discuss issues of generalizability, which are partly addressed in Chapter 4 and later in Chapter 6. There is a greater need to address why the factors identified in the study arise. Furthermore, there is an important nexus between disaster response, disaster recovery and disaster risk reduction (DRR). This thesis focuses on recovery. Although there may be aspects of recovery coordination that have broader implications for DRR and long-term development, this would constitute a study in itself.

Research Process

As mentioned in the Introduction (Chapter 1), this thesis began with observations and personal experiences from the tsunami that affected areas of India in 2008. These initial observations lead to a study on relocation and housing reconstruction in Chennai, India (Paper II). In Tamil Nadu (India), coordination seemed to work well during the response, although conversations with experts working in post-tsunami relief and recovery highlighted that coordination was a challenge for long-term recovery.

Disaster recovery coordination emerged as a key theme, and it was reviewed in detail in the disaster studies literature. As highlighted earlier, although coordination appeared to be a consistent theme in the disaster response literature, international humanitarian organizations have highlighted that it is problematic in recovery. This paved way for the question of why coordination is different during response and recovery? The results are presented in Paper I; respondents highlighted issues to do with coordination structures and the stakeholders involved. This observation led me to examine the factors affecting coordination in disaster recovery, which are presented in Papers III and IV. Paper IV is the result of an exchange program to the African Centre for Disaster Studies in South Africa. Discussions about repeated flooding in the Western Cape Province of South Africa inspired a study of the factors affecting coordination within and between government departments. This case could serve as a case to see if the findings from the tsunami may have present more general conclusions.

The papers presented in this thesis are the result of an iterative process. Papers I, II and III emerged from field observations and personal experience, together with questions about the impact of one of the best-funded disaster recovery programs (as mentioned in Chapter 1). Paper IV contributed to bringing in a different dimension from South Africa about intragovernmental coordination. The questions addressed in Paper V are driven by both data from Paper III and theoretical questions emerging from the concept of coordination (these will be discussed in Chapter 3). Finally, I acknowledge that my findings are based on a limited number of case studies and the issue of generalizability is addressed in the methodology chapter.

Thesis Outline

This thesis consists of seven chapters and a bibliography and is based on the five appended papers. The following is a brief synopsis of the remaining chapters.

Chapter 3 – Theoretical Framework: This chapter defines the main concepts, and presents the theoretical foundations that the research for this thesis is based upon.

Chapter 4 – Research Methodology: This chapter outlines the scientific methods used to answer the research question.

Chapter 5 – Research Contributions: The first part of this chapter is a summary of the appended papers. The later part elaborates upon, and answers the research question.

Chapter 6 – Discussion: This chapter discusses the research findings in the light of the theoretical background. Furthermore, it presents ideas for future research.

Chapter 7 – Conclusions: Here, the main conclusions of the thesis are presented in short bullet points.

3 Theoretical Framework

Our best thoughts come from others. - Emerson

This thesis explores the dimensions of disaster recovery coordination. This chapter considers the theoretical underpinnings of the research question and defines the concepts of coordination, disaster recovery, social interfaces and interdependencies which are crucial to the thesis. Furthermore, it highlights related research in the field of coordination and disaster recovery and explains the concept of social interfaces, which is used as a tool to understand stakeholder relations in disaster recovery.

Disasters bring together multiple actors who often differ in terms of their sector, expertise and nationality (Kettl 2008), as well as their abilities, values, norms and goals (Alberts et al. 2010). Moreover, the sheer number of actors affects coordination (Kruke and Olsen 2005; Comfort et al. 2001; Balcik et al. 2010). They come from both the public and private sector (Tierney and Oliver-Smith 2012; Christoplos et al. 2010; Berke et al. 1993), and there is even competition to be the first organisation to respond to the disaster (Comfort et al. 2001).

One of the key post-tsunami issues was that "the number and diversity of actors made coordination simultaneously more expensive and less effective" (Telford and Cosgrave, 2007: 11).These actors may be forced into new and unplanned roles and responsibilities by the unfamiliar, complex and dynamic character of the situation (Neal and Philips 1995; Scanlon 1999; Drabek and McEntire 2003). In other words, disasters give rise to new ways of functioning depending on the local context and the needs of the situation (Christoplos et al. 2010). In addition, these different actors have different organizational mandates and goals, and are thus engaged in various activities. For instance, Quarentelli (1997) points out that the government and private actors may have "different interests, tasks and goals". Although the response to the 2004 tsunami has been the focus of numerous evaluations, which – at least in theory – may represent a shift towards greater accountability (Bennett et al. 2006), evaluations of the response to and recovery from subsequent disasters indicate that there has not been sufficient progress since then (e.g. Comfort 2007; Nolte et al. 2012; Groupe URD 2011; Grunewald et al. 2010).

Disaster Recovery

Recovery is described as a complex process (Rubin et al. 1985; Lloyd-Jones 2006; Berke et al. 1993; Tierney and Oliver-Smith 2012). The various "built, natural, and social environments, as well as institutions and economies" are "interrelated in complex ways" (Tierney and Oliver-Smith 2012: 123–124). It is synthesized by three consistent themes in the literature, namely its "non-linearity, holistic and dynamic nature" (Johnson and Hayashi 2012: 228). Therefore, we know that it is not linear, but must encompass the myriad complexities of various temporal and spatial scales (Tierney and Oliver-Smith 2012; Johnson and Hayashi 2012). Also, "recovery is not a final, identifiable state, but evolves from decisions made over time and is achieved most readily when local organisations are free to respond to their specific circumstances" (Olshansky 2006: 148). It is a field where there is little consensus between authors. Bates and Peacock (1989) argue that one of the reasons for this is the interdisciplinary nature of disaster research. Many scholars highlight that although physical reconstruction after a disaster is an important component of the process, it is not the only one (Smith and Wenger 2007) and Nigg (1995) frames disaster recovery as a social process.

This thesis defines recovery as *"a differential process of restoring, rebuilding and reshaping the physical, social, economic and natural environment through pre-event planning and post event actions"* (Smith and Wenger 2006: 237). This definition emphasises that recovery is a process shaped by several conditions occurring both before and after the disaster.

Disaster recovery is one of the least-well understood aspects of disaster risk management (Smith and Wenger 2007; Berke et al. 1993). This may be attributed to the huge focus on post-disaster relief, which leaves little room for attention to long-term recovery, or at best, a fragmented approach (Lloyd-Jones 2006). However, at present "notions of recovery have evolved in ways that recognise the non-linear and often iterative character of recovery" (Tierney and Oliver-Smith, 2012: 126). As there are no distinct boundaries between response and recovery, the Gujarat earthquake of 2001 showed that it is important to "improve coordination between a wide range of local, regional, national and international partners" (UNDP 2001: 5) during the transition. Lloyd-Jones (2006) highlights that despite huge improvements in the emergency response to natural disasters, permanent reconstruction is often inefficiently managed, uncoordinated and slow to get off the ground. Coordinating disaster recovery is one such process that requires communication and participation from many governmental departments. Coordination between entities corresponds to activities that cannot be undertaken in isolation and "the multiple actors involved have at least partially differing values; usually no single individual or organisation can control the process" (Robinson et al. 2000). Authors have highlighted that the failure to involve a wide range of

stakeholders and poor decision-making during disaster recovery leads to disasters that are even more destructive in the future (Smith and Wenger 2007).

Berke and Campanella (2006: 194) outline the importance of disaster recovery planning in terms of providing a vision for the future; it frames future goals, builds long-term resilience and can "represent a big picture of the community that is related to broader regional, state, and national disaster response and reconstruction policies". Moreover, consistent with Smith and Birkland (2012: 150) effective recovery goes along with planning and coordination, and "cooperative partnerships among the actors involved in the disaster recovery network". Decisions taken during disaster recovery have long-term implications (Olshansky 2006). Furthermore, planners have an "obligation" to play a crucial role in recovery, as affected communities "will reconstruct their lives whether or not planners participate" (ibid: 147). Recovery is more than just reconstruction and "it is not neatly separable from either the response or the mitigation processes of disasters" (Dynes and Quarentelli, 1989: 2). Recovery is bound to conflict and bureaucracy, and studies have highlighted the need for research into the effects of institutional arrangements that may prove to be incentives or barriers to recovery (Berke, Wenger and Kartez, 1993).

Rubin (2009) noted the disappointing fact that recovery had lacked attention from researchers for over twenty years; and as stated earlier a similar observation was made by Smith and Wenger (2007). Rubin (1985; 2009) identified leadership, the ability to act and knowledge as the three key elements of the recovery process. Moreover, Rubin (ibid.) highlighted intergovernmental relationships as crucial for effective recovery. In a compilation of case histories of recovery from disasters across the world, Johnson and Olshansky (2013) highlighted the key lessons learned by recovery organizations. The first of these is to ensure sufficient funding and its management. The second is to increase the flow of information between the various actors to ensure effective decision-making. The third is to enable collaboration and coordination between different levels of government, and finally to handle time constraints by prioritizing both immediate and long-term recovery needs. It is also a time to include planning for the future (e.g. Alexander 2002).

A key disaster recovery principle involves taking a comprehensive integrated approach, and giving importance to stakeholder participation in the process (Smith 2004; Duxbury and Dickinson 2007). After Hurricane Mitch struck Nicaragua in 1998, one of the key issues was a failure of the international community to understand local institutional frameworks. One among the many factors that contribute to successful disaster recovery depends on "how effectively many different sets of organizational relationships are able to be coordinated and managed" (IRP 2007: 34). Furthermore, research has highlighted that "multi-agency collaboration is crucial to effective decision making in all aspects of disaster risk management" (Gopalakrishnan and Okada 2007: 366). It is already known that confusion during reconstruction may be due to the failure

of government agencies to coordinate their efforts (Schwab et al. 1998). Similarly, Duyne Barnstein (2010: 150) argues that "local stakeholders, including state governments, civil society organisations and local communities, have more influence on reconstruction approaches and outcomes than international actors do".

Coordination

Like many other terms, coordination has been defined in many ways in different domains. It must also be noted that terms such as coordination, collaboration and cooperation are used interchangeably by researchers (Drabek and McEntire 2002; Kilby 2008; Nolte et al. 2012). Coordination requires "a clearly articulated goal, a shared knowledge base, and a set of systematic information search, exchange and feedback processes" (Comfort et al. 2004). According to Klein (2001: 70), "coordination is the attempt by multiple entities to act in concert in order to achieve a common goal by carrying out a script they all understand". It should however be noted that coordination at policy level is very different to coordination at field level (Bennett et al. 2006). It may also be "mutually agreed upon cooperation about how to carry out particular tasks" (Quarentelli 1997: 48) and has also been seen as "...the degree to which there are adequate linkages among organizational parts, i.e., among specific task performances as well as sub-units of the organization, so that organizational objectives can be accomplished" (Hage et al. 1971: 2). Drabek and McEntire (2002: 199) define coordination as "a collaborative process through which multiple organisations interact to achieve common objectives". Looking at these definitions, the aspects that stand out are common tasks and goals. Therefore, in this thesis, coordination is defined as *"the act of managing interdependencies between activities performed to achieve a goal"* (Malone and Crowton 1990: 361).

With regard to coordination, Wildavsky (1973: 142) writes that "many of the world's ills are attributed to lack of coordination in government. Yet, so far as we know there has never been a serious effort to analyse the term". Coordination in the public sector is considered to be a longstanding problem (Bouckaert et al. 2010) as different governmental organizations and agencies have specific functions (Boin et al. 2007). At the same time, disaster risk reduction and response and recovery-related activities are considered to be an additional function (Templehoff et al. 2009). Research into governmental coordination shows that "complex issues which do not fit neatly within a department portfolio, or span the interests of several departments, tend to be neglected" (Flinders 2002: 57). A key issue that lies at the heart of this thesis is the point that there has been "little distinction between coordination at the operational level (who does what and where) and strategic coordination at the policy level (such as for joint advocacy)" (Telford and Cosgrave 2007: 12). Furthermore, it is crucial that

the stakeholders involved in recovery "may have to engage with governments or authorities in a collaborative manner" (Telford 2006: 4). In this context, an Oxfam study of post-tsunami recovery efforts highlights that communities are keen to be equal partners in recovery. Furthermore it goes on to say that "local knowledge, capacity and priorities were overlooked" (Oxfam 2009: 21).

Despite the general objective of coordination structures which aim to bring actors together around a mutual platform, there are numerous examples of parallel structures being created in disaster situations (Bennett et al. 2006; Aubrey 2010; da Silva 2010). Not only must actors be in contact with each other, they must also be willing to coordinate with each other. Telford and Cosgrave (2007: 12) attribute one of the major constraints on coordination to the "absence of any agreed representative mechanism". The most basic activity that facilitates coordination is to share information (IFRC 2000; NRC 2008). Although information sharing is vital for coordination, it has limited effects on the overall efficiency of the total operation if it is not combined with more collaborative efforts (IFRC 2000; NRC 2008).

The deepest, most beneficial and also most difficult level of coordination is joint-planning and programming (ibid.). Here, actors join forces at many levels, not only sharing information and helping each other to solve particular problems, but planning and implementing joint activities to reach shared goals. Nolte et al. (2012) argue that there are differences in coordination and collaboration activities. According to them, "collaboration refers to activities that cross organizational boundaries..." (ibid: 709). In other words, the functioning of coordination structures can be summarized as: facilitating clear and common goals, effective and ongoing information sharing, concrete inter-actor collaboration and joint planning and programs. Furthermore, project goals cannot be attained without interaction and collaboration (ibid).

A review of post-disaster coordination mechanisms in India highlighted that during the tsunami, stakeholders who engaged in coordination had local knowledge of the areas affected. In addition the delegation of power and authority from the state to local government was well-handled. However, the report also highlighted that some communities were not directly linked to the coordination structures and there was a "lack of synergy between coordination cells" (Chatterjee et al. 2010: 29). A report on the impact of the 2004 tsunami in Indonesia stressed the need for ample resources for coordination. Furthermore, it highlighted that making coordination one more task – along with many other disaster-related duties – may undermine the efficiency of the process (BRR 2009). The literature highlights the need for more research in this area, and Johnson and Olshansky (2013) pose the important question of why the same institutional problems repeatedly occur.

Donor-related issues, such as funding and project expectations, are also highlighted as factors that affect coordination (Kruke and Olsen 2005; Balcik et al. 2010). In this regard, although external funding is required for disaster recovery, it is only effective

when there is a certain amount of flexibility (Olshansky, 2006). It has been argued that shared incentives have a high impact on coordination (Nolte et al. 2012), which is another indication that donors have a substantial influence on the effectiveness of coordination. Moore et al. (2003) exemplify this in their study of coordination following the Mozambique floods in 2000. They state that "international NGOs were sometimes under significant pressure to spend money in a short period of time, thus leading to 'short-term' thinking and fewer relevant projects with long-term benefits".

At the same time, the time pressure for recovery is very high (Olshansky 2012). Olshansky refers to this phenomena as time compression and argues that it may have implications for the power relationships between stakeholders, interaction patterns and the exchange of information as "the thirst for information is greater than the system can provide" (ibid: 176). Furthermore, time compression may have implications for "institutional design" (ibid: 177) during recovery, as new organizations are formed (Quarantelli 1989) or existing organizations reorganize their functions (Quarantelli 1989; Wachtendorf 2004; Johnson and Olshansky 2013). Institutional reorganisation can happen at different levels: national government (when disasters cross geographical and political jurisdictions); regional governments (who handle response and recovery); and other organizations that may be created to coordinate between government departments (Johnson and Olshansky 2013).

The UNISDR (2010: 15) highlights that for infrastructure recovery "though a majority of the actual recovery actions taken are likely to occur at the local level, managed by local officials, regional or national coordination mechanisms will be required to ensure proper distribution of the many resources, technical assistance, internal and external financial assistance, and other special programs that will fuel the process", and the same arguments may apply to the broader recovery process. For example, Bennett et al. (2006: 25) draw attention to attempts to centralize the recovery process under one authority in Sri Lanka. They also note that this centralization may hamper decision-making in recovery.

Values and Social Interfaces

In this thesis, values are defined as *"desirable trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity"* (Schwartz 1994: 21). For example, communities attach great importance to cultural values and their continuity in post-disaster relocation and reconstruction (Oliver-Smith 1991). This conceptualization of values can be expressed as different social entities that have different priorities in disaster recovery.

A complex situation with different values and priorities may contribute to different forms of social interfaces. These are defined as *"critical points of intersection between different social fields, domains or life worlds, where social discontinuities based upon differences in values, social interest and power are found"* (Long 2001: 177). Furthermore, "interfaces typically occur at points where different, and often conflicting, life worlds or social fields intersect" (ibid.). Long (2001) contends that although interface interactions presuppose some degree of common interest, they also have a propensity to generate clashes due to conflicting interests and unequal power relations. Actors with different values, interests and power (e.g. government departments, local and international NGOs, fishing communities, community-based organizations and other stakeholders) must interact during the recovery process. One study of values in disaster risk reduction revealed that there may be substantial variation in what is considered valuable when a variety of stakeholders are involved (Becker 2012). Therefore, "…interface phenomena are often embedded in critical events that tie together a number of spatially distinct, institutionally complex and culturally distinct activities" (Long 2001: 84).

When values are different, a "clash of cultural paradigms" occurs (Long 2001: 70). As long ago as the 1980s, Rubin and Barbee (1985: 61) highlighted the role of values; they noted that "upholding community values in post-disaster setting was observed to be a difficult task". More recent research (Becker and Tehler 2013: 9) has noted that it is important to understand the different perspectives of stakeholders with respect to values as "having an explicit dialogue of what is valuable and important to protect also seems to mobilise stakeholders who may not usually consider themselves important for disaster risk management". In disaster recovery, it is important to address not only stakeholders, but also multiple other sectors. Dynes and Quarentelli (1989: 3) note that "the emergency phase then is a time period when things get done because values and priorities are clear and resource allocation is based on observable needs. The recovery period is characterized by conflicting priorities". As I have highlighted, disaster recovery is complex, and Becker and Tehler's (2013: 9) analogy may be useful here as "it is clear that each stakeholder only have one piece of this puzzle, and it is not until they come together and share their individual knowledge as the richer picture emerges".

Long (2001) characterizes the key elements from an interface perspective, noting that social interfaces have a long-term impact on the community. Conflicting ideas and value systems arise from the multiplicity of actors in the process. Whenever these systems meet, there is potential for conflict or other social processes such as negotiation, accommodation, and cooperation. This thesis adopts the interface perspective in order to identify differences in the values of different stakeholders, as well as to highlight the complexity that arises from the participation of multiple stakeholders who are involved in housing relocation and disaster recovery. As social life is complex and heterogeneous, it is important to understand the long-term implications of short-term interventions (Pomeroy et al. 2006). Long (2001: 59) also uses the term "social arenas" to highlight

that these "are either spaces in which contestation associated with different practices and values of different domains takes place or they are spaces within a single domain where attempts are made to resolve discrepancies in value interpretations and incompatibilities between actor interests". Long's interface concept provides further material for the analysis of large-scale post-disaster interventions involving heterogeneous actors. The concept of the social interface has not been used in the disaster research literature, although it does highlight other aspects such as: stakeholder participation (UNDP 2001); cultural conflicts (Oliver-Smith 1991); and social aspects (Nigg 1995). Regarding disaster participation, Chandrashekar (2010: 6) highlights that "little is known about how this participation occurs or can be facilitated under time-constrained circumstances such as post-disaster recovery".

Interdependencies in Disaster Recovery

Malone and Crowston (1994: 91) highlight that "if there is no interdependence, there is nothing to coordinate". Earlier research on interdependencies has tended to focus on manufacturing settings and infrastructure studies (for example Thompson 1967; Rinaldi et al. 2001). Although the literature highlights the crucial role of coordination in disaster situations, many of the definitions given in the section on coordination directly or indirectly highlight interdependencies. Furthermore, it is known that stakeholders do not possess all the expertise required to handle a disaster.

The main focus of this study is on interdependencies. Oxford English Dictionary (2013) defines the word interdependent as "(of two or more people or things) dependent on each other". Interdependencies are in other words relations of mutual dependence, in contrast to dependencies that are relations in which only one side is dependent on the other. However, the two sides may still be interdependent, even if each dependency is unidirectional, as long as there is at least one dependency in each direction between them (Rinaldi et al., 2001:13-14). Though the strength of such interdependence is determined by the strength of the weakest aggregated dependencies of one side in relation to the other.

According to Savage et al. (2010: 21) collaboration achieves results "that cannot be accomplished in any other way" and helps to deal with issues that cannot be handled by a single organization. An organization's commitment to collaboration is highly dependent on "the degree of interdependence the organisation perceives that it has with the other stakeholders in dealing with the problem" (Logsdon 1991: 24). Scotter et al. (2012: 284) argue that the degree of interdependence among organisations is dependent on "the specific task they perform and it varies across tasks".

The world is becoming increasingly interconnected. For example Perrow (2007: 528) stated that "everything is indeed connected, but most of the connections exhibit far more dependency than interdependency". Webb (2007: 431) highlighted that even the definition of disaster according to Fritz (1961) sees "society as a system of interrelated and interdependent parts". Similarly, Perrow (2007) argued that we should not make the mistake of viewing dependencies as interdependencies.

Recovery may be optimized by taking into account interdependencies between infrastructures and stakeholders (Tierney 2007). According to Rinaldi et al. (2001: 14) stakeholders are "interdependent when each is dependent on the other" and their study identified four types of infrastructure interdependencies: physical, cyber, geographic and logical. This classification may be extended to disaster settings. Extending their taxonomy, two stakeholders may be physically interdependent if "the state of each is dependent on the material outputs of the other" (ibid: 14). In disaster situations physical dependencies may relate to the sharing and exchange of resources. These physical dependencies have also been highlighted by Perrow (2007: 529). In this thesis, the term 'cyber interdependency' used by Rinaldi et al. is called information interdependency. One actor may be dependent on another if they depend on information transmitted between them. Geographical interdependencies occur when there is physical proximity and a local event that affects one party also has impacts on others. Logical interdependencies arise when the states of these actors are influenced by any of the three interdependencies mentioned above (i.e. physical, information or geographical). This type of interdependency may be hard to grasp as it includes issues such as decisions taken about one or more of the stakeholders involved in recovery.

In order to deal with social problems collaboratively, Logsdon (1991) highlights that both interdependency and interest in solving the problem are important. However, "organisations may not be motivated to deal interdependently with social problems because they may not perceive their interdependence or, even if they do recognise that multiparty efforts are necessary, they may not be motivated to act" (ibid: 26). Although other authors have stated that "coordination occurs between actors with shared beliefs" interdependencies may be the result of cause–effect relationships or may be imposed by an authority (Zafonte and Sabatier 1998: 475).

Summary

- There is not much consensus on the definition of disaster recovery. However, considering different aspects and changing aspects of disasters, recovery in this thesis considers a holistic approach that encompasses "physical, social, economic and natural environment" (Smith and Wenger 2007:237) considering pre and post disaster events.

- Coordination has been used in many disciplines. Considering the variety of definitions, coordination in this thesis uses Malone and Crowston's (1990) definition emphasising the importance of interdependencies and goals.

- This thesis also uses the concept of 'social interfaces' according to Long (2001), to explain different relationships between stakeholders which may be crucial for disaster recovery. This is dependent on the values that stakeholders' possess, where values in this thesis are referred to as "guiding principles" (Schwartz 1994:21) of what is important to different actors.

- As highlighted that interdependencies are crucial in coordination, the framework by Rinaldi et al. (2001) is extended to recovery coordination to examine different types of interdependencies between stakeholders.

4 Methodology

To unpathed waters, undreamed shores- Shakespeare

Approach

This thesis investigates the factors affecting disaster recovery coordination. Disaster studies clearly require an inter-disciplinary approach. In the words of Oliver-Smith (1996: 321), "this is due to the increasing urgency of a number of research issues, disasters among them, with broad theoretical and practical significance". It is based on qualitative research and empirical data. Qualitative research (Flick 2006:11) puts it "is of specific relevance to the study of social relations, owing to the fact of the pluralisation of life worlds". A qualitative approach was adopted as it is not based on a single theory, but a combination of different theories and concepts (from different disciplines- e.g. coordination theory; concept of social interfaces) and methodological approaches (Flick 2006); in other words the relationship between the research question and the "task at hand" (Silverman 2010).

The appended papers are based on two case studies: the tsunami that affected Tamil Nadu in India in 2004; and the Eden District Municipality in South Africa. Case studies are particularly useful in new research areas (Patton and Applebaum 2003). Although disaster recovery is not a completely new area, it is clear that there is a lack of research. The tsunami proved to be a useful case study for many reasons. It was one of the best-funded disaster recovery programs in history. It attracted massive media attention and in broad terms the response was well-coordinated compared to previous disasters (Telford and Cosgrave 2007; Bennett et al. 2006). Furthermore, the tsunami saw the influx of hundreds of international and local organizations into the affected areas, along with United Nations agencies and the government.

Adapted from: http://www.mapsofindia.com/maps/tsunami-in-india/tsunami-affected-area-india.html
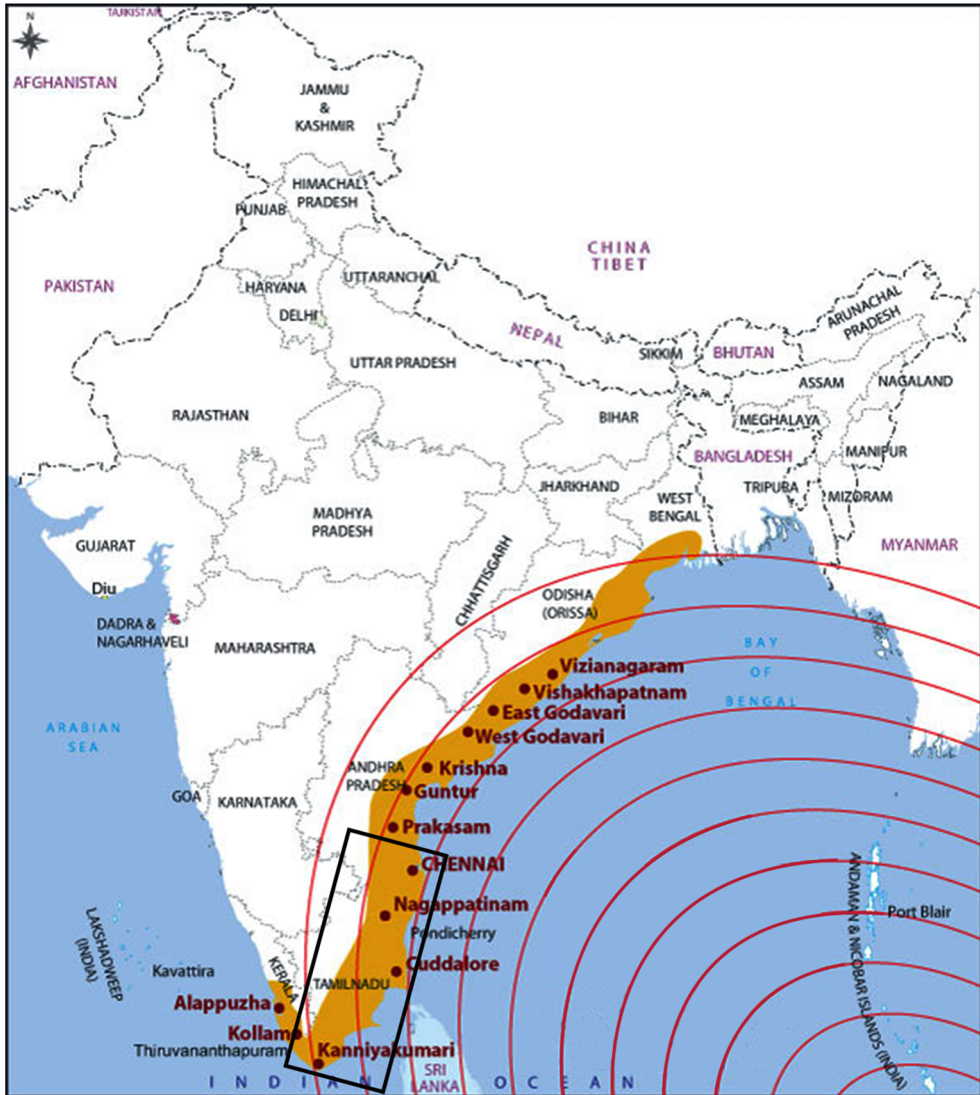
Picture 1: Regions Affected by the Tsunami in Tamil Nadu, India

Tamil Nadu has a long coastline of around 910 kilometers. The Tamil Nadu affected regions are highlighted in the black rectangular box.

The South African case study was selected during my visit to the African Centre for Disaster Studies at the North-West University in South Africa. From 2006 –2008 the Eden District Municipality was continually affected by floods. This case study provided a deeper analysis of coordination between government departments in the district.

Adapted from http://en.wikipedia.org/wiki/South_Africa .

Picture 2: The Eden District Municipality in South Africa

The effectiveness of a case study depends on the selection of the case itself and the methods used to investigate it (Flyvbjerg 2001; Yin 2003). Case studies have been criticized for being subjective and the inability to generalize from them (Bryman 2001; Flyvbjerg 2001; Yin 2003), although it has proved to be able to provide analytical generalizations (Flyvbjerg 2001) especially in multiple case studies (Blaikie 2000). Nevertheless, the selected method should match the research question and the problem at hand (Silverman 2010) and "case studies strive to explain the particular case at hand with the possibility to come to broader conclusions" (Patton and Applebaum 2003: 64). It may be possible to transfer results to other settings by "conscious reflection on similarities and differences between contextual features and historical features" (Greenwood and Levin 2007: 70).

Literature Reviews

Like any academic endeavour, a literature review formed part of the thesis from beginning to end. During the initial stages, and during the design of the study, broad search terms such as 'disaster recovery' and 'housing reconstruction' were used. This was because the study was inspired by my visits to Tamil Nadu, where fishing communities in Chennai had been living in temporary shelters since 2004. This helped me to understand challenges of recovery, relocation and reconstruction, which led to the development of Paper II and identified the larger issues related to stakeholder coordination. This led to new combinations of search terms. For example, they included 'coordination in disaster response and recovery', 'government in recovery', 'stakeholders in recovery', etc.

Starting with concepts of recovery and coordination, definitions from previous research, and case studies of disaster recovery many other combinations of search terms were developed. These terms emerged as the research continued and new literature was identified. Searches were mainly carried out using the Lund University Library search engine and Google Scholar. Also, the snowballing approach based on references and bibliographies helped to identify new literature. The Disaster Research Centre (DRC) at the University of Delaware helped to generate reference lists using combinations of keywords. Scientific journal articles, together with a wide range of reports and documents prepared by government authorities, United Nations agencies, and international NGOs were identified as relevant.

Data Collection Methods

Semi-structured Interviews

According to Blaikie (2000), interviews and focus group discussions are increasingly used in social sciences. Semi-structured interviews provide a flexible study design and help to probe issues where more information is needed (Flick 2006). They explore people's experience of the process (Patton 2002) as they are "guided conversations rather than structured queries" (Yin 2003: 89). The purposive snowball sampling method is used to identify respondents who can provide the needed information (Silverman 2000), but this method may lead to bias. Here, I addressed this problem by identifying respondents based on their organization. Almost all interviews were conducted in India and South Africa in person. The majority of the interviews outlined in papers I, III, IV and V were recorded and brief notes were simultaneously taken. Detailed notes were taken of those interviews that were not recorded. Notes were taken

in the interviews described in Paper II and were discussed in more detail with respondents.

All the papers appended to this thesis used semi-structured interviews as the main source of empirical data. Papers I, III and V are based on interviews conducted with a variety of stakeholders involved in the recovery process in post-tsunami Tamil Nadu in India. As many of the respondents had changed jobs over time, snowballing helped to identify and engage these respondents. In other words, respondents were identified on the basis of their experience of the phenomenon in question (Cresswell 2007), as they had been actively involved in coordination with a variety of actors since the beginning of the tsunami response. All respondents had been involved with long-term post-tsunami disaster recovery, either at the state or district level. Paper IV is based on interviews conducted with government officials in the Eden District Municipality in South Africa.

Paper I required respondents to give information about the early phases of the disaster and how coordination changed over time. They were identified on the basis of their involvement with the tsunami from the time the response began, as well as their involvement and role in coordination platforms at the district and state level. Twenty-four interviews involving fourteen respondents were conducted in February 2010 and March 2011, and are were used for this study.

Paper II is a case study of a specific community that was still awaiting housing reconstruction four years after the tsunami. This group was chosen due to the immense attention given to housing reconstruction along the affected coastline. Primary data was obtained through interviews conducted in Srinivasapuram in Chennai in May 2008. In total, thirty-five respondents representing various stakeholders were interviewed. The respondents were members of fishing and non-fishing communities in the selected area, representatives of non-governmental organizations (NGOs), and state officials who were involved in the post-tsunami recovery process. Two rounds of in-depth interviews were conducted with the majority of community members (both fishing and non-fishing communities). Respondents were identified based on their ability to provide data regarding the different issues that formed the subject of the study. Care was taken to include respondents from the local fishing governing body, fishermen and other occupations. Community members were also identified from different geographic locations to ensure a holistic understanding of the process.

The empirical data for Paper III was gathered through semi-structured interviews conducted in February 2010, March 2011, and October 2012. A total of 23 respondents were interviewed. More than two rounds of semi-structured interviews were conducted with three respondents; two rounds of interviews were conducted with four respondents and one round with the others.

Paper IV is based on a case study from South Africa. The Eden District Municipality was selected due to its proneness to flooding in the past decade. Twelve semi-structured interviews were conducted in the Municipality in November 2010. The sample was designed to be geographically representative of all the local municipalities in the Eden District. Respondents were government officials from various departments involved in disaster risk management activities who were carefully sampled, based on their ability to provide information about disaster recovery coordination in their respective municipality.

Paper V is another case study of the effects of the tsunami in Tamil Nadu. This also used semi-structured interviews as the key tool for data collection. Eighteen interviews were conducted with stakeholders from the government, non-governmental organizations, coordination platforms and United Nations agencies focused on the key themes of recovery and interdependencies.

Table 1: Summary of Methods of Appended Papers

Paper	Data Collection	Empirical Data	
I		24 interviews with 14 respondents	
III	Interviews	23 respondents (different rounds of interviews)	Interviews with stakeholders involved in the tsunami recovery in Tamil Nadu, India
V		18 interviews	
II	Interviews Focus Groups	35 respondents for interviews with various stakeholders 2 focus groups with community members in Srinivasapuram in Chennai	
IV	Interviews	12 interviews in Eden District, South Africa	

Focus groups

In addition to semi-structured interviews, research for Paper II also consisted of two one-hour focus group discussions conducted with community respondents. The first was conducted with six young men from the fishing community, aged 18–24, who were involved in fishing and associated activities. The participants in this group were

identified according to two criteria. One was that they earned their livelihood from fishing and the other was that they represented different geographical areas. The second focus group was conducted with eight members of the fishing community (men and women). This group was identified during semi-structured interviews, based on their ability to provide details of the recovery program and housing relocation in particular. Both of the focus groups were interactive, which helped to develop a broad perspective of issues related to relocation and disaster recovery in the area.

Focus groups "allow for group interaction and provide greater insight into why certain opinions are held" (Blaikie 2000: 234). Group discussions may be useful to clarify and "reconstruct individual opinions more appropriately" (Flick 2006: 191). However, care must be taken as they can lead to conflict between individuals and problems of confidentiality (Robson 2002). Individuals may not share their true opinion due to issues of confidentiality. This was addressed by confirming and clarifying issues with respondents during individual interviews.

Data Analysis

All the recorded interviews were transcribed in detail. Those that were not recorded were transcribed based on notes taken during the interview. Some interviews were discussed with respondents in order to double check their responses. The recordings were listened to many times in order to draw out important points.

The data was analysed by identifying and coding important statements and details that contributed to the research question. The analysis identified common information patterns from individual interviews that were compared to other interviews (Yin 1994). These codes were categorized into themes by clustering statements with common patterns. Data analysis started with the initial data collection (Corbin and Strauss 1990) and began with open coding that helped to identify the various concepts and issues that emerged. The data was then broken down into multiple concepts. Axial coding was then used to identify the relationships between these concepts and to group them into broader categories (Charmaz 2006). These categories helped to filter the initial codes and create coherent datasets. The broader themes presented in the next chapter are the result of the categories formed from this analysis.

An overview of all the papers, together with their research methods is presented in Chapter 5.

5 Research Contributions

It isn't that they can't see the solution. It is that they can't see the problem.   -G.K. Chesterton

The first part of this chapter presents an overview of the research papers followed by their summaries. Each of the papers has a specific research question that feeds into the overall research question of the thesis. Subsequently, the overall research question is addressed.

Background and Summary of Research Papers

Paper I: Coordination from Disaster Response to Recovery in post-tsunami (2004) in India

The importance of coordination in disaster risk management is clear. It manifests at various levels of planning and implementation, ranging from preparedness to disaster response, and in planning for long-term recovery and sustainable development. These processes are not independent. Despite the unclear boundaries between disaster response and disaster recovery coordination, this paper aims to identify whether there are any observable differences between disaster response and disaster recovery coordination and it therefore answers the following research question:

Do the stakeholders who were involved in various activities and efforts after the 2004 tsunami in Tamil Nadu identify any differences between disaster response and disaster recovery coordination?

The experience and expertise of each organisation and government department is reflected in the quantitative and qualitative differences between the stakeholders that were involved in response and recovery. This difference is also due to the fact that during disaster response the majority of the stakeholders share a common goal, which is providing basic services (Christoplos 2006). However, this study revealed that goals changed during recovery, due to sector-related activities. Quantitatively, there was a clear difference in the number of organizations involved during response and recovery. The multitude of organizations that arrived at the site of the disaster during the response phase slowly decreased as recovery activities started taking prominence. The study also highlighted differing levels of engagement during disaster response and

recovery. The level of engagement relates to the urgent need for coordination, which is seen as an important factor during relief activities. However, as time progresses and operations move towards short- and long-term recovery, coordination priorities change and there is a move towards discussion of sector-related issues that involve various stakeholders.

Two major approaches to coordination were identified, which dominate the response and recovery phase, respectively. These relate to the coordination of logistics during response and the coordination of strategies during recovery. This changing nature of coordination is the result of the interplay between the various stakeholders who are involved over a longer period of time, changing levels of engagement and differences in information needs during response and recovery. Moreover, coordination does not imply a top-down approach to consensus-building, but is rather a platform to enable joint stakeholder activities and policy advocacy. However, there are differences in the focus and priorities given to coordination during disaster recovery. In recovery coordination, efforts are tailored to the local context. This highlights the need to bring together various approaches. In long-term recovery, the coordination of approaches involves looking at various thematic areas (such as education, livelihoods, shelter, etc.) that need attention and deciding which interventions best suit the context. As there are many different perspectives and working patterns in both governmental and the multitude of other organizations, a coordinated approach offers a common way of dealing with similar problems.

Paper II: Housing Reconstruction in Disaster Recovery: A Study of Fishing Communities Post-tsunami in Chennai, India

Housing reconstruction was one of the sectors that faced challenges during the tsunami recovery. The fishing community in Chennai, Tamil Nadu (India) expressed their strong resistance to relocation. As background to this debate, the research question of Paper 2 was:

What arguments do the tsunami affected fishing communities and the government authorities in Chennai express regarding housing relocation as part of tsunami recovery?

The study revealed that the government and the affected community involved in relocation and housing reconstruction in the recovery period following the tsunami had differing opinions and values. In particular, perceptions of values differed between these stakeholders. The government expressed concern over the physical safety of new housing and protecting lives from future disasters. For the fishing community, it was important to live close to the natural habitat, i.e. close to the sea in order to sustain their livelihoods. This conflict of values created interfaces that reflected "institutionally complex and culturally distinct activities" (Long 2001: 84).

The study further highlighted that the lack of community involvement in the choice of housing location and design led to conflict and resistance. The International Recovery

Platform recovery guidance notes (IRP 2007) highlighted that taking ownership of recovery initiatives and participation are key issues (amongst others) for effective recovery. The study reiterates that recovery is a social process where social interfaces occur (Quarantelli 1989; Nigg 1995; Berker, Kartez and Wenger 1993).

Paper III: Multi-Organisational Coordination for Disaster Recovery: The Story of Post-tsunami Tamil Nadu, India

The 2004 tsunami attracted huge attention globally, due to both the scale of damage, and levels of funding received (Telford and Cosgrave 2007). Furthermore, the number of organizations that responded was overwhelming. In such contexts, coordination becomes a challenge. Coordination, particularly as applied to disaster recovery, has not been studied and it is ignored in policy debates (Chandrasekhar 2007). Therefore, the research question for this paper was:

What do different actors involved in the tsunami recovery express as factors affecting coordination during long-term recovery?

This study reflected a common view among respondents of the need to coordinate disaster recovery. However, it indicated an almost complete focus on information-sharing and not much on collaboration or joint planning and programs. The term coordination was itself ambiguous for the different actors involved. It was interesting to note that coordination efforts began to dwindle when the focus shifted to disaster recovery.

Coordination was further complicated by the plethora of different coordination structures that mushroomed in the wake of the tsunami. To harmonize activities among diverse actors requires a shared platform for dialogue and action, which was hampered when there were parallel structures. Furthermore, the respondents to the study highlighted that the government must take a more active role in coordination, while at the same time ensuring the autonomy of responding organizations. Coordination was further complicated by a general lack of institutionalized coordination structures and governmental bodies in particular. This meant that over time constant changes in governmental structures and high staff turnover continually undermined any progress made in coordination. It was clear from the study that a lot of money, time and effort were invested in creating a common knowledge base to be shared with all actors participating in one or more coordination structures. It also indicated that not only information was lost, but also vital knowledge and lessons learnt (or at least identified), i.e. knowledge and lessons that could have been used to facilitate better response and recovery in the future.

When looking at the factors that affected long-term recovery coordination in Tamil Nadu, it is interesting to note the close links with response coordination, found in the literature. The context may be different, but the challenges remain and even increase, as the sense of urgency and attention drops and the variety of actors involved increases.

The findings of this study highlighted the number and diversity of the actors involved, as well as the lack of clear and common goals and mutually understood mandates, roles and responsibilities. Consequently, the study suggests that it may be appropriate to approach coordination as a governance problem.

It is equally vital that information, knowledge, and lessons learnt are maintained in an institutional repository that outlives the overall recovery operation. This is also vital in addressing terminological confusion around the unclear and diverse use of key concepts. For coordination to go beyond mere information-sharing, it is vital to formulate common (or at least overall) goals, and ensure that each actor is aware of their own mandate, role and responsibilities, as well as the mandates, roles and responsibilities of the other actors involved. Closer donor-level coordination is crucial for more efficient use of resources, in order to meet the overall recovery needs. Likewise, new (and less mass-media driven) mechanisms are needed to distribute funding to the actors involved.

Paper IV: Intra-governmental Coordination for Sustainable Disaster Recovery: A Case-study of the Eden District Municipality, South Africa

Authors have highlighted that "lack of coordination between agencies is one perennial finding of post-disaster inquiries" (Handmer and Dovers 2007). Coordinating disaster risk management and disaster recovery not only brings together multiple stakeholders, but also involves many different governmental departments who play a key role in all functions (Van Niekerk 2006). Many factors, such as unplanned decision-making, lack of importance given to local governance and participation, and the lack of participatory approaches have been identified as handicaps to disaster recovery (IRP 2007; Alam et al. 2008). This study looked at the floods in 2006, 2007 and 2008 in the Eden District Municipality in South Africa and examined the factors that affected coordination during disaster recovery. This paper thus aimed to answer the following research question:

What do stakeholders within the government express as factors affecting coordination between various departments for sustainable disaster recovery after repeated flooding from 2006 to 2008 in the Eden District Municipality in South Africa?

The study illustrates that coordination between government departments for disaster recovery is a complex process that raises key challenges. The findings indicate that disaster response management took precedence over recovery. Moreover, few efforts were made to coordinate the work of the different departments involved in recovery. The way disaster response was managed had created a secondary role for recovery coordination. This was also highlighted by the lack of capacity and training for planning and implementing sustainable recovery projects. The findings highlighted that coordination was affected by the lack of communication between the various departments involved in disaster recovery. One of the reasons for this lack of

coordination and communication stemmed from the belief that disaster recovery was not a priority for any of these departments. This study underlined the importance of establishing 'public–public partnerships' for effective and sustainable disaster recovery coordination. The challenges highlighted by this study were exacerbated by a lack of political will to invest time, money and effort in disaster recovery coordination. Therefore, these challenges relate to: funding; designing recovery programs; using the expertise of civil society; lack of capacity; and insufficient political will for coordinated disaster recovery.

The main recommendations resulting from the study include: (1) the Municipality must focus on initiatives to develop capacity in order for government officials and politicians to better understand their role and function in coordinating disaster response and recovery, and their role in disaster risk reduction as a cross-cutting issue; (2) the Municipality must include sustainable disaster recovery in their contingency, disaster risk management and integrated development plans; (3) debriefings and post-disaster evaluations that involve all relevant stakeholders must be planned and held as part of the transition from disaster response to sustainable disaster recovery; (4) more emphasis must be placed on integrated interdepartmental planning and cooperation for disaster recovery through the appropriate disaster risk management structures in the Municipality; and (5) the Municipality must work closer with civil society to ensure better planning and action when needed.

Paper V: Exploring Interdependencies and Common Goals in Disaster Recovery Coordination

The fifth paper discusses the extent and nature of organizational interdependencies in recovery operations. Although it is clear that interdependencies influence the development of a crisis, as well as the management of the crisis, it is less obvious how dependencies among various stakeholders and functional sectors influence recovery operations. Hence, the question is if strong dependencies will eventually fade away as the management of a crisis turns into a recovery operation or if they will prevail. Using the case of the tsunami in India, it addresses the following research question:

What do stakeholders involved in tsunami recovery in Tamil Nadu in India express concerning organizational interdependencies in the recovery process?

This study mainly focused on interdependencies. It uses the taxonomy of four categories of dependencies in critical infrastructure systems developed by Rinaldi et al. (2001: 14–16) that may have wider utility in disaster recovery. The four interdependencies highlighted by this taxonomy are physical, geographical, information (adapted from cyber) and logical.

The most common type of dependencies found in the study is information dependencies, in the sense of most stakeholders needing information from others to function. This may be no surprise, as it has been suggested that the most prevalent

coordination activity for disaster recovery is information sharing. However, the findings point out that some stakeholders are more dependent on physical input in terms of resources or on information than others, clearly indicating not only qualitative differences in terms of types of dependencies between stakeholders but also quantitative differences in terms of weight of these dependencies.

The study concludes that first of all, this study indicated that there are different types of dependencies between the stakeholders involved in disaster recovery. Moreover, there can be different types of dependencies between two stakeholders. Secondly, the weight of each of the dependencies between pairs of stakeholders was often different, in the sense that one side was more dependent than the other. Finally, the study highlighted a lack of effort in articulating shared goals for disaster recovery. Different stakeholders may thus pursue different goals, which have a serious impact on the definition and meaning of coordination. Given that interdependencies and common goals are prerequisites for coordination (as stated earlier), one plausible explanation for the declining importance of coordination in disaster recovery may be due to weak organizational interdependencies and a lack of clearly-articulated shared goals.

Table 2: Summary of Appended Papers

Paper	Research Question	Research Results
I	Do the stakeholders who were involved in various activities and efforts after the 2004 tsunami in Tamil Nadu identify any differences between disaster response and disaster recovery coordination?	There are similarities and differences in coordination between disaster response and recovery. Although there are very thin lines of difference between response and recovery; there are differences in level and extent of stakeholder engagement; information; nature and objectives of coordination.
II	What arguments do the tsunami affected fishing communities and the government authorities in Chennai express regarding housing relocation as part of tsunami recovery?	The results of this study highlight the effects of differences in the values held by each of the stakeholders regarding relocation. The lack of community participation further exacerbates different forms of social interfaces between the state and the community regarding relocation.

III	What do different actors involved in the tsunami recovery express as factors affecting coordination during long-term recovery?	The study highlights five key factors that affect coordination in long-term recovery: (1) the need to coordinate; (2) the role of the government; (3) knowledge networking; (4) mandates and goals and (5) coordination at the donor level. Finally, the study indicates a potential for applying a governance perspective on disaster recovery coordination, which needs to be further researched.
IV	What do stakeholders within the government express as factors affecting coordination between various departments for sustainable disaster recovery after repeated flooding from 2006 to 2008 in the Eden District Municipality in South Africa?	The study is structured around the theoretical themes of coordination within the public sector and sustainable disaster recovery. The study highlights that (1) much attention paid to response oriented disaster risk management; (2) government departments working in independent silos; and (3) funding and political will are factors that affect coordination for disaster recovery in the Eden District.
V	What do stakeholders involved in tsunami recovery in Tamil Nadu in India express concerning organizational interdependencies in the recovery process?	The study concludes that there are different types of dependencies between stakeholders in disaster recovery. Further, the strength of the dependencies were found to be different even between two actors. the study highlight that there is not much effort in articulating common goals for disaster recovery. Different stakeholders may thus pursue different goals.

Addressing the Research Question

The research question addressed by this thesis is "What factors affect coordination in the disaster recovery process?"

Paper I contributes to a deeper understanding of the differences found in coordination during disaster response and disaster recovery; the purpose is to outline the factors affecting disaster recovery coordination. Paper II adopts an interface perspective to highlight different arguments that affect coordination and recovery at large. Papers III and IV begin to address gaps in coordination by investigating the important factors in institutional (governmental and non-governmental) coordination in post-disaster recovery. Paper V, investigates organisational interdependencies between stakeholders in disaster recovery.

This thesis moves away from the phase oriented approach and draw upon a holistic and integrated approach to disaster risk management issues. Although the boundaries between response and recovery are unclear, understanding the differences is crucial before beginning to highlight the factors affecting recovery coordination. The factors presented are drawn from the appended papers, in particular the Tamil Nadu case study following the Indian Ocean tsunami of 2004 and the 2006 – 2008 flooding in the Eden District Municipality in South Africa.

Factors Affecting Coordination

Numerous factors may affect coordination for sustainable disaster recovery. Those presented below emerged from the investigation and data analysis of the case studies undertaken as part of this thesis.

Variety of Stakeholders and Differing Levels of Participation

The theoretical framework and the empirical studies that form the basis for this thesis highlight that a variety of stakeholders take part in response and recovery. This is not a new finding, but it is important to stress the role of this factor for recovery coordination. First of all, the sheer magnitude and impact of the tsunami on the Tamil Nadu coastline prompted various actors to coordinate their actions, and a majority of respondents identified the need to coordinate in order to avoid duplication of activities at the field level (Papers I and III). The role of respondents varied and included government workers, NGOs, UN agencies, faith-based or religious groups, individual volunteers and many more. In South Africa, Paper IV investigated the role played by the government, and it is clear that there were many governmental stakeholders representing different departments. This study also indicates a low level of collaborative participation between governmental and non-governmental stakeholders.

Paper I highlights a difference in levels of engagement in response and recovery that relates to differences in activities and the scope of action in the areas affected by the disaster. During disaster response, activities are more related to search and rescue, providing basic services such as food, evacuation or shelter, health care, and many others. All the stakeholders involved at this stage are more or less involved in similar activities, namely saving lives and basic service delivery. Coordination during response is particularly concerned with damage and needs assessments, coordination of relief supplies; coordination of stakeholders engaged in these activities; and assisting the government in all its activities.

Further, Paper I identifies clear differences in the type of information required for response and recovery. The majority of the respondents in Paper I highlighted that during response, information needs are mainly directed towards the common goals of providing services to the affected communities. On the other hand, during recovery, information is directed to different sectors. The information generated and disseminated at the operational level during response focuses on the damage to, and needs of the affected region, which is usually of interest to the majority of the organizations involved in the response. During relief activities, the type of information required and processed for coordination is related to records of supplies, numbers of affected communities, lists of recipients and other such details. However, in long-term disaster recovery there is increasing need for detailed 'sectoral' information. As time passes, the coordination of activities changes, and focuses on policy-oriented discussions of disaster recovery.

It is evident from these studies that different stakeholders had differing levels of participation in recovery coordination. The case studies of the tsunami and in South Africa showed that affected communities were rarely spoken of as a stakeholder in the process. For example, the communities along the Tamil Nadu coastline that were affected by the tsunami had different experiences. In Nagapattinam most attention was given to the housing sector in coordination meetings, but the fishing communities in Chennai perceived that their role in decision-making during disaster recovery was minimal (Paper II). They stated that they received no information about housing reconstruction and relocation for a long time after the tsunami. The community members that participated in this study highlighted that the fishing community had, throughout the recovery process asked for the construction of permanent shelters at the same location as before the tsunami. However, they had received no information from the government concerning the status of the new housing, the exact details of the plan, or the structure and design of houses. As stated earlier, the government had not involved the community in decisions about their needs or what suited them best in order to sustain their livelihoods. While the tsunami was considered to be an example of a disaster where many stakeholders had to coordinate their activities, the affected communities had not been an equal party in the process.

Similarly, in South Africa, communities were rarely acknowledged to be part of the flood recovery process. Actors came from different levels of government, and a range of local departments that participated at different levels. This was made clear by respondents who noted that many stakeholders were handling recovery activities on their own and highlighted that there were no coordination meetings at the local level.

The numbers of stakeholders affiliated to coordination platforms itself highlights an increasing participation in coordination meetings. This may mean that there is increased interaction between different stakeholders taking part in varying activities during disaster recovery. It is this sheer numbers that led to establishing coordination platforms after the tsunami. However, not all actors take an active role in coordination. This has a direct impact on the frequency of interaction between stakeholders which may therefore determine the nature of coordination they undertake.

The level of participation in joint meetings, coordination platforms etc. varied among the stakeholders. The diversity of stakeholders influenced the extent to which one would be interested in engaging in coordination activities. It seems as if higher the similarities in organisational characteristics the higher the extent of coordination activities were between them.

The Meaning of Coordination

Paper I emphasised that: (1) logistics-based coordination takes precedence during disaster response; and (2) approach-based coordination takes precedence during recovery. These approaches are explained in detail in Paper I. During response, as explained above, logistics-based coordination involves the coordination of hundreds of organizations and the management of logistics in terms of relief material flowing into and within the country. For example, in Nagapattinam in Tamil Nadu, almost all relief activities were channelled through the NGO Coordination and Resource Centre (NCRC) and the government. As a result, it was possible to track which organisation was responding in which specific area and what need was being addressed. There was a shared goal of providing a unified response, and the majority of the respondents in Paper I indicated that coordination involved dealing with logistical issues such as maintaining records of damage, the needs of the affected population, relief organizations, etc.

During disaster recovery, sector-related coordination meetings (education, livelihoods, health, etc.) are directed towards building common strategies within sectors. As the organizations involved in recovery have diverse expertise and goals are primarily sector-specific, there is need for discussions in order to adopt a common recovery strategy that must be tailor-made to the local context. In the words of one respondent, this creation of common strategies and a unified recovery plan (although contextualized according to the district and the sector) represents "approach-based" coordination. According to

the respondent this enables planning and improves interventions, while at the same time keeping in mind the common long-term goal of recovery.

The empirical studies in this thesis highlight that coordination was a key subject of discussion during disaster response and recovery after the tsunami. On the other hand, in South Africa there was very little discussion. The role of coordination in the tsunami was acknowledged, particularly given the magnitude and scale of the disaster and although the need to coordinate was commonly recognized, it was not free from challenges. For instance, as one of the respondents (Paper III) says, "understanding the concept of coordination itself was a challenge to many organisations". Another respondent states (Paper III), "the term coordination had different meanings to various agencies". Therefore differences in conceptual understandings arose between local and international organizations. It was clear that one factor that inhibited communication between stakeholders was that local organizations may not have understood the concepts used by international agencies, due to lack of training in the specific issues of disaster risk management and recovery. Nevertheless, local organizations played a key role. For example, as one of the respondents from Paper III put it, "the local wisdom of the people involved in the coordinating bodies" had a positive effect on coordination. According to many respondents who participated in the case studies described in Papers III and V, coordination meant sharing information between themselves and for some this only went as far as attending a meeting and sharing their specific work. According to the theoretical framework, information sharing can be a superficial form of coordination. The lack of mutual understanding was a common problem in coordination and designing recovery strategies.

One of the key findings during the recovery following the tsunami (Papers II, III, and V) was that housing was the only sector that received attention in coordination meetings. Some respondents thought that a potential reason for this was that housing coordination was comparatively easy to manage, as it was associated with tangible reconstruction. They added that it takes longer to see results from other sectors (such as education, livelihoods and health) given the aims of a particular project.

All the studies in this thesis note the great value of coordination between the multiple actors involved in disaster recovery. According to almost all of the NGO respondents referred to in Paper III, the exchange of ideas, experiences and effective recovery strategies from different sectors in the field had a positive impact on coordination. The exchange of ideas and experiences involved sharing best practices and lessons learned from various disasters in other parts of the country, and other districts affected by the tsunami. One example is that the technical expertise of both policy-makers and practitioners was pooled in the design of houses. Other benefits included: the avoidance of duplication; all information was available at one resource centre; coordination made it possible to collect and disseminate information from a wide area; and access to technical expertise from different sectors.

The study highlights how coordination with other organizations brings an opportunity to develop networks and provides an insight into ongoing discussions across the affected region. According to government officials, coordination brought added value by facilitating mapping of capacities and financial resources for investment in disaster recovery. They said that the actors involved in long-term recovery built an effective network for information exchange, and contributed to building not only a knowledge base but also a pool of expertise for different aspects of disaster recovery in Tamil Nadu. However, Papers III and V clearly illustrate the lack of a common definition of coordination. Moreover, actors only coordinated in order to exchange of ideas and information, and implemented their projects independently, in the absence of a collective recovery agenda. This is an example of the most basic form of coordination without any collaborative attempts to establish a joint program (NRC 2008; Nolte et al. 2012).

Since different stakeholders perceive coordination differently, they do not approach the coordination problem in the same way. While stakeholders have differing opinions and meanings of coordination; different expectations from coordination platforms it affects the overall results of coordination. This may be seen in light of not having common approaches to coordinate during a specific problem impacting both the extent and nature of coordination. Some of them consider coordination to be simply information sharing while others consider information sharing as a means to an end where the end is to manage interdependencies to achieve common goals.

Values

The study on housing reconstruction in fishing communities in Chennai highlights substantial differences in stakeholders' values (Paper II). The debate concerning housing relocation was still ongoing four years after the tsunami. The affected communities and the Tamil Nadu state government were engaged in a process of conflict and negotiation about the site for housing reconstruction. This conflict of values between stakeholders was the main reason for the delay in rebuilding. The majority of the fishing community did not want to relocate as they valued their access to open space around their houses and their customary rights to the shore (Paper II). The government however, expressed concern about potential damage to housing and infrastructure in future disasters. According to the government, their task is to protect these communities from future disasters by rebuilding further away from the coast.

Although there is a substantial body of literature that emphasises the need for community participation in disaster recovery, it is clear from Paper II that after the tsunami, it is not only community participation, but also different value paradigms that affect recovery. As Paper II concludes, although the government emphasised the importance of protecting physical infrastructure such as housing and the protection of human life, there seems to be a conflict that prevents the two parties reaching agreement. It shows that differing values of stakeholders can create conflicts in disaster

recovery. Differing values may be ascribed to Long's idea of a "clash of cultural paradigms" (Long 2001: 70). Furthermore, the implications of different values can be seen in terms of conflict between state and community, a conflict that is later transformed into a bargain between them. They may also be attributed to Long's framework of social interfaces (ibid.).

Goals and Mandates

Closely related to values are the different goals and mandates of stakeholders. The empirical studies from Tamil Nadu highlight that different actors have different mandates. Although it is not necessary for them to have similar mandates, a problem arises when these stakeholders cannot frame a common goal for disaster recovery. For example one respondent (Paper III) notes that "very few organizations have a long-term sustainable agenda". According to this respondent, this leads to a situation where coordination is hampered as it becomes difficult to identify common interests, and plan and implement joint activities. This is also linked to differences in goals between stakeholders involved in disaster response and recovery (Paper I), i.e. the more unified goal in disaster response as against a sectoral goals in recovery.

The studies also highlight the relationship between values and the formulated goals. How goals are formulated depends on what stakeholders consider to be valuable in disaster recovery. For example, in Paper II the government and the community had different goals for recovery. One the one hand the government advocated the community's physical safety, while the community itself was pushing for the recovery of its livelihood, with physical infrastructure as an interdependent process. Many local respondents in Tamil Nadu highlighted examples of one community benefitting from the same type of recovery project from more than one external actor at the same time. Furthermore, these projects were funded by a single donor (Paper III). Although donor-related aspects of coordination can constitute an entirely new study, it is essential to highlight that donors are as much responsible for formulating goals as funding affects coordination. The studies also provided an interesting viewpoint on the challenges of convincing donors to mainstream disaster recovery and risk reduction into sustainable development.

Paper IV highlights that, "according to all the respondents, the inconsistency in coordinating for disaster recovery arises due to the fact that departments do not work in consultation with allied stakeholders involved in recovery activities". This phenomenon has been clearly identified in terms of different departments having a specific role to play in post-disaster rebuilding. Furthermore, many respondents noted that activities related to disaster risk management were seen as an add-on function. Similarly, Paper V concludes that the process of coordination has been significantly affected by the absence of common goals for post-tsunami recovery.

Therefore, different values (as indicated in the previous factor) may impact coordination in different ways. Therefore, having different values has implications in the way stakeholders participate; engage in dialogue and negotiations in disaster recovery. This implies that stakeholders may even interact less due to conflict of values and thereby not engage in deeper coordination mechanisms. Given that actors involved in disaster recovery have different mandates as they represent different organisations, the findings indicate minimal efforts in framing or articulating common goals. If two stakeholders have different values they may not perceive the need for coordination since there are no common goals. The combination of different goals and values does affect both the extent and nature of coordination along with the overall impacts. Therefore, there will be less engagement in coordination activities where the extent is referring to the frequency of interaction between stakeholders. These factors influence the nature and form of coordination by defining the activities they may undertake. For example, the findings indicate that stakeholders engage primarily in information exchange which may be a basic form of coordination, and do not delve into more collaborative efforts.

Role of the Government

The post-tsunami case study from Tamil Nadu highlights the crucial role of government in influencing coordination (Papers II, III, and V). Although coordination structures were set up immediately after the disaster, Paper III illustrates that these structures can only facilitate coordination and that it is the government that has the ownership and authority to ensure accountability of the actors involved. Therefore, it concludes that coordination structures should be part of the government's mandate in order to ensure that there is no duplication of effort throughout the response and recovery process. Although the study notes that government officials were willing to pay attention to the issues raised by coordination platforms, they also noted several challenging factors arising within the government structure. Furthermore, many of the respondents referred to in Paper III identified that changes to governmental coordination structures at state and district level were a challenge during disaster response and recovery; both in terms of changes to the actual setup of the structures, and staff turnover of key officials. This was also evident in Sri Lanka after the tsunami (Bennett et al. 2006).

Paper III highlights that if coordination process had been properly institutionalized, a change in government officials would not have affected the coordination processes to the extent that it did. When there is a change in governmental structure, the entire coordination process has to be redefined, along with its relevance and the role of the new officials. Government officials (Paper III) highlighted that there were no guidelines for the coordination of long-term disaster recovery, and that the coordination process was dependent on leadership at state and district level. This was also highlighted in the collection of data for Paper V, although it is not reflected in the paper.

Papers I and III show that opportunities to set up coordination platforms as long-term institutions for disaster risk management have not been used efficiently. Most governmental and non-governmental stakeholders highlighted coordination as a continuous process in which the government can institutionalize platforms for recovery, long-term sustainable development and disaster risk reduction. Moreover, the majority of respondents in Paper II argued that the government had to ensure consultation and participation with all stakeholders and the community in the recovery process. Dialogue and participation were seen as important elements for collaborative work and coordination.

The South African case study (Paper IV) also highlights that disaster recovery coordination is not highly prioritised and does not receive as much attention as disaster response. This case study illustrates that the Joint Operations Centre (JOC) formed during the disaster response was dissolved during the transition from response to long-term recovery and development activities. Many respondents commented that the activities undertaken during the transition from response to recovery were unplanned, random and differed according to the department responsible. Furthermore the study highlights inconsistencies in coordinating disaster recovery, which were thought to arise from departments not working in consultation with stakeholders involved in recovery activities. The majority of respondents highlighted that no coordination meetings were held at municipality level to discuss disaster recovery. Consequently, the situation where post-disaster rebuilding did not result from proper planning and coordination contributed to repeated damage from floods throughout 2006 – 2008.

Like the tsunami in India, the South African case study highlights larger structural issues. Government departments involved in disaster recovery have highly specialized roles and specific jobs. Although disaster risk management requires an integrated approach, government authorities argue that disasters are one-off events and they see disaster risk management an add-on to their routine work and responsibilities. This clearly indicates the lack of a holistic approach to disaster recovery. The study highlights that only very rarely has there been a joint evaluation of disaster recovery activities in affected regions. A joint evaluation of disaster recovery after a flood would contribute to effective coordination, as the same damage has occurred many times. Such an evaluation may also contribute to planning for a sustainable recovery agenda.

Both case studies highlight that funding and political will plays a crucial role in coordinating disaster recovery. In both cases, disaster response coordination has proved to be high on the agenda. Planning and coordination of disaster recovery has been focused on rebuilding physical infrastructure. However, these efforts have not extended to building a framework for effective recovery coordination. With the tsunami, the magnitude and scale of the disaster brought various stakeholders from inside and outside government together. However, in the long-term the government did not

continue coordination for disaster recovery. This was also seen in the dwindling and eventual disappearance of coordination structures at all levels.

The findings indicate the role of the government as a crucial aspect in recovery coordination as the government is one of the few players committed to long term activities (Papers III and IV). The government, as indicated in the findings does not reciprocate dependencies in the same way as the other stakeholders (Paper V). This is discussed in more detail in the next section. Thereby, this influenced the government in the tsunami case to function as a completely independent entity without any form of joint programs with the exception of housing reconstruction. When government agencies work without recognizing and reciprocating dependencies or do not play a key role in leading coordination, it undermines the overall results in recovery. The non-governmental stakeholders may engage less in coordination as they perceive government as the one of the more legitimate stakeholders to anchor the process (Paper V).

Interdependencies between Stakeholders

The literature shows that stakeholders do not possess all the required skills and expertise to undertake recovery activities on their own. Different stakeholders come with varying degrees of experience, expertise and knowledge. In broad terms, the papers appended to this thesis illustrate that the interdependencies between stakeholders (Paper V) and sectors (Paper II) are crucial factors in disaster recovery coordination.

The respondents in Paper V revealed that non-governmental stakeholders were highly dependent on the government, community structures and also their donors. Although there were many local and community-based organizations that continued to work after the tsunami in India, there was barely any mention of working with these organizations. Non-governmental stakeholders are highly dependent on the government for their legitimacy. According to Rinaldi et al. framework (2001) this may be categorized as a form of logical dependency.

According to the studies, government authorities are dependent on other government departments and external donors. The government is dependent on other departments for bureaucratic reasons (which may be an example of logical dependency) or for information (i.e. information dependency). The majority of respondents in Paper IV (South Africa) highlighted that government departments carried out recovery activities and rebuilt in the same way as before with no consultation and collaboration with other stakeholders. This raises crucial questions such as whether there are, in fact, any dependencies or interdependencies? Or is it enough for each stakeholder to carry out their role independent of the overall impacts?

Paper V also highlights interdependencies between stakeholders from NGOs and government departments. Most of the NGOs involved in housing reconstruction explained interdependencies in terms of the task assigned to each stakeholder (for

example, the government contributed towards the cost of the land and the NGOs built houses). Paper II explains the need for community involvement in disaster recovery and its implications for its effectiveness. Although Paper V notes the value of interdependencies between various stakeholders for coordination, the study on housing reconstruction and relocation (Paper II) highlights a lack of community involvement and consultation in disaster recovery.

Papers I and III reflect the importance of information in disaster recovery and its crucial role in assisting coordination. There are different aspects of information and knowledge networking. Gathering information, the availability of information from coordination structures, and the timely dissemination of information are seen as some key factors that contribute to effective coordination. Paper V elaborates on this point and highlights that different stakeholders depend on each other for various types of information for the various functions of disaster risk management. However, as explained earlier, the ideal form of coordination is when stakeholders cooperate and work together towards jointly programmed initiatives. Simple sharing and exchange of information that arises from interdependencies is the most basic form of coordination.

This thesis reflects on stakeholder interdependencies at an institutional level. Furthermore, as in the study described in Paper II, it highlights another form of interdependency that is important for disaster recovery. The Sustainable Livelihoods Framework (SLF 1999) places a great deal of importance on the nexus and interdependence of various forms of capital (human, social, financial, physical, and natural). However, the study reveals a difference between theory and practice. In Paper II, the approach seems to be fragmented and gives more importance to physical rebuilding and reconstruction. In order to attain sustainable disaster recovery, interdependency issues such as alternate livelihoods, and enhanced human and social capital must also be addressed (for example Oliver-Smith 1991; Blaikie et al. 2004). Therefore, Paper V categorically concludes that there are different types of dependencies between different stakeholders. This is also addressed in the section on conflicting values, where stakeholders have different perceptions about what is most important during disaster recovery. According to Becker (2009: 20), who uses a systems' approach "not acknowledging interdependencies may cause sub-optimisation problems where the desired outcome is not reached as the factor focused on and/ or the desired outcome are dependent on other factors that are ignored".

The results of disaster recovery may diminish by the lack of common goals, regardless of a gradual evolution of sector specific goals. The findings indicate that there are different types of dependencies between stakeholders. However, the definition of coordination highlights interdependencies as an integral part of the process. While organisations seek independence or work only with their own likeminded and sector related stakeholders, this may be beneficial for their own functioning as they avoid tedious bureaucracies; this undermines the overall results of recovery as stakeholders do

not collaborate or even engage in dialogue with each other. While working with stakeholders closely related to one's own sector and expertise, it may give rise to bigger problems of ignoring deeper connections between stakeholders which are beneficial for the larger recovery process. Further, by not recognizing these dependencies and managing interdependencies, as discussed above it directly impacts on articulation of common goals in recovery which has direct impacts on the effectiveness of coordination in recovery. Furthermore, as indicated in the previous factor the government of a disaster struck area is likely to have a key role in determining the extent of overall coordination. As indicated in the tsunami case, other stakeholders perceive a strong dependency on the government, e.g. in terms of legitimacy. If the government is clear in prioritising coordination, for example through advocating coordination platform and facilitating joint goals and joint programming, the other stakeholders are likely to increase their effort to coordinate with others. However, on the other hand if the government plays a more isolated role, their actions are likely to influence the other stakeholders as well.

Summary

The main findings of this thesis on factors affecting disaster recovery coordination may be summed up as follows:

- There are a variety of stakeholders who are different in terms of experience, expertise and skill. They come with different mandates and goals which may have implications for recovery coordination. There are differences in coordination between disaster response and recovery.

- The term 'coordination' means different things to different stakeholders. This affects their functioning, as there is no unified approach. Although this thesis does not advocate complete unification, and it is important to be flexible as disaster recovery is a non-linear process, there needs a shared conceptual and practical understanding of what coordination entails.

- Coordination is affected by stakeholders who have different perceptions of values. This affects coordination in a way that stakeholders may not participate in recovery activities that feed into overall goals. Recovery situations may present potential conflicts and be a competitive environment between stakeholders.

- The role of the government is a key factor that influences and/ or acts as a barrier to coordination. The level of governmental participation determines the extent and nature of coordination between all the other stakeholders. It also influences the extent of collaborative efforts between various stakeholders.

- There are different types of dependencies between stakeholders. Interdependencies between stakeholders in disaster recovery have a significant effect on coordination. This is exacerbated by interdependencies between various sectors that are crucial for disaster recovery.

6 Discussion

This world is but a canvas to our imagination -Thoreau

Coordination poses a challenge during disasters that involve a multitude of different stakeholders (Katoch 2006; Telford and Cosgrave 2007). The nature of stakeholders during response and recovery changes based on their experience and the expertise of organizations and government departments (Paper I). However, it is known that even when all these organizations have a wealth of expertise and varied experience, coordination poses huge challenges (Granot 1997). Along with the changing nature of stakeholders in response and recovery, furthermore, there is a difference in the type of information required by different stakeholders. During response, most information is related to damage and needs assessments, relief requirements, logistics, etc. and most stakeholders require similar information (Paper I). As recovery begins, information demands become more sector-specific with temporal and spatial complexity. Stakeholders need information that is relevant to their activities in specific sectors and it is important that it is made available in a timely fashion (Papers I and III). The role of the coordinating agencies in Tamil Nadu after the tsunami is a good example of information sharing in recovery.

Paper I highlights that the difference between coordination in response and recovery lies in the focus and priority given to coordinating approaches during disaster recovery. Recovery coordination efforts are modified to suit the local context, which highlights the need for various approaches. In long-term recovery, coordinating approaches involves looking at different thematic areas (such as education, livelihoods, shelter, etc.) that need attention and deciding on the intervention that suits the context best. Like the problem of handling the many different perspectives and working patterns of government and multiple organizations, approach-based coordination offers a common way to deal with similar problems (Paper I). This helps in building consensus on appropriate approaches that are in keeping with overall recovery goals.

Social Interfaces and Values

Disaster recovery is an example of a situation where there are multiple discourses (extending Long's 2001 framework). Given the multiplicity of actors involved in the process, conflicting ideas and value systems are brought together. When these systems meet, it creates a potential platform for conflict or other social processes such as negotiation, accommodation and cooperation. The conflict interfaces that emerged between the state and the community (Paper II) were found to be important in the debate about reconstruction. According to the fishing community (Paper II), the natural habitat (i.e. living close to the sea) was of primary importance. In contrast, the state was guided by the principle that it must offer protection to communities and reduce future damage. Perceptions of 'what it is important to protect' differ between these stakeholders. The state argued that physical safety could only be ensured by building new houses away from the coast. The fishing community responded that risked losing their livelihood if they moved away. These emerging interfaces may have long-term repercussions for both the state one the one hand, and the livelihood of the fishing community on the other. Similar issues were seen in Sri Lanka (Klein 2007).

Chandrashekar's (2010) study is relevant to this theme. This study identified four factors that affected stakeholder participation. They may be summed up as power, legitimacy, trust, and urgency of action. Furthermore (although not discussed in Paper II) the study highlights the issue of power between the community and state government. This was also noted by Oliver-Smith (1996: 309) as "disasters can create contexts in which power relations and arrangements can be more clearly perceived and confronted, which transforms political consciousness, shapes individual actions, and strengthens or dissolves institutional power arrangements". There are power reations between different staleholders also as identified that it affects stakeholder participation in disaster recovery (Chandrashekar 2010). This is made clear by the ongoing tension between the state and the community in debating and negotiating where reconstruction should take place. The bargaining power of the fishing community has helped them to maintain a debate that has turned into negotiations with the government. The findings of Paper II were echoed by Santha (2007: 68); although in a different setting that the conflict between the fishing community and the state is the result of threatening or contradicting "those components of culture that serve the purpose of sustaining livelihood needs". Paper II confirms Long's (2001: 70) view that "interface situations often provide the means by which individuals or groups come to define their own cultural or ideological positions vis-a-vis those espousing or typifying opposing views".

It is important to understand and analyse the social processes inherent in a community and their cultural values in the context of the external intervention. Given the plurality of actors, interfaces occur when conflicting interests and viewpoints come together. On the other hand, social processes may take the form of cooperation and accommodate

external intervention. Researchers have written about the importance of cultural values to a community, and its continuity, in post-disaster reconstruction or relocation. Post-disaster reconstruction yields better results when it takes a holistic view and incorporates the will of the people in planning and implementation (Oliver-Smith 1991). Paper II highlights the absence of community consultation and participation, the lack of involvement of the affected community in decision-making, and the lack of information about the reconstruction process, which exacerbated the problem. The immense resistance from the community came about as the result of an absence of dialogue between them and the state over a long period of time. This communication gap was exacerbated when the community was not involved in the recovery process.

There are many forms of interfaces inherent between different stakeholders. As the findings indicate, the non-governmental stakeholders are highly dependent on the government for legitimacy. This is elaborated in detail in the section on interdependencies later in this chapter. This approval for legitimacy reflects the element of power that plays out as an interface is between the government and the other stakeholders. This has also been highlighted as crucial in disaster recovery by Chandrashekar (2010) in her research on participation in disaster recovery. Although interface elements in the cases here do not present direct conflicts, disasters may present situations of conflict with new recovery programs that the government may suggest.

There are interfaces between implementing stakeholders and donor agencies with a constant negotiation for funding; project approvals; implementation and evaluation of projects. Further, interfaces between different non-governmental organisations appear with their interactions in coordination meetings; information exchange; joint collaborations if undertaken and other forums of discussion. Further, it is also highlighted that there is immense competition on the field between different organisations for funding and even for project implementation areas in the aftermath of disasters (TEC 2006; Hilhorst 2002). This relationship between organisations depicting competition may most likely be an obstacle for collaboration between stakeholders.

Stakeholders' values may be determined by their mandates aund the organisation they represent. Therefore there may be discrepancies in what different stakeholders prioritize during recovery. Coordination may therefore be affected by the varying values of stakeholders which are determined by many factors (e.g. organizational affiliations; community priorities; government policies). Discrepancies in values may highlight stakeholders not willing to engage in coordination at a larger level but to engage in discussions and coordinate only with likeminded stakeholders. This is likely to undermine inherent interdependencies in disaster recovery.

Coordination: Temporary or Long Term?

In the South African study, all the government officials who responded highlighted the lack of coordination during recovery and the importance of coordination as a requirement for effective recovery. At the same time, the different departments involved made little effort to coordinate their efforts. Papers I, III and V showed that the majority of respondents acknowledged the role of government in coordination. However, Paper III indicates that while government officials perceived coordination as playing an important role (at least initially), it did not actively take ownership of the process at all levels.

Paper IV highlights that disaster response management takes precedence over recovery, and as I have already identified, disaster recovery has not received much attention from researchers (Smith and Wenger 2006). This study also suggests that in South Africa, recovery coordination was not properly addressed, even after three consecutive years of flooding. Furthermore, Paper IV highlights that coordination was affected by the lack of communication between the various departments involved in disaster recovery. One of the reasons for this lack of communication stems from the argument that disaster recovery is not seen as a priority by any of the departments. In normal planning and development conditions, disaster risk management is not a priority. Therefore, disaster recovery reconstruction is considered to be a normal and simple procedure that does not recognize the role of other departments and the interdependencies involved.

Ideally, disaster recovery should be considered as a platform for stakeholders to develop a plan that addresses various forms of vulnerabilities (Blaikie et al. 2004) and integrate it into development planning (Van Riet 2009; Van Riet 2012). However, the lack of communication not only hampers coordination between government departments that are responsible for recovery, but is also an obstacle to mainstreaming disaster recovery into development. In a study of the effect of the tsunami on Sri Lanka and Indonesia, "the post-tsunami and recovery process implied major changes in organizational structures, the creation of new agencies and legislations for disaster management" (Birkmann et al. 2008). Similarly, in India many coordination platforms were set up for the response and recovery efforts. However, the sustainability of these new institutions, their coordination, and the involvement of stakeholders was crucial to the success of the recovery process. For effective post-disaster planning and coordination, the government must lay down the foundations for effective disaster risk reduction (UNISDR 2005).

Coordination was complicated by a general failure to institutionalise coordination structures and mechanisms and those of governmental bodies in particular. This meant that over time, constant changes in governmental structures and high staff turnover undermined any progress made in coordination. It is clear that a lot of money, time and effort were invested in creating a common knowledge base to be shared with the

actors participating in one or more coordination structures. Although as the theoretical framework suggests, this is an important factor for coordination, it is equally important to sustain these results by creating an institutional repository for long-term disaster recovery learning. There are some good examples of this, such as the NGO Coordination and Resource Centre (NCRC) in Nagapattinam, and the Kanyakumari Rehabilitation Resource Centre (KRRC) but these are unfortunately more the exception than the rule, and vast amounts of vital information have been lost or are no longer maintained, as coordination structures dwindled and died. The study also indicates that it is not only information that is lost, but vital knowledge and lessons learnt (or at least identified), i.e. knowledge and lessons that could have been used to facilitate better response and recovery in the future. It appears that after every big disaster, with excessive attention there are coordination efforts that build new coordination platforms for a short period of time. Although this truly need based, efforts to institutionalise this process as a truly collaborative one has not been done sufficiently, and no exception with the tsunami.

Interdependencies in Disaster Recovery

Paper V reflects on organizational interdependencies between stakeholders in disaster recovery. While it has been argued that recovery is a non-linear process in which activities cannot be undertaken by a single entity, there has not been much discussion of interdependencies. Paper V illustrates that stakeholders have differing dependencies and expectations and that many of them depend upon the government for legitimacy. The findings from this study indicate different types of dependencies between stakeholders in disaster recovery. First of all, it is interesting to note that dependencies in relation to issues of mandate and legitimacy were common. Others have highlighted dependence of international stakeholders on the government for legitimacy (Ossewaarde et al. 2008), especially in relation to governmental regulations (Martin 2005; TEC 2006). However, this study takes a new approach in characterizing this dependence for legitimacy as a logical dependency using the taxonomy presented in the theoretical section. Many of the non-governmental stakeholders were dependent on the government for a legitimate approval to be involved in the recovery process, and these logical dependencies are thus fundamental for the lawful participation of entire organisations. This has been indicated by Chandrashekar (2010) and Mitchell et al. (1997: 869) before us, but then in terms of legitimacy as such and not as logical dependencies. However, we think that framing such issues of legitimacy as logical dependencies is helpful to grasp and improve coordination between stakeholders in complex post-disaster settings, as it facilitates comparison of the different dependencies that make up the interdependencies that must be managed through coordination to

achieve goals. However, governmental dependencies tend to be focused on internal bureaucracy and the departments that undertake different recovery tasks.

Dependencies may relate to logical dependencies (Rinaldi et al. 2001). Although Paper V highlights dependencies, there is not much evidence of collaborative efforts between stakeholders. Information-sharing was a key coordination issue in most of the tsunami-related reports. For example, the government of Tamil Nadu report (2008:2) acknowledged the role of different coordination platforms as they "helped by regularly disseminating government policies, programmes and orders achieving a two-way flow of information from district to state and from state to district". Paper V highlights a clear interdependency between the government and other stakeholders regarding information, which may be seen as an example of an information dependency (Rinaldi et al. 2001). This study also highlights physical dependencies in the housing sector as there is a flow of material goods and services in the construction of permanent houses. This is consistent with the view of Perrow (2007) as according to stakeholders, there are more dependencies than interdependencies.

Van Scotter et al. (2012: 283) highlight that the literature on coordination consists of two main currents of thought. One tends towards the command and control approach (this is not the focus of this thesis), and the other is a "more networked view of coordination as the interaction of interdependent actors outside of traditional hierarchical structures" (e.g. O'Toole 1997; Agranoff 2006; Wise 2006; Comfort 2001). Post-disaster coordination must take cognizance of the fact that disasters vary in their geographical extent, impact, scale and manageability. Disaster recovery is not a linear function (Smith 2004) and cannot be undertaken as an independent activity by one department or as independent activities by many departments. Paper II indicates that during the recovery process connections are not made between issues of culture, livelihoods, and physical infrastructure. In this case, as Alesch (2005) writes, "intervention based on absence of understanding, no matter how well-intentioned, will have unexpected and unpredictable consequences".

The definitions given in the theoretical framework highlight that when multiple stakeholders work in a common environment (in this case disaster recovery) with interdependent factors, it is important to have common goals. Furthermore, Van Scotter et al. (2012: 285) note that, "interdependence requires acceptance of common goals, use of standardised procedures and language, and constant communication among specialized individuals/teams". Coordination seemed to have a significant positive impact during the tsunami, and agencies were created with this as their mandate (Masyrafah and Mc Keon 2008). Although the establishment of coordination platforms aimed to create these linkages, they have dwindled over time. This can be attributed to the lack of a common goal: as Fawcett and Daugbjerg (2012:199) note, a policy community is only established when there is a shared agenda and its members are "dependent on others to achieve their aims". It may be inferred indirectly from the

post-tsunami studies (Papers III and V) that an opportunity was missed to create a regional- and national-level policy community for disaster risk management. This does not discount the fact that a network and linkages between stakeholders was established: Long's (2001: 69) framework argues that "the interface itself becomes an organized entity of inter-locking relationships". However, a conversation with a government official following the tsunami was revealing. When asked what happens if another disaster occurred, the official answered, "we may have to re-invent the wheel".

What is Coordination?

The definition of coordination given in the theoretical framework is that it is "the act of managing interdependencies between activities performed to achieve a goal" (Malone and Crowston 1990: 361). The two elements that clearly define coordination are interdependencies and goals. It is worth mentioning again that coordination means different things to different stakeholders (Paper III). Although Paper III identifies other key aspects of coordination, such as promoting neglected issues and prioritising resources, this study indicates a more or less complete focus on information sharing, little attention is given to actual collaboration or joint planning and programs. In other words, although coordination is deemed to be vital, it is limited to the most basic activities. The literature suggests that the best form of coordination leads to joint and collaborative efforts (IFRC 2000) and it has been argued that "collaboration occurs over time as organisations interact formally and informally through repetitive sequences of negotiation, development of commitments, and execution of those commitments" (Thomson and Perry 2006: 21). However, the empirical studies described in this thesis show that there is a decline in coordination over time and that it does not lead to collaboration. Furthermore as Papers III and V highlight, coordination structures and the process of coordination itself do not emphasise a common goal [referred to by Thomson and Perry (2006) as 'commitments'].

The empirical studies in this thesis indicate that respondents share the view that there is a need to coordinate disaster recovery, although it is expressed in various ways. This is perhaps not surprising given the immense focus on coordination and its challenges in current disaster risk management discourse. Papers III and IV highlight that the massive magnitude of the 2004 tsunami, as well as experience of past disasters contributed to the consensus that coordination was key to the effectiveness of ensuing operations, especially as the number and variety of actors skyrocketed. It is also interesting to note that coordination started to dwindle as soon as immediate needs were met and the focus shifted towards recovery. Paper III indicates that housing issues were almost the only focus of subsequent recovery coordination meetings. There may be different reasons for this (e.g. housing is a tangible and costly sector) but the

consequences for coordination were significant. Actors stopped attending coordination meetings, funding for coordination declined, and coordination structures were shut down. Nevertheless, it seems that actors that were embedded into the local context, and had a long-term local presence were more likely to continue to take an active part in coordination.

In the wake of the tsunami, coordination was complicated by a plethora of coordination structures. Although not discussed in the study, a comparison with the theoretical framework given earlier makes it clear that parallel coordination structures at the same administrative level undermine its effectiveness. Therefore, it is clear from both the South African and the tsunami case studies that managing interdependencies in order to achieve common goals was not the primary focus of coordination. They highlight the results of working in departmental 'silos': in the South African case, a lack of interaction with civil society; and in India, more dependencies than interdependencies, and a clear emphasis on simple information sharing between stakeholders. "Aligning one's actions with those of other relevant actors and organisations to achieve a shared goal" (Comfort 2007:194) entails having a shared goal and a common interface for communication. The harmonization of the activities of diverse actors (McEntire 2007) requires a common platform for dialogue and action, which is limited when there are parallel platforms that lack sophisticated links between them. However, it is interesting to note that it was difficult to establish common goals not only between coordination structures, but also within each structure. Given that not only interdependencies but also goals are crucial elements to the definition of coordination, it appears that managing interdependencies is influenced by the goals stakeholders adopt for disaster recovery. Stakeholders seem to establish goals that are very specific to their organizational mandates and only in relation to their expertise in different sectors. This may be a possible reason for not acknowledging interdependencies between different stakeholders, thereby reducing the need for collaborations and joint programming which is suggested as a deeper form of coordination.

Research Generalisability

It is crucial that issues of generalisability are addressed in discussing validity, although Flyvbjerg (2001: 76) highlights that studies "without any attempt to generalize can certainly be of value" in research. This thesis acknowledges that knowledge developed in one case cannot be completely generalized; nevertheless, it may be possible to make analytical generalizations (ibid.). Guba and Lincoln (1989: 241) express generalizability as "transferability". As discussed in Chapter 4 (methodology), it may be possible to arrive at broader conclusions by clearly accounting for contextual factors (Patton and Applebaum 2003). As the emphasis on coordination grows, there is a need for further

research in order to arrive at broader, generalized conclusions. In this case, the factors identified as affecting recovery coordination may have wider applicability to other disasters.

The involvement of a wide variety of stakeholders in disaster recovery from the tsunami case is not a novel finding, but this thesis contributes to extending coordination from more response oriented to coordinating approaches in disaster recovery. It is evident that stakeholders come with a certain expertise and experience. In mega disasters like the tsunami which affected many regions in Asia or for example, the Haiti disaster of 2010, recovery involves planning and envisaging rebuilding and addressing complex issues in a holistic manner. In order to be able to address the complex issues in disaster recovery, it is most likely that adopting common approaches in a particular context may be beneficial for disaster recovery.

The empirical findings in this thesis highlight that the term 'coordination' meant different things to different stakeholders. Since there are fewer guidelines for disaster recovery compared to disaster response (which is discussed in the next section), it is more likely that different stakeholders perceive coordination differently compared to how they perceive it during immediate response. Also, the empirical data from the Tsunami (Paper III) also shows that there were many opinions among the stakeholders involved in recovery activities concerning what the term actually mean. The tsunami is not a unique event with respect to the multitude of stakeholders involved and the relatively unclear guidelines for disaster recovery. Therefore, it is likely that coordination is perceived differently in other disasters as well. It may probably be the case that coordination is primarily focuses on information sharing and networking, while stakeholders continue to carry out different activities independently without acknowledging their role in collaborating for the larger recovery goal.

The case of the tsunami highlights that stakeholders have a wide variety of values. Given that these stakeholders represent different organisations, they are most likely to carry the bag of values of what they perceive to be most important and prioritise activities based on their mandates (Papers II, III and IV). These set of values are likely to determine the focus of recovery activities in other disaster recovery settings. In such situations, there is a high probability that different interfaces occur between different stakeholders (e.g. between communities and government; between different organisations; between organisations and the government). This is due to differing power relationships; working mandates; priorities of different actors; funding available etc.

The case studies from India and South Africa highlight a key role of the government in recovery coordination. When government agencies function independently without recognising expertise of the non-governmental stakeholders (Paper IV), there are more chances that, resources and capacities of stakeholders is not effectively utilised for recovery coordination. It is very evident that the role of the government is crucial for

effectiveness in disaster recovery (Papers III, IV and V). It is highly likely that most of the actors involved in disasters across may perceive the government as the main working partner responsible for many factors in disaster recovery. The affected communities in any disaster may also consider that recovery is the mandate of the government at all levels as it is one of the most prominent players committed to long term activities. Furthermore, the role of the government in taking a lead role in coordination is most likely to determine the interest of the other stakeholders to collaborate with others.

The findings in this thesis indicate that there are different types of dependencies between stakeholders involved in the tsunami recovery. Also the strength of these dependencies varies. It is most likely that different disaster settings will have different types of qualitative and quantitative dependencies between stakeholders. Although the type of dependencies may not exactly be the same in all settings, it may be possible to extend this argument that there may be different types of dependencies in disaster recovery settings across. Taking the finding on legitimacy as a form of logical dependency, theoretically, we may argue that the non-governmental stakeholders and more specifically the international community may be highly dependent on the government in many countries to get permission to involve in recovery or any related activity. However, this may vary across settings as a stronger state may impose more limitations and regulations on these stakeholders to obtain legitimacy. In countries where the government may be politically weak and economically highly aid dependent, the legitimacy argument may be more of a principle on paper and the international community takes over more activities by playing a prominent role. This is elaborated in Paper V.

Goals and lack of articulation of common goals is identified as a key factor affecting recovery coordination post-tsunami in India. This is also indirectly hinted in from the South Africa case study. However, it is most likely that articulation of common goals may continue to be a challenge as it is closely linked with interdependencies. Further, the lack of common goals highlights an inclination towards achieving more independent sector-related or organisational goals. Furthermore, there may be a clash of goals as traditionally recovery is seen as a physical linear rebuilding activity versus the more holistic approach that is required (i.e. a clash of approaches). Differences in parlance between the international community and the government (Paper III) may also be a possible reason for lack of common goals. One such example is where government institutions continue to adopt a more phase oriented approach to disaster risk management and use the word rehabilitation as a synonym for recovery.

Recovery Coordination: A Governance Issue?

Experts in disaster risk management, who are active in the international arena, explain that there are fewer guidelines for disaster recovery when compared to response. Some examples of response guidelines are the cluster approach, and the Inter Agency Standing Committee Guidelines for natural disasters and the Humanitarian Charter and Minimum Standards in Humanitarian Response (the SPHERE standards). The cluster approach is a recent development in the global arena. It began in 2005 and addresses sectoral coordination "as a means to strengthen predictability, response capacity, coordination and accountability by strengthening partnerships in key sectors of humanitarian response, and by formalising the lead role of particular agencies/organisations in each of these sectors" (Stoddard et al. 2007: 1). Although evaluations of the cluster approach (e.g. Stoddard et al. 2007; Steets et al. 2010) highlight the scope for improvement, it is a huge step forward in establishing a global humanitarian response. However, the problem with recovery is the lack of established guidelines. The few documents that are available are very vague guidelines set out by the United Nations Development Programme (UNDP). After the tsunami, the UN agencies launched the idea of a single program to combine all UN forces in India between 2005 and 2008. Similar efforts were seen in other affected Asian countries. However, there was a clear problem in operationalizsing the idea. Papers III and V highlight the very limited efforts made in joint programming.

There is a growing need to address issues of disaster recovery governance (Djalante 2012; Renn 2008; Fung 2006; Ikeda et al. 2008; IGRP 2010). From my analysis and during my research, it appears that coordination may be approached as a governance problem that needs to be investigated in more detail. Governance has many definitions, which have been contested. It is not the same as government (Jordan 2008; Lemos and Agarwal 2006) as it encompasses all stakeholders and should "cover the whole range of institutions and relationships" (Pierre and Peters 2000: 1). Coordination is certainly an important issue, along with control, accountability and political power (Flinders 2002: 70). The findings from papers III and IV also have reflected this. However, extending these arguments to disaster recovery, there have been very few, scattered efforts to develop recovery governance (Tierney and Oliver-Smith 2012). Governance also takes into account the factors discussed above such as power, interdependence, autonomous functioning, and a complex set of actors (Stoker 1998). Paper V deals with these issues of interdependencies and goals in disaster recovery which may be directly linked to governance issues.

I reviewed fifteen documents and reports from organisations involved in tsunami recovery in various Asian countries. A quick review of these post-tsunami evaluations highlights that recovery approaches differ in the affected countries. This thesis does not advocate universal recovery guidelines, as recovery is based on local conditions and

socio-cultural, economic and political factors. Although recovery processes are highly context-dependent, the question arises of what may be learned from these different approaches? Duyne Barenstein (2010: 173) shows that "policy-making processes, practices and outcomes depend on a number of contextual factors" including the relationships between stakeholders and their previous disaster experience. For example, in India there were many coordination structures at different levels. This point was examined in detail in Paper II. For example, in Indonesia the government required agencies with a four-year mandate to coordinate their activities. However, it was clear that during recovery, coordinating agencies were more involved in the implementation of activities than coordination as a task in itself (Masyrafah and McKeon 2008). Many reports highlighted the need for greater stakeholder participation. For example, Oxfam's second year evaluation highlighted that "there needs to be an increased focus on working with others: with governments and other humanitarian organisations and communities, who are usually the first to deliver assistance" (Oxfam 2006: 38).

"Every post-disaster recovery manifests tension between speed and deliberation" (Olshansky 2006: 148). For example, post-tsunami reports suggested that affected communities measured speed by the time it took to construct permanent housing. Along with speed, it is essential to bring all stakeholders on board and address issues of holistic planning, interdependencies (Paper V), community participation (Paper II), goals (Paper V) and other related factors. This may create the tension that Olshansky (ibid.) refers to. Also, a conversation with one of the major players in post-tsunami coordination in Tamil Nadu highlighted that "social processes takes time, deliberations take time". According to this professional, the coordination platform can facilitate the deliberation of issues in this process. In 2010 UNDP held several workshops in South America on disaster recovery; their report highlights that "consideration of post-disaster recovery processes above and beyond the reconstruction of infrastructure was new for most participants; the notion of planning recovery measures before any disaster struck, was even more challenging" (UNDP 2010: 10).

The literature highlights that coordination is a problem; however, there has not been many efforts to address the question of why coordination is a challenge in recovery. This raises the need for a debate on disaster governance in order to explore coordination as a challenge and address the practical realities.

To sum up, coordination in disaster recovery requires the engagement of stakeholders across sectors, disciplines, and governmental and non-governmental organisations. This thesis has raised important issues for governmental and non-governmental stakeholders in relation to goals, mandates, autonomy, adopting common recovery approaches and the importance of learning from disasters. Furthermore, this thesis reiterates that coordination goes beyond information-sharing and the exchange of ideas. Collaborative efforts that acknowledge interdependencies are highlighted as a key area in recovery coordination (Papers III, IV and V).

Reflections on the Research Process

Traditionally, the quality of research processes has been evaluated by their reliability and validity. Robson (2002) and others (e.g. Guba and Lincoln 1989) highlight the problem of operationalising these concepts in qualitative research. It is however important to address these issues to ensure research quality. Guba and Lincoln (1989:233) use the term "trustworthiness" of the research to evaluate research quality. This includes credibility, transferability, dependability and confirmability (Guba and Lincoln 1989; Creswell 2013). It may be argued that issues of reliability and validity in qualitative research can be addressed by a transparent research process, keeping detailed notes, interview notes, and careful transcriptions and coding of data (Creswell 2013). Further, it is argued that prolonged engagement in the field contributes to validity along with triangulation of data sources (Flick 2006; Guba and Lincoln 1989; Creswell 2013).

Field notes helped a lot in keeping track of interviews and important details that were later used during analysis. In all the papers, all the interviews and focus group discussions were transcribed in detail very carefully. The interviews were heard many times to ensure the analyses are in relation to what the data sources reveal. I was active with field work in Tamil Nadu over different time periods from 2008 to 2012. Everytime I went to Tamil Nadu for data collection, it was a good debriefing exercise with the respondents about interviews and previous studies conducted earlier. This may be called "communicative validation" where the aim is to "involve the actors in the research process a little further" (Flick 2006:372). This was beneficial as some of the respondents were interviewed more than once during these four years. The interviews were discussed with many different stakeholders representing different organisations. In South Africa, the co-author of paper IV has actively conducted research in the region. This helped to ensure that respondents were representative of all the regions in the Eden District Municipality. Peer review is another way to ensure research quality (Creswell 2013). My research includes three peer-reviewed journal articles. Finally, debriefing sessions with respondents, together with discussions with university colleagues have helped to ensure clarity and transparency. Issues of generalisability have already been discussed in the previous sections.

Ideas for Future Research

There is great need for research on recovery guidelines although it is crucial to take contextual factors into account. My literature review and research for this thesis identified that there is very little common ground in the international arena on this issue. Research on coordination and the role played by the institutions that are formed post-disaster to help with recovery may add value to my findings. Comparison with other disaster settings may help to draw more generalized results. Other normative questions arise when talking about coordination. Is it possible to arrive at common goals and to what extent can organizsations go beyond their specific mandates in a disaster situation?

This thesis is a small attempt to bridge the knowledge gap in disaster recovery coordination. However, it generated many unanswered questions and new thoughts arose. While coordination poses huge challenges in recovery, at a broader level it can also be seen as a governance problem. It may be useful to identify elements in coordination studies that are more widely applicable to governance – both in theory and practice.

Recovery is not an independent process; it is associated with other issues such as disaster risk reduction and development planning. In this regard, it may be useful to study the outcome of recovery goals when they are linked to other sectors, and the challenges of coordinating such approaches.

7 Conclusions

… And miles to go before I sleep. - Robert Frost

The aim of this thesis was to explore factors affecting disaster recovery coordination. This is done with the help of two cases which may have implications for other disaster settings. The main conclusions of the thesis are as follows:

- Disaster recovery presents different set of characteristics in comparison to disaster response. Although the boundaries between response and recovery are not clear, the nature of coordination changes. Organizsations use a variety of strategies depending on their field of knowledge and expertise. In disaster response, the primary focus of coordination is logistics, whereas in disaster recovery it is the coordination of tailor-made strategies that are suited to a particular context which is referred to as 'approach-oriented' coordination.

- The number and complexity of actors involved in disaster recovery means that stakeholders are bound to have different values. Different forms of social interfaces occur with differences in stakeholders' values. These may be interfaces of conflict, negotiation, or may take a different form. Consequently, it is important to recognize different values in order to achieve common goals. It is crucial that values and social interfaces are more explicitly discussed between stakeholders for effective recovery.

- The studies presented in this thesis identify that coordination tends to be primarily associated with information sharing. Unfortunately, not all this information is freely available at the regional level, and it is crucial that these mechanisms are institutionalized if they are to contribute to long-term recovery.Although information sharing is an important part of the process, coordination only becomes truly effective when it moves more towards collaborative efforts.

- In both the case studies presented in this thesis (the Indian Ocean tsunami and the South African floods), the level of coordination dwindled during recovery. Although governments and other organizations make a huge effort to initiate coordination platforms after disasters, there have been very few attempts to institutionalise the same.

- It is clear that there are different dependencies between stakeholders in disaster recovery. Given that interdependencies and common goals are prerequisites for coordination, weak organizational interdependencies and the lack of clearly articulated common goals contribute to a decline in disaster recovery coordination.

References

Agranoff, R., 2006. "Collaborative Management Inside Collaborative Networks : Ten Lessons for Public Managers". *Public Administration Review*, 66, pp.56–65.

Alam, K., F. Nureen, and W. Bashar. 2008. Gender, Climate Change and Human Security in Bangladesh. Dhaka.

Alberts, D. S., Huber, R. K., & Moffat, J. 2010. NATO NEC C2 maturity model. Washington DC: CCRP Publications.

Alesch, D.J. 2005. "Complex urban systems and extreme events: towards a theory of disaster recovery". 1st International Conference of Urban Disaster Reduction. Kobe, Japan.

Alexander, D. 2002. *Principles of Emergency Planning and Management,* Oxford:Oxford University Press

Aubrey, D. 2010. "Kenya: Can temporary shelter contribute to participatory reconstruction?" Pp. 215–40 in *Building Back Better: Delivering People-Centred Reconstruction to Scale*, edited by M Lyons, T Schilderman, and C Boano. London: Practical Action Pub.

Balcik, B. et al., 2010. "Coordination in humanitarian relief chains: Practices, challenges and opportunities". *International Journal of Production Economics*, 126(1), pp.22–34.

Bates, F.L. & Peacock, W.G., 1989. "Long Term Recovery". *International Journal of Emergency Management*, 7(3), pp.349–365.

Becker, P., 2009. "Grasping the hydra: the need for a holistic and systematic approach to disaster risk reduction". *JÀMBÁ: Journal of Disaster Risk Studies*, 2(1), pp.1–13.

Becker, P., 2012. "The importance of integrating multiple administrative levels in capacity assessment for disaster risk reduction and climate change adaptation". *Disaster Prevention and Management*, 21(2), pp.226–233.

Becker, P. & Tehler, H., 2013. "Constructing a common holistic description of what is valuable and important to protect: A possible requisite for disaster risk management". *International Journal of Disaster Risk Reduction*, pp.1–10.

Bennett, et al., 2006. "Coordination of International Humanitarian Assistance in Tsunami-affected Countries". London:Tsunami Evaluation Coalition.

Berke, P.R., Kartez, J. & Wenger, D., 1993. "Recovery after disaster: achieving sustainable development, mitigation and equity". *Disasters*, 17(2), pp.93–109.

Berke, P.R. & Campanella, T.J., 2006. "Planning for Postdisaster Resiliency". *The ANNALS of the American Academy of Political and Social Science*, 604, pp.192–207.

Berman, E.M. & Korosec, R.., 2005. "Planning to Coordinate and Coordinating the Plan: Evidence From Local Governments". *The American Review of Public Administration*, 35(4), pp.380–401.

Birkmann, J. et al., 2008. "Extreme events and disasters: a window of opportunity for change? Analysis of organizational, institutional and political changes, formal and informal responses after mega-disasters". *Natural Hazards*, 55(3), pp.637–655.

Blaikie, Norman. 2000. *Designing Social Research.* Cambridge: Polity Press.

Blaikie, P., T. Cannon, I. Davis, and B. Wisner. 2004. *At Risk: natural hazards, people's vulnerability and disasters*. London: Routledge.

Boin, A et al. 2005. *The Politics of Crisis Management- Public Leadership Under Pressure*. Cambridge: Cambridge University Press.

Boin, A., 2009. "Introduction to the Special Issue The New World of Crises and Crisis Management : Implications for Policymaking and Research". *Review of Policy Research*, 26(4), pp.367–377.

Bouckaert, G., B. Peters, and K. Verhoest. 2010. *The coordination of public sector organizations—shifting patterns of public management*. London: Palgrave Macmillan.

BRR. 2009. "10 Management Lessons for Host Governments Coordination Post-Disaster Reconstruction". Indonesia:BRR.

Bryman, Allan. 2001. *Social Research Methods*. Fourth Edi. Oxford: Oxford university Press.

Chandrasekhar, D. 2007. "Managing development after catastrophic disaster (Observations from New Orleans and Aceh, Indonesia)", presented at the Annual Conference of the Association of Collegiate Schools of Planning (ACSP), Milwaukee WI.

Chandrasekhar, Divya. 2010. "Understanding Stakeholder Participation in Post-Disaster Recovery." PhD Thesis, University of Illinois at Urbana-Champaign.

Charmaz, K. 2006. *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. London: Sage.

Chatterjee, A., Gupta, D. & Jain, N., 2010. "Coordination of Disaster Response : Potential and Challenges from Indian Experiences". RedR India

Christoplos, I. et al., 2010. "Learning from recovery after Hurricane Mitch". *Disasters*, 34(S2), pp.202–219.

Comfort, L.K. et al., 2001. "Complex Systems in Crisis :Anticipation and Resilience in Dynamic Environments". *Journal of Contingencies and Crisis Management*, 9(3), pp.144–158.

Comfort, L.K. et al., 2004. "Coordination in complex systems: increasing efficiency in disaster mitigation and response". *International Journal of Emergency Management*, 2(1/2), pp.295-313.

Comfort, L.K.. 2007. "Crisis Management in Hindsight: Cognition, Communication, Coordination, and Control". *Public Administration Review, Special Issue, Administrative Failure in the Wake of Katrina,* December. Pp. S188-S196.

Corbin, J.M., and Strauss, A. 1990. "Grounded theory research: Procedures, canons, and evaluative criteria." Qualitative Sociology 13(1):3–21.

Creswell, J. W. 2007. *Qualitative inquiry and research design: Choosing among five traditions* (2nd Ed). Thousand Oaks and London, CA: Sage.

Cresswell, J.W. 2013. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches.* Thousand Oaks and London: Sage Publications.

da Silva, J. & Batchelor, V. (2010). "Indonesia: Understanding agency policy in a national context". In M. Lyons, T. Schilderman, & C. Boano (Eds.), *Building back better.* (pp. 135-61). London: Practical Action Publishing.

Djalante, R., 2012. Review Article: "Adaptive governance and resilience: the role of multi-stakeholder platforms in disaster risk reduction." *Natural Hazards and Earth System Science*, 12(9), pp.2923–2942.

Drabek, T. and McEntire, D., 2002. "Emergent Phenomena and Multiorganisational Coordination in Disasters: Lessons from the Research Literature". *International Journal of Mass Emergencies and Disasters*, 20(2), pp.197–224.

Drabek, T.E. and McEntire, D., 2003. "Emergent phenomena and the sociology of disaster: lessons, trends and opportunities from the research literature". *Disaster Prevention and Management*, 12(2), pp.97–112.

Duxbury, J. & Dickinson, S., 2007. "Principles for sustainable governance of the coastal zone: In the context of coastal disasters". *Ecological Economics*, 63(2-3), pp.319–330.

Duyne Barenstein, J. 2010. "Who governs reconstruction? Changes and continuity in policies, practices and outcomes." Pp. 149–76 in *Rebuilding after Disasters From emergency to sustainability*, edited by C Lizarralde, G Johnson, and C Davidson. London: Taylor and Francis.

Duyne Barenstein, J., and S. Iyengar. 2010. "From a culture of housing to a philosophy of reconstruction." Pp. 163–88 in *Building Back Better: Delivering People-Centred Reconstruction to Scale*, edited by M Lyons and T Schilderman. Rugby: Practical Action Publication.

Dynes, R. R., and E. L. Quarantelli. 1989. "Reconstruction in the Context of Recovery: Thoughts on the Alaskan earthquake." Preliminary paper 141, Disaster Research Centre, University of Delaware

Fawcett, P. & Daugbjerg, C., 2012. "Explaining Governance Outcomes: Epistemology, Network Governance and Policy Network Analysis". *Political Studies Review*, 10(2), pp.195–207.

Flick, U. 2006. *An Introduction to Qualitative Research*. London: Sage.

Flinders, M., 2002. "Governanace in Whitehall". *Public administration*, 80(1), pp.51–75.

Flyvbjerg, B. 2001. *Making social science matter: why social inquiry fails and how it can succeed again.* Cambridge: Cambridge University Press.

Fung, A., 2006. "Varieties of Participation in Complex Governance". *Public Administration Review*, 66, pp.66–75.

Handmer, J., and S. Dovers. 2007. *Handbook of disaster and emergency policies and institutions*. London: EarthScan.

Gopalakrishnan, C. & Okada, N., 2007. "Designing new institutions for implementing integrated disaster risk management : key elements and future directions". *Disasters*, 31(4), pp.353–372.

Gouws, C. et al. 2005. "The floods of December 2004–January 2005 in the Garden Route region of the Southern Cape". North-West University, Vanderbijl Campus, South Africa

Govt. of Tamil Nadu. 2008. *Tiding over the tsunami.* Chennai: Govt. of Tamil Nadu.

Granot, H., 1997. "Emergency inter-organizational relationships". *Disaster Prevention and Management*, 6(5), pp.305–310.

Greenwood, D., and M. Levin. 2007. *Introduction to Action Research: Social Research for Social Change.* Thousand Oaks and London: Sage Publications.

Groupe URD. 2011. *Beyond emergency relief in Haiti.* Paris: Groupe URD.

Gryszkiewicz, A. and Chen, F. 2010. "Design requirements for information sharing in a crisis management command and control centre". In *Proceedings of the 7th international ISCRAM conference,* Seattle, USA.

Guba, E. G., and Y. S. Lincoln. 1989. *Fourth Generation Evaluation*. California, USA: Sage Publications.

Guha-sapir, D., Hoyois, P. & Below, R., 2012. "Statistical Review 2012 Annual Disaster Statistical Review 2012 The numbers and trends" EM-DAT.

Hage, J., Aiken, M. & Marrett, C.B., 1971. "Organization Structure and Communications". *American Sociological Review*, 36(5), pp.860–871.

Holloway, A., Fortune, G., and Chasi. V. 2010. *RADAR: Western Cape, 2010: risk and development annual review*. South Africa: PeriPeri Publications.

IFRC. 2000. *Improving coordination (Disaster preparedness training programme)*. Geneva: IFRC.

IGRP. 2010. "Integrated Risk Governance Project." , http://www.irg-project. org/

Ikeda, S., Sato, T. & Fukuzono, T., 2008. "Towards an integrated management framework for emerging disaster risks in Japan". *Natural Hazards*, 44(2), pp.267–280.

International Recovery Platform (IRP). 2007. Learning from Disaster Recovery: Guidance for Decision Makers, Available at http://www.unisdr.org/eng/about_isdr/isdr-publications/irp/Learning-From-Disaster-Recovery.pdf.

IRP. 2010. *Guidance Note on Recovery- Infrastructure*. Japan: IRP Secreatariat.

Johnson, L.A. & Hayashi, H., 2012. "Synthesis efforts in Disaster Recovery Research". *International Journal of Mass Emergencies and Disasters*, 30(2), pp.212–239.

Johnson, L.A. & Olshansky, R.B., 2013. "The Road to Recovery: Governing Post-Disaster Reconstruction". *Land Lines*, 25(3), pp.14–21.

Jordan, A. 2008. "The governance of sustainable development: taking stock and looking forwards." *Environment and Planning C: Government and Policy* 26(1):17–22.

Katoch, A., 2006. "The Responders' Cauldron: The Uniqueness of International Disaster Response". *Journal of International Affairs*, 59(2), pp.153–172.

Kettl, D.F., 2008. "Contingent coordination: practical and theoretical puzzles for homeland security". In A. Boin, ed. *Crisis Management*. London and Thousand Oaks: Sage Publications, pp. 348–370.

Kilby, P., 2008. "The strength of networks : the local NGO response to the tsunami in India". *Disasters*, 32(1), pp.120–130.

Klein, G. 2001. "Features of team coordination." Pp. 68–95 in *New trends in cooperative activities*, edited by M. McNeese, M. R. Endsley, and E. Salas. Santa Monica, CA: HFES.

Klein, N. 2008. *The Shock Doctrine: The Rise of Disaster Capitalism*. Canada: Knopf Canada.

Koria, M., 2009. "Managing for innovation in large and complex recovery programmes: Tsunami lessons from Sri Lanka". *International Journal of Project Management*, 27(2), pp.123–130.

Kory, D. 1998. "Coordinating Intergovernmental Policies on Emergency Management in a Multi-Centered Metropolis." *International Journal of Mass Emergencies and Disasters* 16(1):45–54.]

Kruke, B. I. & Olsen, O. E. 2005. "Reliability-seeking networks in complex emergencies" *Int. J. Emergency Management* 2(4):275–91.

Kulatunga, U. 2011. "Project management of disaster reconstruction". In D. Amaratunga & R. Haigh (Eds.), *Post-Disaster reconstruction of the built environment: Rebuilding for resilience.* (pp. 133-50). Chichester: Wiley-Blackwell.

Labadie, J.R., 2008. "Auditing of post-disaster recovery and reconstruction activities". *Disaster Prevention and Management*, 17(5), pp.575–586.

Lemos, M., and A. Agarwal. 2006. "Environmental Governance." *Annual Review of Environment and Resources* 31:297–325.

Logsdon, J.M., 1991. "Interests and Interdependence in the Formation of Social Problem-Solving Collaborations". *The Journal of Applied Behavioral Science*, 27(1), pp.23–37.

Llyod-Jones, T. 2006. "Mind the Gap! Post-disaster reconstruction and the transition from humanitarian relief", A report produced for RICS by the Max Lock Centre at the University of Westminster.

Malone, T.W., Crowstone, K. 1990. "What is coordination theory and how can it help design cooperative work systems",Proceedings of the Conference on computer supported cooperative work, Los Angeles. available at: http://dspace.mit.edu/handle/1721.1/2396.

Malone, T.W. & Crowston, K., 1994. "The interdisciplinary study of coordination". *ACM Computing Surveys*, 26(1), pp.87–119.

Martin M. 2005. "A voice for the vulnerable groups in Tamil Nadu" *Forced Migration Review, Tsunami: Learning From the Humanitarian Response (special issue),* pp.44-45.

Masyrafah, Harry, and Jock M. J. A. Mckeon. 2008. "Post-Tsunami Aid Effectiveness In Aceh." USA: Wolfensohn Centre for Development.

Menon, V. 2007. In the Proceedings of the International Forum on Tsunami and Earthquake International Symposium, pp.47-54. Kobe, Japan,

Mitchell, R.K., Agle, B.R. and Wood, D.J., 1997. "Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts". *Academy of Management Review*, 22(4), pp.853–886.

Moore, S., Eng, E. and Daniel, M., 2003. "International NGOs and the role of network centrality in humanitarian aid operations: a case study of coordination during the 2000 Mozambique floods". *Disasters*, 27(4), pp.305–18.

Mulligan, M., and Y. Nadarajah. 2012. *Rebuilding communities after disasters: Lessons from the tsunami disaster in Sri Lanka and India*. New Delhi: Routledge.

Neal, D.M. & Phillips, B.D., 1995. "Effective emergency management: reconsidering the bureaucratic approach". *Disasters*, 19(4), pp.327–37.

Nigg, J.M. 1995. "Disaster Recovery as a Social Process". Working Paper, Disaster Research Centre, University of Delaware

Nolte, I.M., Martin, E.C. & Boenigk, S., 2012. "Cross-Sectoral Coordination of Disaster Relief". *Public Management Review*, 14(6), pp.707–730.

NRC (2008). Coordination. In *Camp management toolkit.* (pp. 107-36). Oslo: NRC.

Oliver-Smith, A., 1991. "Successes and Failures in Post-Disaster Resettlement". *Disasters*, 15(1), pp.12–23.

Oliver-Smith, A., 1996. "Anthropological Research on Hazards and Disasters". *Annual Review of Anthropology*, 25(1), pp.303–328.

Olshansky, R.B., 2006. "Planning After Hurricane Katrina". *Journal of the American Planning Association*, 72(2), pp.147–153.

Olshansky, R.B., Hopkins, L.D. & Johnson, L. 2012. "Disaster and Recovery: Processes Compressed in Time". *Natural Hazards Review*, 13(3), pp.173–178.

Ossewaarde, R., Nijhof, A., and Heyse, L. 2008. "Dynamics of NGO Legitimacy: Representation and Legitimacy How Organizing Betrays Core Missions of INGOs". *Public Administration and Development,* 28:42-53.

O'Toole, L., 1997. "Treating networks seriously: practical and research-based agendas in public administration". *Public Administration Review*, 57(1), pp.45–52.

Oxfam International. 2009. *Collaboration in crises : Lessons in community participation from the Oxfam International tsunami research program*, UK: Oxfam.

Oxfam International. 2006. *Oxfam International Tsunami Fund: Second year report.* UK: Oxfam

Patton, M. Q. 2002. *Qualitative research & evaluation methods*. Thousand Oaks: Sage.

Patton, Eric, and Steven H. Appelbaum. 2003. "The Case for Case Studies in Management Research." *Management Research News* 26(5):60–71.

Perrow, Charles. 2007. "Disasters Ever More? Reducing US Vulnerabilities." Pp. 521–33 in *Handbook of Disaster Research*, edited by H Rodriguez, E L Quarantelli, and R R Dynes. New York: Springer.

Pierre, J., and B. G. Peters. 2000. *Governance, Politics and the State*. New York: Palgrave Macmillan.

Pomeroy, R.S. et al., 2006. "Coping with disaster: Rehabilitating coastal livelihoods and communities". *Marine Policy*, 30(6), pp.786–793.

Quarantelli, E.L., 1997. "Ten criteria for evaluating the management of community disasters". *Disasters*, 21(1), pp.39–56.

Régnier, P. et al., 2008. "From emergency relief to livelihood recovery: Lessons learned from post-tsunami experiences in Indonesia and India". *Disaster Prevention and Management*, 17(3), pp.410–430.

Renn, Ortwin. 2008. *Risk Governance: Coping with Uncertainty in a Complex World*. London: EarthScan.

Rinaldi, B.S.M., Peerenboom, J.P. & Kelly, T.K., 2001. "Identifying, Understanding, and Analyzing Critical Infrastructure Interdependencies". *IEEE Control Systems Magazine*, 21(6), pp.11–25.

Robinson, D., Hewitt, T., and Harriss, J. 2000. *Managing development: understanding inter-organizational relationships*. Buckingham: Open University.

Robson, C. 2002. *Real World Research*. 2nd Edition. Malden, USA: Blackwell Publishing.

Rubin, Claire B. 2009. "Journal of Homeland Security and Long Term Recovery from Disasters – The Neglected Component of Emergency Management Long Term Recovery from Disasters – The Neglected Component of Emergency Management" *Journal of Homeland Security and Emergency Management* 6(1).

Rubin, C. B., Saperstein, M. D., and Barbee, D. G.1985. "Community Recovery from a Major Natural Disaster". Institute of Behavioral Science, University of Colorado, Boulder

Santha, S.D., 2007. "State interventions and natural resource management: A study on social interfaces in a riverine fisheries setting in Kerala, India". *Natural Resources Forum*, 31(1), pp.61–70.

Savage, G.T. et al. 2011. "Stakeholder Collaboration: Implications for Stakeholder Theory and Practice." *Journal of Business Ethics* 96(S1):21–26.

Schwab, J., et al.1998. "Planning for Post-Disaster Recovery and Reconstruction". Report no. 483/484. FEMA, American Planning Association, Chicago.

Scanlon, J., 1999. "Emergent Groups in Established Frameworks: Ottawa Carleton's Response to the 1998 Ice Disaster". *Journal of Contingencies and Crisis Management*, 7(1), pp.30–37.

Schipper, L. and Pelling, M., 2006. "Disaster risk, climate change and international development: scope for, and challenges to, integration". *Disasters*, 30(1), pp.19–38.

Schneider, K., 1992. "Governmental Response to Disasters : Te Confict Between Bureaucratic Procedures and Emergent Norms". *Public Administration Review*, 52(2), pp.135–145.

Schwartz, S.H., 1994. "Are There Universal Aspects in the Structure and Contents of Human Values?" *Journal of Social Issues*, 50(4), pp.19–45.

Smith, G. and Birkland, T., 2012. "Building a Theory of Recovery: Institutional Dimensions". *International Journal of Mass Emergencies and Disasters*, 30(3), pp.147–170.

Smith, G. 2004. *Holistic disaster recovery: Creating a more sustainable future,* FEMA, Emergency Management Institute Higher Education Project, USA.

Silverman, D. 2010. *Doing Qualitative Research*. Third Edit. London and Thousand Oaks: Sage Publications.

Smith, Gavin, and D. Wenger. 2007. "Sustainable disaster recovery: Operationalizing an existing agenda." Pp. 234–57 in *Handbook of Disaster Research*, edited by H Rodriguez, E L Quarantelli, and R R Dynes. New York: Springer.

Stephenson, M., 2005. "Making humanitarian relief networks more effective: operational coordination, trust and sense making". *Disasters*, 29(4), pp.337–50.

Steets, J. et al., 2010. "Cluster Approach Evaluation 2 Synthesis Report". London: ODI.

Stoddard, A., et al. 2007. "Cluster Approach Evaluation". London: ODI.

Stoker, G. 1998. "Governance as theory: five propositions." *International Social Science Journal* 50(155):17–28.

Thompson, J.1967. *Organisations in Action: Social Science Bases of Administrative Theory*. New York: Mac-Graw- Hill.

TEC, 2006. *Coordination of international humanitarian assistance in tsunami-affected countries*, London: TEC.

Telford, J. & Cosgrave, J., 2007. "The international humanitarian system and the 2004 Indian Ocean earthquake and tsunamis". *Disasters*, 31(1), pp.1–28.

Tempelhoff, J., Gouws, I. & Botha, K., 2009. "The December 2004-January floods in the Garden Route region of the Southern Cape", South Africa. *JAMBA:Journal of Disaster Risk Studies*, 2(2), pp.93–112.

Thomson, A.M. & Perry, J.L., 2006. "Collaboration Processes: Inside the Black Box". *Public Administration Review*, 66(1), pp.20-32.

Tierney, K. & Oliver-smith, A., 2012. "Social dimensions of Disaster Recovery". *International Journal of Mass Emergencies and Disasters*, 30(2), pp.123–146.

UNDP 2001. *From Relief to Recovery: The Gujarat Experience.* India: UNDP   Available at http://www.recoveryplatform.org/assets/publication/from%20relief%20to%20recovery%20gujarat.pdf

UNISDR. 2005. "Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters - summary." Geneva: UNISDR

Van Niekerk, D. 2006.   "Disaster risk management in South Africa: the function and the activity — towards an integrated approach" *Politeia* 25, pp. 96–116

Van Riet, G. 2009. "Disaster risk assessment in South Africa: Some current challenges." *South African Review of Sociology* 40(2):194–208.

Van Riet, G., and Van Niekerk, D. 2012. "Capacity development for participatory disaster risk assessment." *Environmental Hazards* 11(3):213–25.

Van Scotter et al. 2012. "An examination of interdependencies among major barriers to coordination in disaster response", *Int. J. Emergency Management* 8(4):281–307.

Wachtendorf, T. 2004. "Improvising 9/11: Organizational Improvisation in the World Trade Center Disaster." Disaster Research Centre, University of Delaware.

Webb, G. 2007. "The Popular Culture of Disaster: Exploring a New Dimension of Disaster research." Pp. 430–40 in *Handbook of Disaster Research*, edited by H Rodríguez, E L Quarantelli, and R R Dynes. New York: Springer.

Wildavsky, A., 1973. "If planning is everything, maybe it's nothing". *Policy Sciences*, 4(2), pp.127–153.

Wise, C.R., 2006. "Organizing for Homeland Security after Katrina: Is Adaptive Management What ' s Missing?" *Public Administration Review*, 66(3), pp.302–318.

Yin, R. K. 2003. *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Zafonte, M. & Sabatier, P., 1998. "Shared Beliefs and Imposed Interdependencies as Determinants of Ally Networks in Overlapping Subsystems". *Journal of Theoretical Politics*, 10(4), pp.473–505.