Copyright Notices

Notice 1

Notice 2

Addendum

Page xvi: Delete the sentence in para 4 line 23-28 (i.e. delete "Information related to ... after the earthquake") and substitute "Information related to literature-identified key natural disaster responses was collected through in-depth and semi-structured interview with 40 key informants. Informants interviewed were varied from the central government, the provincial regional government, local government, community leaders, local NGOs and international NGOs who were involved during and after the earthquake".

Page 2: Delete the sentence in para 3 line 28 (i.e. delete "However, although Indonesia ... about disaster") and substitute "However, although Indonesia is prone to disaster but low apathy or lack of concern about and interest in disaster issues is very significant due to limited knowledge about disaster".

Page 4: Delete the sentence in para 1 line 6 (i.e. delete "A comprehensive study ... 40 years) and substitute "A comprehensive study by Quarantelli (1997) suggested ten criteria for applicability to the developing world of empirical research on local management in evaluating disasters. This study was derived mostly from developed countries and carried out by social scientists over the past 40 years".

Page 10: Delete the word "discusses" in para 5 line 14 and substitute "explains". (i.e. "Chapter Seven *explains* the descriptive analysis of the quantitative data gathered through the community leaders' survey").

Page 42: add at the end of para 1:
"Indonesia has adopted integrated approach by changing institutions and policy related to disaster management with emphases on mitigation, preparedness, response and recovery activities".

Page 45: delete New Public Management from the heading in section 2.4. and substitute "2.4. Local Government and Decentralisation".

Page 69: delete point 1 of para 2 (i.e. delete "It leads regional ... the region") and substitute "Decentralization has reduced the authority of central government and extended the authority of provincial and local government to have their own discretion and to implement local policies as far as they do not violate national law and public interests".

Page 192: delete the sentence in para 2 sub-section 6.3.1.3.1 (i.e. delete "As stated by ... Ministry of Finance) and substitute "As stated by one of the deputies in BNPB, if a disaster happens in one area, BNPB must conduct a loss and damage assessment and each region would be responsible in the recovery activities)

Page 208: delete the sentence in para 1 line 5 (i.e. delete "To name but ... government officials") and substitute "Activities that involve local government and NGOs are tsunami drills, early warning preparation, evacuation routes establishment and disaster awareness training for local government officials".

Page 216: substitute the title of table 7.1, "Table 7.1. The Socio-Economic *Background* of Selected Districts 2003-2006".

Page 220: delete the sentence in para 2 line 14 (i.e. delete "In Pleret ... before 2006") and substitute "In Pleret, 80% of the community leaders stated that action was frequently organized by local government after 2006 earthquake".

Page 230: delete the word "interviewed" in para 2 line 9 and substitute "surveyed". "Of the 75 community leaders *surveyed* in Bantul, an average of 84% stated that the Bantul local government rebuilt social infrastructure effectively".

Page 270: delete the sentence in para 1 line 3 (i.e. delete "Indonesia has also ... section 4.3.1) and substitute "The new paradigm of Indonesia's disaster management paradigm has been started in 1966 by the development of disaster management institutions as explained in Chapter 4, section 4.3.1".

Page 288: delete the word "using" in para 2 line 5 and substitute "used". "This study has also *used* institutional theory to answer the research questions on how social networks managed in the 2006 Bantul earthquake.

Page 296: delete the sentence in para 2 line 17 (i.e. delete "The findings of ... government level") and substitute "The findings of the study found that, although disaster management strategies were developed at the central and provincial levels, these top levels of government have decentralised decision-making power to the local government level".

Resource Capability of Local Government in Managing a Disaster: Evidence from Indonesia

Bevaola Kusumasari
SIP (Indonesia), M.Si (Indonesia)

This thesis is submitted towards the fulfillment of the requirements of the degree of Doctor of Philosophy

Department of Management
Faculty of Business and Economics
Monash University
Australia

MONASH University

Declaration

I declare that this thesis is my own work and has never previously been submitted at Monash University or any other university or tertiary institution for any other degree or diploma. To the best of my knowledge and belief, any previously written or published materials used in this thesis are duly acknowledged.

Bevaola Kusumasari

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Finally, for the 5,000 people who died in Bantul because of the 2006 earthquake, my prayers and my heart go out to you.

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Abbreviation Used in the Thesis

Bakornas PBA	National Coordinating Body for Natural Disaster Management
Bakornas PBP	National Body for Disaster and Internally Displaced Persons Management
Bakornas PB	National Coordinating Body for Disaster Management
Bappenas	National Development Planning Agency
Bappeda	Regional Agency for Planning and Development
BRR	Rehabilitation and Reconstruction Agency
BNPB	National Body for Disaster Management
BPBD	Local Body for Disaster Management
DRR	Disaster Risk Reduction
HFA	Hyogo Framework for Action
HANSIP	Civil Defence Unit
KECAMATAN	Subdistrict Level
KPDE	Centre for Electronic Data
LINMAS	Civil Protection Unit
MOSA	Ministry for Social Affairs
NGO	Non-Governmental Organization
NAP	National Action Plan
UNDRO	United Nations Disaster Reduction Organisation
UNDHA	United Nations Department of Humanitarian Affairs
UNISDR	United Nations International Strategy for Disaster Reduction
UNDP	United Nations Development Programme
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PLANAS PRB	National Platform for Disaster Risk Reduction
POSKO	Command Post
RPJM	National Middle Term Development Plan
RPJMD	Bantul's Middle-term Development Plan
RKP	Government's Annual Work Plan
SATGAS	Task Forces
SATKORLAK PB	Provincial Coordinating Board for Disaster Management
SATKORLAK PBA	Provincial Coordinating Board for Natural Disaster Management
SATLAK PB	District or Municipal Implementation Unit for Disaster Management
Sistem Penanggulangan Bencana Swakarsa	Self-Initiative Disaster Management System
SME	Small Medium Enterprise
Tagana	Volunteer Disaster Corps
PMI	Indonesian Red Cross

Publications Arising from this Study

Listed below are the publications completed during the course of the PhD and based on the findings and analysis of this research.

Refereed Journal Publication

1. Kusumasari, B., Alam, Q., & Siddiqui, K. (2010). Resource Capability for Local Government in Managing Disaster *International Journal of Disaster Prevention and Management* 19(4), pp. 438-451.This paper has been selected for inclusion in Emerald Reading 'ListAssist' under the topics of 'Humanitarian Logistics'

2. Kusumasari, B. (2010). Local Government Capability in Managing Disaster: Evidence from Bantul, Indonesia. In N. Setiadi, J. Birkmann & P. Buckle (Eds.), *Disaster Risk Reduction and Climate Change Adaptation: Case Studies from South and Southeast Asia* (Vol. 14). Bonn: SOURCE

3. Kusumasari, B & Quamrul Alam (2012).Bridging the Gaps: The Role of Local Government Capability and the Management of a Natural Disaster in Bantul, Indonesia. *Natural Hazards* Volume 60, number 2.DOI 10.1007/s11069-011-0016-1.Online First Publication 9 November 2011.

4. Kusumasari, B & Quamrul Alam. (2012). Local Wisdom-Based Disaster Recovery Model in Indonesia. *International Journal of Disaster Prevention and Management* Volume 21, issue 3. Print published 02 April 2012.

5. Kusumasari, Bevaola. (2012). Network Organisation in Supporting Post Disaster Management in Indonesia. *International Journal of Emergency Services*. Volume 1 Issue 1.

Peer-Review Conference Proceedings

1. Kusumasari, Bevaola. (2008). Capability of Local Government in Managing Disaster presented on the 19th Indonesian Postgraduate Roundtable held in Melbourne on 1st November.

2. Kusumasari, Bevaola. (2009). Resource Capability of Local Government in Managing a Disaster: Evidence from Indonesia presented in the International PhD workshop on "Disaster Risk Reduction and Climate Change Adaptation", which is held by the UNITED NATIONS UNIVERSITY Institute for Environment and Human Security (UNU-EHS) andsponsored by the German Academic Exchange Service (DAAD) held inYogyakarta, Indonesia on 23-25 November.

3. Kusumasari, Bevaola. (2010). Local Wisdom-Based Disaster Recovery: Lesson Learnt from Local Government in Indonesia Managing Earthquake Recovery Process presented at the 42nd Annual International Conference/the International Association forCommunity Development (IACD) in New Orleans, Louisiana, USA on July 25-28.

4. Alam, Quamrul & Kusumasari, Bevaola. (2011). Logistic and Network Organisation in Supporting Post Disaster Management:A Case of Bantul Local Government, Indonesia presented at the 10th International Research Conference on Quality, Innovation & Knowledge Management in Kuala Lumpur, Malaysia on 15 - 18 February 2011

Poster

1. Resource capability of Local Government in Managing a Disaster: Evidence from Indonesia, selected at HDR Student Poster Exhibition during Monash Research Month 2008 and won the Faculty HDR poster student.

2. Local Government Fighting Disaster selected at HDR Student Poster Exhibition during Monash Research Month 2009 and won the Faculty HDR poster student.

Abstract

Disasters cause great damage, destruction and human suffering. They test local capacity to respond to them. Unless a disaster management system has implemented a mitigation program and provided a comprehensive, effective plan, the consequences of a disaster will be amplified. In the wake of a disaster, adjustments to the plan, coherent requests for assistance and a willingness to coordinate with other institutions are critical requirements. Decision-making must be efficient and based on context-specific problem solving. Balanced with this is the need to redeploy resources in new ways and to regain trust from communities, so that they are not working to different purposes. These conditions therefore require strength in particular capabilities.

This study highlights capability in institutions, human resources, policy making, finance, technical capacity and leadership as key functional success factors for local government in managing a disaster at the local government level. The study focuses on local government because local government is the institution closest to the community and plays an important role in a disaster management system.

The research framework of this study articulates a model for local government in managing a disaster, the requirements needed, obstacles that may be faced by local government, and networking that occurs with all levels of government, NGOs and the community. The research is focuses on the Bantul local government, Indonesia, as a case study in managing the 2006 earthquake.

The study is an exploratory and intrinsic case study. In order to increase reliability and validity, mixed method research was used. Information related to literature-identified key natural disaster responses was collected through in-depth and semi-structured interview with 40 key informants. Informants interviewed were varied from the central government, the provincial regional government, local government, community leaders, local NGOs and international NGOs who were involved during and after the earthquake. To support the interview findings, researcher also conducted a community leader

survey in three districts where destruction was greatest and most deaths and injuries occurred. Qualitative data was analysed using *NVivo*; SPSS was used to analyse quantitative data.

The study finds that:

(1) The lack of a strategic framework for disaster management, lack of disaster mitigation and preparedness programmes and limited knowledge on the part of local government existed in Bantul before the 2006 earthquake and resulted in paralysis of the government's mobilisation and organisation;

(2) Although Bantul had never previously had to manage such a disaster, local government capability shows favourable results in terms of institutions, human resources, policy for effective implementation, finance, technical capacity and leadership;

(3) Collaborative leadership revealed in the Bantul case indicates decisive action as the critical competency in managing disaster;

(4) Building trust between local government and public, private and not-for-profit organisations contributed to the success of disaster response and recovery in Bantul;

(5) Organisation, the budget, attitudes, local expertise and volunteers are the most crucial problems at each stage of disaster management; and

(6) Social capital, local culture and local wisdom contributed significantly to the effective recovery result in Bantul.

Chapter 1. Introduction to the Thesis

1.1. Background

The numbers of natural disasters and of people affected by such disasters are increasing worldwide. Climate change, and environmental degradation have resulted in a greater number of disaster events. UNDP (2004)reported that in 2000 at least 75% of the world's population lived in disaster-prone areas. This had not much changed by 2003 when one in 25 people worldwide was affected by natural disasters (Guha-Sapir, Hargitt, & Hoyois, 2004). According to data from the OFDA/CRED International Disasters Database (EM-DAT), in the decade 1900-1909 natural disasters occurred 73 times, but in the period 2000-2005 that number rose to 2788. Centre for Research on the Epidemiology of Disaster(2003)has also stated that more than 255 million people on average were affected by natural disasters globally each year between 1994 and 2003, in a range from 68 million to 618 million.

Given that natural disasters are increasing every year and becoming more costly, which impacts on society, the economy, the environment and institutions, studies on disaster management have become very important. As a distinct field of study, disaster management requires organized effort to address preparedness, mitigation, response and recovery (Coppola, 2007). Under these conditions, any nationwide action in disaster management becomes an important measure of capability. The fact that problems are reported in the coordination and delivery of humanitarian assistance is not surprising. Jurisdictional involvement in disaster management reflects the interdependent characteristics of organisational response. Damage from an earthquake elicits that organisational response at three levels of administrative jurisdiction: central government, provincial government and local government (Comfort, 1991). Although each level serves specific functions in disaster response, no single level is able to meet all the needs generated by an earthquake. Unmet needs at one level push the demand for action to the next administrative level, in an

escalating search for resources and skills that range outside the formal disaster management system. This is understandable because a natural disaster is a complex situation and an inescapable reality of human life. Therefore disaster management highlights the importance of institutions' roles in addressing broader issues rather than immediate responses to disaster alone. Physical and economic vulnerability of the community in disaster areas needs to be adequately taken into consideration. For this reason, it is useful to consider the total process of disaster management as a macro system made up of interactions between all levels of government, private organisations, voluntary organisations and the community and all of their roles in disaster management.

Indonesia is a country vulnerable to disaster, both natural and man-made. There are many factors that affect vulnerable regions in Indonesia. First, there is the effect from the increasing population in recent years. The population was 237,641,326 in 2010 (Statistics Centre Bureau, 2010). Many of these live in disaster-prone areas because of such factors as the availability of fertile soil in floodplains or they live in cities with compromised natural ecosystems. Second, the high population density (116 people per square kilometre) leads to overcrowding in urban areas, which, coupled with poor building practices, leads to a large number of casualties in the event of a disaster such as an earthquake. Third, many tropical forest regions have been damaged due to increasing land demand as a consequence of demographic growth, which eventually creates adverse outcomes through decreasing the quality of the environment or, at the least, exacerbating the damaging impact of natural disasters. Fourth, logging and mining activities, and the creation of large plantations, have reduced the environment's capacity to withstand the challenges posed by nature (National Development Planning Agency, 2006b).

However, although Indonesia is prone to disaster but low apathy or lack of concern about and interest in disaster issues is very significant due to limited knowledge about disaster. Lack of such capabilities brings many implications and consequences, such as greater and unavoidable financial strain, delay in economic recovery, re-scheduling of development funds to address the consequences of a disaster, hesitancy on the part of international investors to

invest in a country that cannot deal effectively with or limit avoidable disasters, additional loss of life, property and community infrastructures which are otherwise avoidable, greater possibility of epidemics, enhanced chance of political instability, and potentially prolonged disruption in essential services (Coppola, 2007).

Indonesia's local governments find that, although local government is the institution closest to the community and can be assumed to have the best knowledge of local needs, people and culture; this institution has never been equipped in how to manage a disaster and has not paid attention to the value and importance of mitigation and preparedness for the community. Disaster management plans have rarely been found in local government in Indonesia. Thus there remains a dearth of study on the resource capability of local government in Indonesia that this local body requires to address disaster management issues.

This chapter consists of six sections. First, background of the research topics is presented. Second, the rationale of the research is highlighted. Third, research questions, research aims and significance are presented. Fourth, a brief overview of research methods is provided. Fifth, chapter organisation is outlined. Section six provides a conclusion.

1.2. Rationale of the Study

Discussion about local government's role in managing a disaster began in the mid-1950s. Wolensky and Wolensky's (1990) literature review found that, in regard to the role of local government, there were 100 articles and books published between the mid-1950s and 1989 from sociologists, political scientists and public administrators. Wolensky and Wolesnsky focused on how local government managed the demands associated with major natural disasters and observed the performance patterns of local government in managing a disaster. Another study by Jeanne-Marie Col (2007) highlighted local government's key role in any response to an overwhelming disaster and cooperation between different levels of government in order to take the initiative to protect citizens. Takeda and Helms (2006) have also emphasized the serious shortcomings of

the bureaucratic model for responding to disaster situations for local government. Scheider (1992) developed an explanation that focused on the gap between what governments are prepared to do in emergency management situations and what disaster victims expect in disaster events in the context of developed countries. A comprehensive study by Quarantelli (1997) suggested ten criteria for applicability to the developing world of empirical research on local management in evaluating disasters. This study was derived mostly from developed countries and carried out by social scientists over the past 40 years.

In the context of developing countries, studies on disaster management mainly focus on issues such as the role of community participation and social vulnerability (Aldunce & Leon, 2007), the concept of community policing and what such community policing incorporates in building disaster management policy (Trim, 2004), an integrated approach for effectively managing natural disasters (Moe & Pathranarakul, 2006), institutional failure as the root cause for underdevelopment and susceptibility to disasters (Ahrens & Rudolph, 2006), policies for giving equal treatment to victims (Rautela, 2006) and the role of network centrality in humanitarian aid operations (Kilby, 2008; Moore & Eng, 2003).

Studies on disaster in the Indonesian context mainly focus on post-tsunami rehabilitation and reconstruction analysis (Alexander, Chan-Halbrendt, & Salim, 2006), logistics managers' responses to the tsunami (Perry, 2007), post-disaster response to urban-centred calamities (Leitmann, 2007), the importance of education and socialization in earthquakes and tsunamis (Iemura, Takahashi, Pradono, Sukamdo, & Kurniawan, 2006), the role of early warning information and how it is handled by government authorities (Martin, 2007), and the full impact of the Asian tsunami in Aceh province (Rofi, Doocy, & Robinson, 2006).

However, little attention has been paid to the question of resource capabilities as a key aspect for local government in managing a disaster, even though many experts emphasise that local government plays a crucial role in a disaster event (Cigler, 1987; Herman, 1982; Labadie, 1984a; May, 1985; Perry & Mushkatel, 1984; Wolensky & Wolensky, 1990). There are two important areas under-explored in terms of the role of local government in managing disaster. First, the

issue has been examined in the context of local government in developed countries, and insufficient attention has been paid to local government in developing countries. Second, the resource capabilities of local government in managing disaster at every stage (pre-, during and post-disaster events) have not been examined. Indeed, in recent years many local governments have faced difficulties in dealing with disasters and they have inadequate knowledge and capabilities to manage them.

In order to fill this gap, and taking into account the importance of local government in managing disasters, this research examines and assesses the key success factors that are competitive and affect local government capability to manage disaster in Indonesia, specifically for earthquake disaster management. This study focuses on the Bantul local government, Indonesia, as a case study because of its experience in managing the 2006 earthquake. The government of Indonesia classified the 2006 earthquake as a local disaster due to the number people killed, injured property damaged and infrastructure severely affected. The study takes a case study approach and such local government conditions are representative of most local government in Indonesia: the people of Bantul live in a disaster prone area, typical of densely populated areas in Indonesia, and it has limited revenue sources of its own and depends on the central government's general allocation transfer. The findings of this study will therefore contribute significant insight for all stakeholders in Indonesia and can be used to enhance the role of local government in managing disaster.

1.3. Problem Statement

The capability that existed in the Bantul local government during the 2006 earthquake was very weak. It was because the fact that *Satlak PB* (District Implementation Unit for Disaster Management) in Bantul had never experienced such adverse conditions and thus had acquired no knowledge of disaster management. There were almost no programs undertaken by local government to identify disaster-prone areas in sub-districts in Bantul before the 2006 earthquake even though Bantul is a disaster-prone area. There was even no

sign of disaster awareness in local government or the community. Even worse, availability of an early warning system and local government's capacity to understand it were very limited. Such limitations became obstacles for the Bantul local government in managing the 2006 earthquake.

1.4. Research Questions and Research Objectives

To investigate local government capabilities in earthquake disaster management, the following research questions have been formulated to examine the reasons and factors responsible:

1. a. What capabilities do exist in the Bantul local government for managing a disaster?
    b. What disaster management capabilities does the Bantul local government require?
    c. What gaps are there between the capabilities required and those in fact existing for managing disaster?
2. How do relations between the central government, the Yogyakarta provincial government and the Bantul local government affect the management of disaster events in Indonesia at the local level?
3. How do the Bantul local government and social networks interact in the different stages of disaster management?
4. What are the problems faced by the Bantul local government in managing a pre-, during and post- disaster event?

The objective of this research is, firstly, to assess the capability of local government in Bantul, Indonesia, and capability requirements with regard to earthquake disaster management. Secondly, it seeks to identify the nature of relations between the central government, the Yogyakarta provincial government and the Bantul local government body that affect the management of disasters in Indonesia. Thirdly, it aims to identify the effectiveness of social networks in the Bantul local government. Finally, it seeks to understand the problems that the Bantul local government body faced before, during and after a disaster.

To address the research questions, two theories and one approach are considered relevant for this study: resource-based theory (RBT), institutional theory and the network theory.

Resource-based theory has been used to explain the resources that an institution should have in order to achieve its aims and to meet the requirements of an institution from the perspective of the organisation's capabilities. This theory has also supported the recent capability debate that focuses on uncertainty and change, which are the main characteristics of disaster.

Institutional theory is used to guide the understanding of how institutions and local culture are contingency factors in institutional and disaster management practices. The theory is also adopted to explain institutional variables that reflect a pattern of cultural factors that become legitimized within an institution and society. Since little attention has been considered to linkage between local culture and disaster management, this theory thus offers explanations of complex phenomena in disaster events.

The network theory is used in to examine inter-organisational networks, citizen-to-organisation networks and organisation-to-citizen networks in disaster management. Since disaster management is primarily a civil government activity that is coordinated from the local level up to the central government, all government levels must have the same commitment to creating a better network for the community.

1.4. Research Significance

This research aims to make a contribution to theoretical and practical development in disaster management. First is the theoretical contribution. The theories used in this study have widespread application, heterogeneity and usefulness as a strategic approach in management discourse. However, very few studies that have focused on disaster management have considered RBT to explain organisational capability for managing a disaster. Also little attention has been paid to micro-level factors (including culture, local wisdom, social

capital), which in disaster management calls upon institutional theory. Therefore this study will make a significant contribution to the theory development.

Second is the practical contribution. Practical development can be achieved from understanding the role of networks in disasters. This will increase knowledge about local government institutions in achieving better results in the future. It will indeed help them to handle non-routine problems through non-hierarchical methods. Moreover, this research can also be useful for developing and disseminating a disaster management framework for Indonesia. Experience from previous events can be effectively applied to similar disasters. Future disaster responses will benefit from the accumulation of experience from previous disasters because the actors involved will have a better understanding of role expectations and appropriate processes, as well as a more complete base on which to develop strategies in response to their environment. Such useful experience can be converted into standard operating procedures (SOPs) that can be applied to other disasters and adjusted as appropriate, depending on variables such as time, geography, the nature and scope of a disaster, relevant technologies and the actors involved.

1.5. Research Methods

The research is an exploratory case study which concentrates on the Bantul local government. The research uses a mixed method approach, utilizing qualitative and quantitative research methods that optimise primary and secondary data sources in understanding the circumstances of disaster management in Bantul. Data were gathered in two categories: primary and secondary. Data related to the literature-identified key natural disaster responses were collected through in-depth and semi-structured interviews with 40 key informants classified into six groups. The informants were the representatives of the central government of Indonesia, the Yogyakarta provincial region, the Bantul local government, community leaders, local NGOs and international NGOs who were involved during and after the earthquake. The names of those selected were collected from government reports or on the recommendation of another participant. The names of NGO representatives

were gathered from the Profile and Directory of Disaster Risk Reduction Organisations in Indonesia, published by the National Agency for Disaster Management, Indonesia. For all the interviews, a semi-structured interview guide was provided. This sought answers to questions related to local government capability and expectations if local government was to meet the capability requirement for managing a disaster.

In order to support the qualitative findings, community leaders survey was conducted in three selected sub-districts in Bantul. The three sub-districts were selected because, in terms of the number of human fatalities and property damage, impacts were greatest in these areas. In addition to their having had to confront recovery issues associated with widespread damage, a substantial majority of community leaders in these sub-districts had experienced the effects of the earthquake directly. Since the author lived in the area where the earthquake struck and was also involved in humanitarian assistance to the victims in Bantul, this experience was advantaged her in understanding the situation and in constructing better interview guidelines for the research. Primary data were thus collected through in-depth interviews and a survey questionnaire. Secondary data were collected from documents related to the topic of this study and published by government and NGOs in relation to the 2006 Bantul earthquake. However, although it is mixed method research, qualitative data were principally used to pursue the research questions while quantitative data were used to support the research findings. Data analysis for the research findings was mainly done using *NVivo* for qualitative data; SPSS was used to analyse quantitative data. Details of the methodology of this research are presented in Chapter Three.

1.6. Chapter Organisation

The thesis is structured into nine chapters.

Chapter One is the introduction, which consists of the background, a statement of the research problem, research questions, the rationale of the study, the definition of key concepts, research methods, and chapter organisation.

Chapter Twocomprises the literature review on theory and approaches in order to explain organisational capability, definitions of disaster and disaster management, local government and disaster management, and the capability requirement for local government in managing disasters.

Chapter Three focuses on research methods and discusses the research design, research methods, data collection, and data analysis applied in this study.

Chapter Four explores the Indonesian context of the study, including natural disaster phenomena in Indonesia, institutions and policies for disaster management, the framework of decentralisation in Indonesia and the socio-economic condition of the Bantul local government after the 2006 earthquake.

Chapters Five and Six present the findings of the qualitative data gathered through face-to-face and in-depth interviews with key informants.

Chapter Seven explains the descriptive analysis of the quantitative data gathered through the community leaders' survey.

Chapter Eight discusses the findings of the qualitative and quantitative data in order to answer the five research questions. It also explains the theoretical implications for resource-based theory, institutional theory and the network theory based on the findings.

Chapter Nine summarizes the study by way of concluding remarks, recommendations, limitations of the research and proposals for further research.

Chapter 2. Disaster Management and Local Government Capability

2.1. Introduction

The objective of this chapter is to critically review literature on local government, disaster management, and management theories (resource-based theory, institutional theory and the network theory) in order to design a theoretical framework for this study.

This chapter focuses on five main areas. Firstly, it discusses the definition of a disaster, trends, paradigms and the effects of a natural disaster on the community. Secondly, it discusses disaster management and emphasises capability requirements in managing disasters. Thirdly, it reviews the debate on New Public Management, the implementation of decentralisation, the role of local government in managing a disaster, and the role of central government, as well as relations between central, provincial and local government in disaster management. Fourthly, it deals with resource-based theory, mainly with the organisational dynamic capability, institutional theory and the network theory, which are put forward as the lenses to identify factors of the research questions of this study. Fifthly, it describes the implementation of decentralisation in Indonesia and disaster management at the local government level. Lastly, it focuses on the conceptual framework of this study.

2.2. Disaster

This sub-section discusses and defines disaster from several perspectives, disaster trends, disaster paradigms and the implications of disaster.

2.2.1. Disaster Definition

Definition of disaster is explained from a historical, religious and societal point of view.

2.2.1.1. Historical and Religious Definition

Disaster is not a new phenomenon for humankind or communities. The term 'disaster' has been well known and used by human societies for thousands of years. 'Disaster' in English is derived from the Latin roots *dis* (apart)and *astrum* (star), whose meaning is 'away from the star', that is,it an event to be blamed on an unfortunate astrological configuration (Coppola, 2007). Archaeological studies speculate that when humans started to abandon nomadic wandering and settled into permanent sites millennia ago, communities started to recognize disaster (Lenski, Lenski, & Nolan, 1991). Prehistoric ancestors faced many of the same disasters that exist today, such as starvation, inhospitable elements, and dangerous wildlife, violence at the hands of other humans, disease, accidental injuries and more. The earliest occurrences of disaster are described in legend and myth, oral tradition and folksongs, religious accounts and archaeological evidence from many different cultures and sub-cultures around the world. These pre-historical indications of disaster have been added to considerably by the development of histories of descriptive accounts of contemporary occurrences and examinations of past eras (Quarantelli, Lagadec, & Boin, 2006). In Ancient Greece, Aristotle described disaster as 'the result of natural phenomena and not manifestations of supernatural interventions'. From the 17th Century scholars viewed disaster as accidental or natural events (Mulcahy, 2006), and the 1755 Lisbon earthquake was noted as the 'first modern disaster' (Dynes, 2000).

Many definitions of disaster arise from religious perspectives. For instance, fundamentalist Christians tend to view disaster 'as a harbinger of the apocalypse', while radical Islamists see any disaster that 'washes the beaches clear of half-nude tourists to be divine' (Neiman, 2003). Disaster is also understood as a result of religious beliefs that attribute negative societal happenings to punishments or tests by supernatural entities. This is the starting point for defining disaster as an 'Act of God' (Quarantelli, 2001a). However, after the 2004 South-western Asian tsunami, most of the population in Asia believed that disaster was 'sent either as a test of faith or punishment'. In a Western country such as the USA, the religious notion of disaster was

alsoemphasised after the 2005 Hurricane Katrina, with disaster described as punishment imposed by God for 'national sins' (Quarantelli, et al., 2006). At present, religious interpretations of disaster still appear to be widely held. This orientation is affected by sharp cross-societal differences in the importance attributed to religion in each country.

However, the development of science as the new source of knowledge has changed people's perception of disasters as 'Acts of Nature' instead of 'Acts of God' (Shaluf, 2007). At present the view that disasters are caused by 'Acts of Nature' has been gradually replaced by the idea that they derive from the 'Acts of Men and Women' (Quarantelli, 2001a). As human societies have evolved and the advancement of scientific and technical knowledge has been developed, new threats and disasters have also emerged: for example, increasing risks from chemical, nuclear and biological agents, a growing number of deadly diseases such as HIV/AIDS, hepatitis, encephalitis and diabetes. Scholars have begun to provide informed opinion defining disaster from a societal and scientific perspective, and have categorized disaster into three specific types, natural, man-made and hybrid disasters, in order to formulate appropriate policies for providing adequate treatment for victims of these events, and also to mitigate disasters.

2.2.1.2. Societal Definitions

There are many definitions of disasters. The definition used seems to depend upon the discipline using the term. Turner and Pedgeon (1997) point out that no developed definition of 'disaster' is universally accepted. The common definition that many scholars use is defined by the Asian Disaster Reduction Centre (2003) and the United Nations (1992): disaster is *a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope using only its own resources*. Rautela (2006) emphasizes disaster as a state of ultimate ruin and tribulation that leads to a breakdown of social structures and to the affected population being unable to cope with the event and thus needing external assistance (Rautela, 2006).

At the same time, the Centre for Research on the Epidemiology of Disasters (CRED) in Belgium has also defined a disaster as a '...situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering'(Rautela, 2006, p. 802).Emergency Management Australia (EMA) views disaster as an event that is 'beyond the day to day capacity of the prescribed statutory authorities and which requires special mobilising and organising of resources other than those normally available to these authorities' (Emergency Management Australia, 1998, p. 42).

According to the Encyclopaedia of Disaster Management (Indian Institute of Disaster Management, 2007), disaster means 'an occurrence arising with little or no warning, which causes or threatens serious disruption of life, and perhaps death or injury to large numbers of people, and requires therefore a mobilization of effort in excess of that normally provided by the statutory emergency services' (p. 1).

Parker (1992) reviews the concept of disaster and suggests that the definition of disaster be formulated as

> ... an unusual natural or man-made event, including an event caused by failure of technological systems, which temporarily overwhelms the response capacity of human communities, groups of individuals or natural environments and which causes massive damage, economic loss, disruption, injury, and/or loss of life. (p. 131)

Noji (1997) defines disaster as 'the result of a vast ecological breakdown in the relation between humans and their environment, a serious and sudden event (or slow, as in drought) on such a scale that the stricken community needs extraordinary efforts to cope with it, often with outside help or international aid' (p. 65).

Carter (1991) identifies four characteristics of disaster which are different from other events, the first of which focuses on disruption in terms of the speed of onset, predictability and extent. The second relates to effects or impact of the event on people, such as death, injury or disease and resulting hardship. The

third is damage to or destruction of infrastructure such as lifeline facilities and essential services and communications. Fourth is the need of humanitarian assistance such as medical care, shelter, food, clothing and other social needs.

Perry (1991) defines disasters as 'non-routine events in which societies or their larger subsystems (e.g. regions or communities) are socially disrupted and physically harmed' (p. 201). He further elaborates that the key defining characteristics of disasters are: the length of forewarning; the magnitude of impact; the scope of impact; and the duration of impact.

There are many criteria to define disasters in terms of their effect (Contra, 2002; Keller & Al-Madhari, 1996; Keller, Manikin, Al-Shammari, & Cassidy, 1997; Malaysian National Security Council, 2003; Middleton & Franks, 2001; Mitroff, 1988); for example:
1. Ten or more people reported killed;
2. 100 people reported affected;
3. A call for international assistance; or
4. Declaration of a state of emergency.

A local disaster is not a national disaster if a provincial or local government response entity can manage its consequences. If local government is unable to cope with the disaster and requires the intervention of the national government, the disaster becomes national. In situations in which a national government is incapable of managing the consequences of an adverse event, then the event becomes an international disaster, which entails intervention by a range of international response and relief agencies (Coppola, 2007).

Since this study focuses on the capability of local government, the definition of disaster provided by CRED is appropriate as it defines how a disaster causes great damage, destruction and, human suffering, and where local capacity is tested. The definition of disaster from CRED is relevant to this study because it integrates aspects of the three views into one holistic interpretation of the disaster concept. First, the CRED definition involves local capacity and capability of the local government. Second, the definition includes network

activities between government and national or international assistance, which may be especially important during response and recovery stages of disaster management. Third, the definition also covers the need for mitigation and preparation as important factors, since a disaster is an unexpected and sudden event, so that government must prepare the population in order to limit further damage and suffering. The CRED definition seems to correspond best with the local capability requirement of local government in managing earthquake disasters. It is the definition most appropriate to the research objectives of this thesis.

2.2.2. Disaster Trends

1. The overall number of people affected by disaster is rising

As the population and size of settlements grow, the risk becomes higher. Urbanization and migration have continued to increase over time since population increase occurs in almost all countries. In 1950, for example, less than 30% of the world's 2.5 billion people lived in an urban area. By 1998, the number of people had grown to 5.7 billion and 45% of them lived in cities. The UN predicts that by 2025 there will be 8.3 billion people in the world and over 60% of them will live in cities (Britton, 1998).

2. Disasters are becoming more costly

The cost of disasters worldwide is increasing significantly. A quarter of a century ago, the economic damage from any given disaster rarely reached one billion dollars. However, during the last decade disasters have caused damage of US$60 billion per year on average, with a maximum of US$230 billion and a minimum of US$28 billion. The economic cost associated with natural disaster has increased 14-fold since the 1950s (Coppola, 2007; Guha-Sapir, et al., 2004). There are several explanations for the rising financial cost of disaster, including increasing migration and urbanization in disaster-prone areas, climate change, increasing population, and technology dependency.

3. Poor countries and poor people are the most affected victims of disaster

Disaster strikes every nation of the world, whether rich or poor. Poorer communities are the most vulnerable to natural disasters due to a complex of social, political, cultural and economic factors which force them to live in areas at risk (Benson, Twigg, & Myers, 2001). However, developing countries suffer the greatest impact from disasters (Table 2.1). Between 1980 and 2000, 53% of the deaths attributable to disasters occurred in countries with a low human development rating, although these countries accounted for only 11% of the world's at risk population (UNDP, 2004). According to CRED, the number of people killed by natural disaster between 1991 and 2005 in OECD countries was 61,918, but in developing countries the number reached 630,106 people (International Strategy for Disaster Reduction, 2008).

Table 2.1 Differences in Disaster Impact between Rich and Poor Countries

Rich Countries	Poor Countries
• Tend to suffer higher economic losses, but have mechanisms in place to absorb the costs • Employ mechanisms that reduce loss of life, for example early warning systems, enforced building codes, and zoning • Have immediate emergency and medical care that increase survivability and contain the spread of disease • Transfer much personal, private and public risk to insurance and reinsurance providers	• Are less at risk in terms of financial value, but maintain little or no buffer to absorb even low financial impacts • Economic reverberations can be significant and social development ultimately suffers • Lack the resources necessary to take advantage of technologies and little ability to enforce building codes and zoning • Generally do not participate in insurance mechanisms. Divert funds from development programs to emergency relief and recovery

Source: (Coppola, 2007)

4. The number of disasters is increasing each year

According to data from the OFDA/CRED International Disasters Database (EM-DAT)[1], the number of disasters is increasing every year (Table 2.2). In the

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[1] Data on natural disasters was drawn from EMDAT by the Centre for Research on the Epidemiology of Disasters (CRED), which was established in 1973 as a non-profit institution. CRED is based at the School of Public Health of the Catholic University of Louvain in Belgium and became a World Health Organisation (WHO) collaborating centre in 1980. Although CRED's main focus is on public health, the Centre also studies the socio-economic and long-term effects of large-scale disasters. Since 1988, CRED has maintained EMDAT, a worldwide database on disasters. It contains essential core data on the occurrence and effects of almost

1900-1909 decade, only 73 natural disaster events occurred, but in the 2000-2005 decade, the number increased to 2788 occurrences.

Table 2.2 Distribution of Natural Disasters by Decades

	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2005	Total
Hydrometeorological (Drought, Extreme Temperature, Flood, Slide, Wild Fire, Wind Storm)	28	72	56	72	120	232	463	776	1498	2034	2135	7486
Geological (Earthquake, Tsunami, Volcano)	40	28	33	37	52	60	88	124	232	325	233	1252
Biological (Epidemic, Insect Infestation)	5	7	10	3	4	2	37	64	170	361	420	1083
Total	73	107	99	112	176	294	588	964	1900	2720	2788	9821

Source: (International Strategy for Disaster Reduction, 2008)

There are two principal reasons for the increasing number of annual disasters. The first is that climate change and environmental degradation have been shown to result in a greater overall number of disaster events. There is a strong correlation between the loss of natural buffer zones and the destabilization of slopes with increased global temperature. The second reason is related to the patterns of increased human settlement in more vulnerable areas. As people tend to live in more urbanized centres, collective vulnerability to disasters of every origin increases. Incidents that may have been managed locally exhibit an increasing tendency to become devastating events as the population density of affected areas increases.

5. Disasters are becoming less deadly

Humans are adaptable and quickly adjust to the pressures placed upon them by nature. Modern science has helped people to mitigate and respond to disaster appropriately. The term 'earthquakes don't kill people, buildings do' is a clear example that people now have to prepare for disaster (Hough & Jones, 2002). Moreover, globalization and increased international cooperation have helped the world community to more effectively address risk reduction and limit the human impacts of disaster. According to CRED's analysis, the decrease in

16,000 natural and technological disasters worldwide, from 1900 to the present. The database is compiled from various sources, including UN agencies, NGOs, insurance companies, research institutions and press agencies.

deaths in disaster is directly linked to the type of disasters that occurred (ISDR, 2006). Floods and droughts directly impact on large numbers of people and their economic livelihoods but are less likely to cause loss of life compared with earthquakes and hurricanes. The more organised and comprehensive the preparation of a country against disaster, the more communities are helped to reduce their vulnerability and react more appropriately when exposed to disaster.

2.2.3. Disaster Paradigm

Smith (2007) describes two key paradigms used in disaster studies from a social science perspective: the behavioural paradigm and the structural paradigm. The behavioural paradigm emphasizes the geophysical causes of disasters and the use of technology to alleviate damage caused by the impact of disaster. This paradigm holds disasters to be indiscriminate occurrences and emphasises the significance of human behaviour in preventing disasters. However, the behavioural paradigm pays little attention to the social circumstances of areas stricken by disasters. Conversely, the structural paradigm emphasises the influence of the social structure in which individuals and groups are embedded (Bolin, 1998; Smith, 2007), and recognises that disasters are 'products of a nature or society interface which intensify daily economic and social living problems' (Hutton & Haque, 2004). This perspective contends that marginalised social groups and individuals are more 'at risk' in the wake of natural disasters (Wisner, Blaikie, Cannon, & Davis, 2004).

An important approach encompassed by the structural paradigm is the vulnerability approach, which focuses on the spatial dimensions of social and economic stratification in relation to disasters (Hewitt, 1998). Tierney, Bevc and Kuligowski (2006) state that 'groups are differentially vulnerable … in the face of disasters, depending upon their position in the stratification system' (p. 109). The approach 'does not deny the significance of natural hazards as trigger events, but puts the main emphasis on the various ways in which social systems operate to generate disasters by making people vulnerable' (Wisner, et

al., 2004). In other words, the vulnerability perspective examines natural disasters as social phenomena moderated by the existing social structure.

2.2.4. Disaster Type

Disasters, as presented in Figure 2.1, can be categorized into three types: natural, man-made and hybrid (Richardson, 1994; Turner & Pedgeon, 1997; World Health Organization, 2003).

Figure 2.1 Disaster Classification
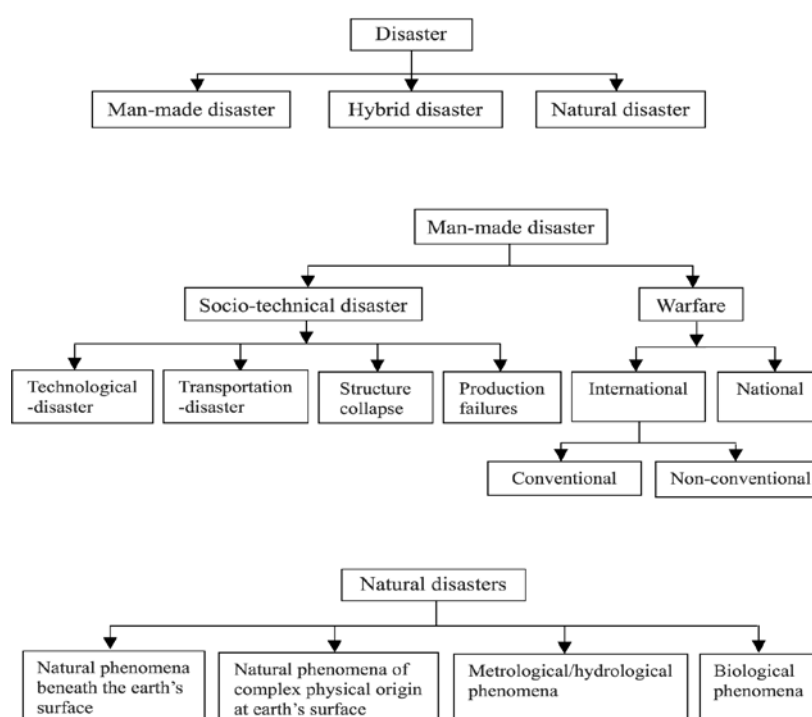
Source: (Shaluf, 2007)

Natural disasters are catastrophic events resulting from natural hazards which may result from internal (beneath the Earth's surface), external (topographical), weather-related (meteorological / hydrological) and biological phenomena. Natural disasters are beyond human control and often represented as 'Acts of God' (Shaluf, 2007). Man-made disasters are catastrophic events that result from human decisions. The International Federation of Red Cross and Red Crescent Societies (2003) highlight that a man-made disaster refers to non-natural disastrous occurrences that can be sudden or more long-term. Sudden man-made disasters include structural, building and mine collapses, when this

occurs independently, without any outside force. A hybrid disaster arises from a linkage of anthropogenic (man-made) events and natural events (Indian Institute of Disaster Management, 2007). Examples of hybrid disaster are: the spread of disease from an endemic community to a community with no natural immunity; destruction of rain forest, which causes soil erosion; and the pollution of oceans due to accidental dumping of oil or chemical products.

Despite various definitions of disaster, this study will specifically address natural disaster.

2.2.4.1. Earthquakes as Natural Disasters

Since the focus of this study is more on earthquakes, further discussion will explore that topic. An earthquake is caused by sudden slippages of crustal rock along a fault or an area of strain in a tectonic plate, thereby causing a rebound to a new alignment. An earthquake releases strain energy related to sudden fault movements (Solway, 2004). These movements are preceded by the slow build-up of tectonic strain that progressively deforms the crustal rocks and produces stored elastic energy. When the stresses exceed the strength of the fault, the rock fractures (Smith, 2007). The earthquake shock causes vibrations or seismic waves on and below the earth's surface, causing ground rupture and shaking, aftershocks, liquefaction, tsunamis and landslides. The point of rupture (hypocenter) can occur between the earth's surface and a depth of 700 km. The most damaging earthquake is a shallow-focus type more than 40 kilometres below the earth's surface.

The probability of an earthquake occurring in a particular place can be determined, although it is difficult to predict the exact time. Probability estimation is based on the monitoring of seismic activity, on detailed geological knowledge and on historical incidence. However, according to Bolt (1993), about two-thirds of all large earthquakes are located in the 'Ring of Fire' around the Pacific which is closely related to the geophysical activity associated with plate tectonics.

An earthquake is measured at the epicentre, which is a point on the earth's surface directly above the hypocentre. Earthquake magnitude is assessed on the Richter scale, which describes the energy of the seismic waves radiating outwards from the earthquake as recorded by the amplitude of ground motion traces on seismographs at a normalised distance of 100 km from the source.

2.2.5. The Effects of Disaster on Society

Disaster disrupts society in many ways and most people become used to disaster statistics that relate to numbers of people killed and injured, buildings damaged and destroyed, and the value of property lost (Quarantelli, 2001b). Many scholars (Coppola, 2007; Drabek & Hoetmer, 1991; Helsloot & Ruitenberg, 2004; Indian Institute of Disaster Management, 2007; Solway, 2004) identify the consequences of disaster which disrupt the community and reduce the quality of life of individuals in the community. These consequences include:

a. a reduced ability to move or travel, due to damaged or destroyed transportation infrastructure;

b. interrupted educational opportunities, due to damage to schools, loss or injury of teachers and students, or disabilities caused by pressures such as trauma;

c. loss of cultural heritage, religious facilities and communal resources;

d. loss of markets and trade opportunities, through short-term business interruption due to the loss of customers, employees, facilities, inventory or utilities;

e. loss of confidence by investors, who may potentially withdraw from investments, which in the future will create unemployment due to job cuts or damage to workplaces;

f. communications difficulties, due to infrastructure damage or loss;

g. homelessness caused by housing and property losses;

h. hunger and starvation, due to breaks in the food supply chain, which in turn cause shortages and price increases;

i. environmental loss, damage and pollution from the deterioration of damaged buildings and infrastructure which are not yet repaired; also deformation and loss of ground quality;

j. public unrest when government response is inadequate.

2.2.6. Contributory Factors of Disasters

Research and practice support the theory that there is a strong correlation between disaster and poverty. It is well documented that developing countries which are repeatedly subject to disaster experience stagnant or even negative rates of development over time (Coppola, 2007). In 2001, for example, earthquakes occurred in both El Savador and Seattle, USA, each causing approximately $2 billion in damage. While this amount had little noticeable impact on the US economy, it affected 15% of El Salvador's GDP in 2001 (UNDP, 2004). Each disaster has its own impact and triggers causes for poverty, particularly in developing countries. The aftermath of a disaster negatively affects the economies of developing countries beyond the initial deaths, injuries and destruction, which in turn create later poverty. Coppola's study (2007) presents some general overviews of the ways in which disaster creates poverty in developing countries:

a. national and international development efforts are stunted, erased or (even worse) reversed;

b. vital infrastructure, such as roads, bridges, airports, communication systems, power generation and water supply, is damaged or destroyed;

c. schools are damaged, which deprives students of a chance to access an adequate source of education for some time;

d. hospitals and health clinics are damaged, which results in increasing the vulnerability of the affected population to disease;

e. formal and informal business are destroyed and economic stability delayed, which creates a surge in unemployment;

f. desperation and poverty lead to a rapid upsurge in crime and insecurity;

g. a general feeling of desperation afflicts the affected population, leading to increased rates of depression and a lack of motivation to rebuild.

Another factor that contributes to disaster is population growth. There is an obvious connection between the increase in losses from a disaster and the increase in population. The growth of population has been so overwhelming that more people will inevitably be affected by disaster, as more will be forced to live

and work in unsafe areas. Increasing numbers of people will compete for a limited amount of resources, and this can lead to conflict.

Rapid migration has also contributed to a disaster. Disaster acts as a push factor in people's decision to migrate, forcing them to move from one area to another (Bates, 2002; Hunter, 2005). There are many factors that influence migration in the wake of a natural disaster. Hunter (2005) says that socioeconomically disadvantaged or marginalized groups, including women, the elderly, racial and ethnic minorities, the poor and those with lower levels of educational attainment are disproportionately affected by disaster. Economic structure, community infrastructure, demographic characteristics such as population density and the rural-urban continuum, and other features that relate to spatial stratification are also significant factors that may moderate a natural disaster's impact on migration (Cutter, Mitchell, & Scott, 2000).

Another factor causing a disaster is environmental degradation. Many disasters are either caused or aggravated by environmental degradation. Deforestation, for instance, leads to rapid rain runoff, which contributes to flooding. The destruction of mangrove swamps decreases a coastline's ability to resist tropical winds and storm surges. Drought conditions are caused by poor cropping patterns, over-grazing and the stripping of topsoil, poor conservation techniques, and depletion of both surface and subsurface water supplies.

Figure 2.2 The Link between Environmental Degradation, Natural Disasters and Vulnerability
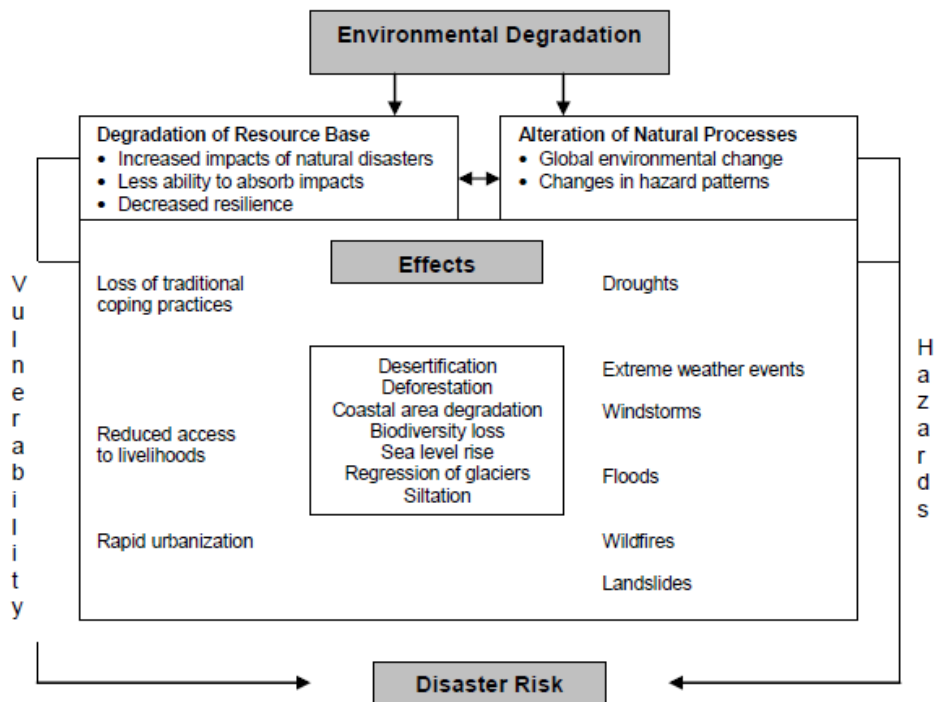
Source: (International Strategy for Disaster Reduction, 2004)

The fifth factor is lack of awareness and information. Disaster can also happen because vulnerable people do not know how to get out of harm's way or take protective measures. There is a lack of awareness and information on what measures can be taken to build safe structures in safe locations. Also, people do not have information about safe evacuation routes and procedures. In most disaster-prone societies, understanding about disaster threats and responses should be incorporated into any efforts to protect the victims and reduce losses.

The sixth factor is technological innovation. Communities rely more on technology today. These systems are susceptible to the effects of natural, technological and intentional disaster (Smith, 2007). Technology varies, from communication, transportation and utilities, such as nuclear power, to high-rise buildings.

The seventh factor is social expectation. With increases in technology and the advancement of science, social expectations for public services, such as

availability of water, long-distance transportation and constant electrical energy, also increase. The economic and social impacts of disaster can be influenced if the systems do not function, and these in turn may become trigger factors for disaster.

The last factor is growing interdependence. Individuals, communities and nations are intensifying their interdependence on each other. Natural disasters such as biological phenomena or disease (for instance, the SARS epidemic) in one particular country could quickly impact on other countries through international travel.

Figure 2.3 Disaster as the Interface between Hazards and Vulnerable Community
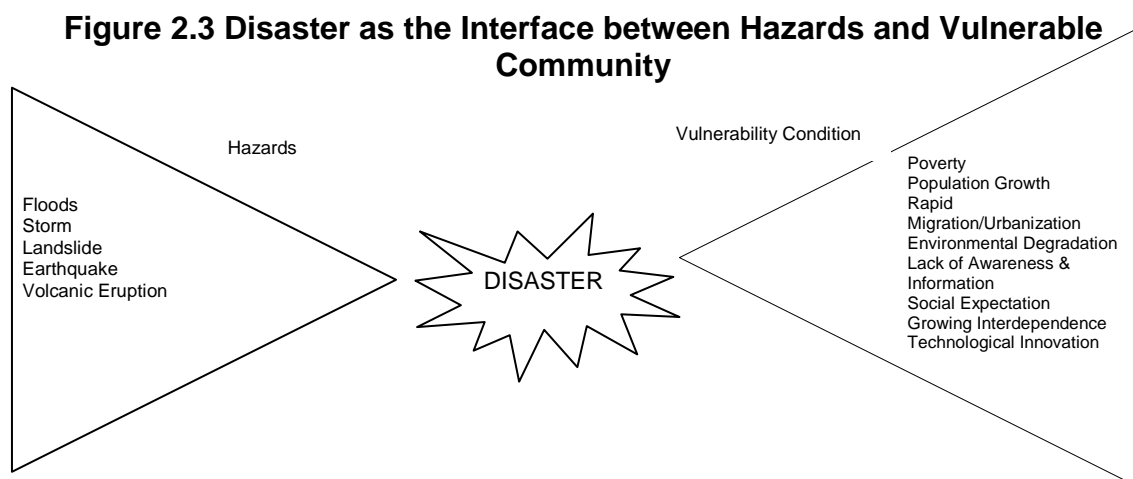
Source: Adapted from (Mauro, 2004)

2.3. Disaster Management

The following subsection discusses the definition of disaster management, as well as the stage and capability requirements in disaster management.

2.3.1. Disaster Management Definition

Disaster management is not a new term or discourse. Disaster management has been practised for thousands of years. Archaeological discovery has shown that our prehistoric ancestors faced many of the same risks that exist today and they were not idle in the face of such risks. Evidence indicates that they took measures to reduce or mitigate them. The fact that they inhabited caves is one

measure of their mitigation activity. Evidence of risk management practices can be found as early as 3200 BCE[2]. The management of disasters during the last few thousand years was limited to single programs addressing individual disasters. It was organized and comprehensive in reducing both human suffering and damage to the built environment. Modern disaster management, in terms of the emergence of global standards and organized efforts to address preparedness, mitigation and response activities for a wide range of disasters did not begin to emerge until the mid-20th Century.

Disaster management is defined as a collective term encompassing all aspects of planning for and responding to disaster, including both pre-disaster and post-disaster activities that may also refer to the management of both risks and consequences of disaster (Shaluf, 2008). It involves plans, structures and arrangements established to engage the normal endeavours of governments, voluntary and private agencies in a comprehensive and coordinated way to respond to the whole phase of emergency needs. Therefore disaster management consists of all the planning, organizing and resource mobilizing required in dealing with all phases of disaster as a unique natural event (Kelly, 1995).

Disaster management includes five general stages (Jayaraman, Chandrasekhar, & Rao, 1997; King, 2007; Moe, Gehbauer, Senitz, & Mueller, 2007; Moe & Pathranarakul, 2006): prediction, warning, emergency relief, rehabilitation and reconstruction.

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[2] When in AD 79 the Vesuvius volcano in Italy began erupting, two towns (Herculaneum and Pompeii) faced an impending catastrophe. But although Herculaneum, which was at the foot of the volcano and therefore directly in the path of its lava flow, was buried almost immediately, the majority of Pompeii's population survived. This was because the citizens of Pompeii had several hours before the volcano covered their city in ash, and evidence suggests that the city's leaders organized a mass evacuation (Coppola, 2007).

Figure 2.4 Disaster Management Phases

Project Life Cycle	Disaster Management	Time	Activities	Approach
Initiation / Planning	Prediction	Before	Mitigation / Preparednes	Pro-Active
Executing	Warning	During	Response	Reactive
Executing	Emergency Relief	During	Response	Reactive
Executing	Rehabilitation (Short-term)	After	Recovery	Reactive
Completing	Reconstruction (Long-term)	After	Recovery	Reactive

Source: (Moe & Pathranarakul, 2006)

The first phase of disaster is prediction. In this phase, mitigation and preparedness activities are conducted. This includes structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards, and non-structural measures taken in advance to ensure an effective response to the impact of hazards, including the issuing of timely and effective early warnings and temporary evacuation of people and property from threatened locations.

The second phase is warning. This phase refers to the provision of timely and effective information, through identified institutions, which allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare an effective response.

The third phase is emergency relief, which refers to the provision of assistance or intervention during or immediately after a disaster, to meet life preservation and basic subsistence needs of the people affected. It can be of immediate, short-term or protracted duration.

The fourth phase is rehabilitation. This phase includes decisions and actions taken after a disaster, with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk.

The fifth phase is reconstruction. This stage refers to the rebuilding of damaged living conditions of the stricken community with the aim of long-term sustainability.

Overall, the essential activities conducted are: mitigation and preparedness activities in the prediction phase; response activities in the warning and emergency relief phases; and recovery activities in the rehabilitation and reconstruction phases.

2.3.2. Disaster Management Stages

In a natural disaster management life cycle, and in modern disaster management, only four of the activities conducted are critical: mitigation, preparedness, response and recovery (Alexander, 2002; Coppola, 2007; King, 2007; Moe & Pathranarakul, 2006; Quarantelli, 1997).

The following section will describe disaster management stages starting with from mitigation, preparedness, response and recovery.

2.3.2.1. Mitigation

Mitigation is defined as 'measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment' (King, 2007). Mitigation is sometimes called prevention or risk reduction, and is considered the 'cornerstone of disaster management' (Federal Emergency Management Agency (FEMA), 2006). While preparedness, response and recovery are undertaken either in reaction to disaster or in anticipation of their consequences, mitigation measures seek to reduce the consequences of disaster risk before a disaster occurs. Mitigation can be seen as any sustained effort undertaken to reduce a disaster risk through the reduction of the likelihood

and consequence component of a disaster's risk (Coppola, 2007). The aims of mitigation are risk likelihood reduction, risk consequences reduction, risk avoidance, risk acceptance and risk transfer, sharing or spreading. Mitigation as a measure taken independently from an emergency situation or actual disaster must focus on preventive measures because the efficiency of emergency measures is very limited, due to avoidance of human and economic losses (National Research Council, 1994). Mitigation activities include structural and non-structural measures undertaken to limit the negative impact of natural hazards, environmental degradation and technological hazards. According to FEMA (2006), mitigation activities reduce the chance of an emergency happening or lessen the damaging effects of unavoidable emergencies[3].

There are two types of mitigation, structural and non-structural. Structural mitigation is defined as a risk reduction effort undertaken through the construction or altering of the physical environment through the application of engineered solutions. It also refers to considered attempts at 'man controlling nature' (Coppola, 2007) as applied to natural disaster. This effort includes resistant construction, building codes and regulatory measures, relocation, structural modification, construction of community shelters, construction of barrier or detection systems, physical modification, and treatment systems and redundancy in life safety infrastructure.

Non-structural mitigation involves a reduction in the likelihood or consequence of risk through modifications in human behaviour or natural processes, without requiring the use of engineered structures. This technique is considered as 'man adapts to nature'. The category includes regulatory measures, community

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[3]In regard to mitigation activity, particularly in earthquakes, UNESCO, which has been engaged since 1960 in the assessment and mitigation of risks arising from natural disasters, has encouraged the establishment of international, regional and national centres, systems and networks for the exchange and analysis of earthquake and data training, the identification of seismically active zones and the quantitative assessment of earthquake hazards, the field study of the effect of large earthquakes, experience sharing among scientists and engineers, and the training of qualified personnel. UNESCO established the International Institute of Seismology and Earthquake Engineering in Japan, the Institute of Earthquake Engineering and Engineering Seismology in Skopje, the International of Seismological Centre in the UK and the Regional Seismological Centre for South America in Peru. Beside these, regional initiatives include the regional seismological networks in South-East Asia and the Balkan region, the Program for Assessment and Mitigation of Earthquake Risk in the Arab region and in the Eastern Mediterranean region (Rouhban, 2004).

awareness and education programs, non-structural physical modifications, environmental control and behavioural modification.

However, there are also some barriers to implementing mitigation, such as cost, the low level of political support, socio-cultural issues and risk perception (Mileti, 1999). Mitigation can be very expensive. It is a fact that government has limited budgets to support development, and many governments consider disasters to be chance events that might not occur. The low level of political support is also considered to be an obstacle in implementing mitigation in a governmental program. It is important for politicians to maintain their high public standing by having projects and programs that increase their political stature. Convincing the local decision making authority of the need to undertake a mitigation measure is crucial to getting the project off the ground. Mitigation has also faced socio-cultural obstacles, because people and the culture may resist any project that involves an alteration they find undesirable or a waste of their time. The last obstacle is risk perception. How people perceive disaster will play a large part in what people do to prevent it and how much they are willing to sacrifice to avoid risk.

2.3.2.2. Preparedness

Preparedness means planning how to respond in case of disaster. It can also be defined as a state of readiness to respond to a disaster, crisis or other emergency events. This stage is a recurrent theme throughout disaster management. Godschalk (1991) emphasizes preparedness as 'actions taken in advance of an emergency to develop operational capabilities and to facilitate an effective response in the event an emergency occurs' (p. 134). Gillespie and Streeter (1987) define preparedness as planning, resource identification, warning systems, training, simulations, and other pre- disaster actions taken for the sole intent of improving the safety and effectiveness of a community's response during a disaster. Mileti (1991) states that 'preparedness includes such activities as formulating, testing, and exercising disaster plans, providing training, and exercising disaster plans, providing training for disaster responders

and the general public, and communicating with the public and others about disaster vulnerability and what to do to reduce it' (p. 127).

Preparedness relates to activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuing of timely and effective early warnings. Since natural disasters are characterised by limited warnings or lack of them, this means that preparedness and instituting plans and programs to cope with potential disruption of physical and social systems are one of the key foundations of disaster management (Godschalk, 1991). The purpose of preparedness is to anticipate problems and place resources needed for an effective response before disaster occurs (Kreps, 1991; Mileti, 1991). The main difference between preparedness and mitigation is that mitigation presumes that a disaster can be prevented or that its impact can be reduced. However, preparedness assumes that disaster will occur (McEntire & Myers, 2004). Based on this distinction, experts cite several important reasons for preparedness as a vital component of overall disaster management (Auf der Heide, 1989; Dynes, 1994; Kreps, 1991; Mileti, 1991). *Firstly*, effective preparedness and response activities help save lives, reduce injuries, limit property damage, and minimise all sorts of disruptions that disasters may cause. *Secondly*, preparedness helps to protect community values and reduces unwanted conditions during disaster. *Thirdly*, preparedness increases inter-organisational coordination and communication and establishes the responsibilities of key players such as community officials, state officials, municipalities and hospitals. *Fourthly*, preparedness helps to identify resources (personnel, time, financial, equipment, supplies or facilities) that a community may need for the response and recovery phases. *Lastly*, preparedness identifies some important functions which need to be undertaken in times of a disaster, such as resource management, evacuations, and damage assessment,.

In organizing disaster management, a strong preparedness capability is the initial issue. This capability can be built by planning, training and exercising. There are many phases that should be done at the preparedness stage, including establishing emergency management, assessing the disaster, creating

an emergency plan, developing a warning system, identifying resources and aid, instituting mutual aid agreement and educating the public.

There are some basic principles of preparedness (Drabek & Hoetmar, 1991):

a. Preparedness is a continuous process.

The development of a written plan at a specific time is only a small part of the total preparedness process. Therefore plans should be kept up-to-date and must anticipate facing new conditions and requirements.

b. Preparedness reduces unknowns during a disaster.

The goals of preparedness are to anticipate problems and project possible solutions. Therefore, while it is often difficult to predict the exact time when a given disaster will happen, it is, however, worth trying to soften its impacts on the physical and social environment. Preparedness increases the ability to deal with uncertainty.

c. Preparedness is an educational activity.

Preparedness must be trained for and demonstrated to individuals, groups and organisations so that all levels of a community know what they should do during and after a disaster occurs.

d. Preparedness is based on knowledge.

Anticipating problems and devising solutions requires accurate knowledge, because one deals with people's lives in a crisis situation.

e. Preparedness evokes appropriate action.

Planning can be seen as a way to increase the speed of response when a disaster occurs. However, even though speed is an important aspect, reacting appropriately is more important.

f. Resistance to disaster preparedness is a given.

Some bureaucrats might think that they already know what to expect and what to do during disaster, and that they will be able to improvise as they go along. There is also a mistaken assumption that civilian disasters can be handled by a command-and-control model or through direct military intervention (Quarantelli, 1987). Leadership is required from public officials to remove this obstacle.

g. Modest planning is a reasonable goal.

A modest level of preparedness should be expected because situations change constantly and specific details could quickly become out of date. Disaster preparedness should be as streamlined as possible.

However, research on disasters shows that apathy and lack of experience in managing a disaster are two major problems at the preparedness stage (Auf der Heide, 1989; McEntire & Myers, 2004). Furthermore, the value and importance of preparedness and its processes are sometimes difficult to quantify. At the same time, communities that often create elaborate emergency plans fail to develop the capability to implement them. In other words, there is a written plan, but it has never been subject to training and exercises within the community. Auf der Heide (1989) states this condition clearly: 'disaster plans are important, but they are not enough by themselves to assure preparedness… they can be an illusion of preparedness if they are not tied to training programs, not acceptable to the intended users, not tied to the necessary resources, or not based on valid assumptions. This illusion is called the paper plan syndrome' (p. 34).

2.3.2.3. Response

Response is an action taken immediately before, during and just after a disaster occurs. The aims of this activity are to save lives, minimize property damage, and enhance the beginning of recovery from the incident (Shaluf, 2008). Responses include the provision of assistance or intervention during or immediately after a disaster, to meet the life preservation and basic survival needs of people affected. At this stage, the essential keys of natural disaster response requirements include preparedness activity in vulnerable regions, involvement of local people, needs assessment coordination, sharing information between multi-stakeholders and logistical expertise (Perry, 2007). The response function in disaster management includes actions aimed at limiting injuries, loss of life, and damage to property and the environment. These actions are taken prior to, during, and immediately after a disaster

occurs. Response activities can be done through warnings, evacuation and shelter provision.

Table 2.3 Myths and Facts about Disaster Response

Myths	Facts
• Because people faced with great danger will panic, warnings should be withheld until the last minute • Even those who do not act irrationally are often immobilized by disaster and will need help with such basic tasks as getting fed, housed, and clothed • Partly because of widespread individual pathological reactions and partly because of the overwhelming damage to the resources of disaster-affected communities, local social units are severely limited in their ability to handle emergency demands effectively. Outside help is essential • The social disorganisation that results from disaster impact allows antisocial behaviour to surface. Because social control is weak or absent, those in the disaster area become easy victims of looting and other forms of criminal activity • Community morale is very low in disaster-stricken areas. Steps must be taken to overcome demoralization of the affected population • A community stricken by a disaster may descend into total personal and social chaos. Immediate, firm and unequivocal control is required, often from the outside	• Information about danger should be disseminated, not withheld because of fear that people will panic • Residents of disaster-affected areas respond actively and do not wait for community officials to tell them what to do • The ratio of disaster damages to community and regional resources is usually low to modest. Local social units generally have enough material resources and personnel to deal with the situation. Outside aid should be consistent with local requirements and not sent indiscriminately • Although symbolic security measures should be taken, massive deployment of forces for security is usually unnecessary. Looting and other antisocial behaviours are not major problems in most disaster situation • Community morale is generally high immediately after a disaster. Quick restoration of essential community services tends to sustain this view • Communities mobilize rapidly to meet emergency demands even under severe circumstances. Timely coordination is more important than control. Although it is often difficult to achieve, coordination is essential and should be maintained under local authority

Source: (Dynes, Quarantelli, & Kreps, 1972a)

Response processes begin as soon as it becomes apparent that disaster is imminent and lasts until the emergency is declared to be over (Coppola, 2007). Response is the most complex of the four stages in disaster management, because it is conducted during periods of very high stress, in a highly time-constrained environment, and with limited information. Response includes not only activities such as limiting injuries, loss of life, and further damage to property, shelter and the environment, but also includes systems developed to

coordinate and support such efforts. Response involves the rapid resumption of critical infrastructure – for instance, (re)opening transportation routes, restoring communications and electricity, and also ensuring food and clean water distribution. These measures aim to allow recovery to take place, reduce further injury and loss of life, and speed up society's return to its normal functioning.

2.3.2.4. Recovery

Recovery is the activity that returns infrastructural systems to minimum operating standards and guides long-term efforts designed to return life to normal or improved levels after disaster. Recovery begins the moment a disaster happens (Sullivan, 2003). Disaster recovery is the function by which countries, communities, families and individuals repair, reconstruct or regain what has been lost as a result of a disaster, and reduce the risk of similar disasters in the future (Coppola, 2007). Recovery activities cover decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the affected community. At the same time these activities encourage and facilitate required adjustments to reduce disaster risk. This stage can be done by undertaking activities such as damage assessment, debris removal and the creation of disaster assistance centres.

The activities associated with disaster recovery are the most diverse of all disaster management functions. The range of individuals, organisations and groups involved is also greater than in any other function. Recovery generates the greatest amount of interest and attention from the whole community, because disaster consequences affect people's lives. Also, recovery activities attract (or involve) a greater amount of money compared to other functions. According to Coppola (2007), recovery requires a complex process of planning, coordination and funding, which covers activities such as ongoing communication with the public, provision of temporary housing or long-term shelter, assessment of damage and needs, demolition of damaged structures, clearance, removal and disposal of debris, rehabilitation of infrastructure, inspection and repair of damaged structures, new construction, social rehabilitation programs, creation of employment opportunities, reimbursement

for property losses, rehabilitation of the injured, and reassessment of disaster risk.

The recovery process can be divided into short-term and long-term activities. The short-term recovery phase immediately follows disaster events and seeks to stabilize the lives of those affected in order to prepare them for the long road toward rebuilding their lives. The activities at this stage include the provision of temporary housing, the distribution of food and water, and the restoration of critical infrastructure. Long-term recovery does not begin until after the emergency phase of a disaster, when the community begins to rebuild and rehabilitate. In many cases it has been found that the community needs to be reinvented, by accommodating new information about disaster while maintaining as much of its original culture and pre-disaster condition as possible. The types of recovery involved are public assistance, economic recovery, housing recovery and cultural recovery.

Some experts on disaster science, such as Quarantelli (1997) and Perry and Lindell (2003), identify requirements for implementing disaster management. Table 2.4 explains these requirements.

Table 2.4 Good Preparedness in Disaster Management Planning

E.L Quarantelli	Ronald W. Perry & Michael K. Lindell
1. Views disasters as both quantitatively and qualitatively different from accidents and minor emergencies	1. Should be based on accurate knowledge of the threat and of likely human responses
2. Highlights a continuing planning process rather than the production of an end-product such as a written plan	2. Should encourage appropriate actions by emergency managers
3. Adopts a multi-hazard rather than single hazard focus and is generic rather than agent specific	3. Should address inter-organisational coordination
4. Builds on the notion that what is needed is a model that focuses on the coordination of emergent resources, rather than trying to impose some kind of command and control	4. Should integrate plans for each individual community hazard managed into a comprehensive approach for multi hazard management
5. Focuses on general principles rather than specific details	5. Should be based on the idea that plans should have a training component
6. Assumes potential victims will react well during the emergency time of major	6. Should develop the coordination which is needed by the response agency team during an actual emergency
	7. Should provide for testing proposes response operations

crises 7. Emphasises the need for intra and inter-organisational integration in the process 8. Encourages appropriate actions by anticipating likely problems and possible solutions or options 9. Builds on social science research findings derived from systematic data 10. Includes all four time phases of the planning process, that is mitigation, preparedness, response and recovery	8. Should understand that it is a continuing process 9. Should be conducted in the face of conflict and resistance 10. Should recognize that planning and management are different functions and that the true test of a plan rests with its implementation during an emergency

Source:(Perry & Lindell, 2003; Quarantelli, 1997)

Given the range of problems involved in response and recovery, disaster experts need knowledge and skills from at least five decision perspectives: medicine, engineering, public health, economics, and public policy and management. In the evolving design of a disaster management planning process, the primary organisational task in response and recovery is to connect the elements within each domain of action and to integrate the different domains into a coherent, effective program of operations. The objective is to weave a productive network of organisations, drawing resources and skills from relevant jurisdictional levels to meet the needs of affected communities.

2.3.3. Indicators for the Success of Disaster Management

Many scholars try to define the critical factors in managing disasters. Table 2.5 is the summary of several scholars' conceptions of measuring the performance of disaster management.

Table 2.5 Critical Success Factors for Disaster Management

Indicator	Explanation
Effective institutional arrangement (Moe & Pathranarakul, 2006)	Institutional arrangement is crucial, particularly to the condition where the responsible government lacks authority, or may cause unclear power authority distribution and postpones making decisions, especially in the case of emergency relief and rehabilitation. There must be some relationship between central and local government in order to implement the policy well.
Coordination and collaboration (Charoenngam & Leungbootnak, 2005)	There are five different levels of coordination and collaboration among key stakeholders: international, national, regional, organisational, and project levels. However, lack of coordination among stakeholders is commonly found in many countries.
Supportive laws and regulations (Tingsanchali,	Supportive laws and regulations have a positive impact on the success of disaster management policy. Therefore, it must be

2005)	established and enforced to create a conducive environment for managing disasters.
Effective information management system (Charoenngam & Leungbootnak, 2005)	Information is playing a vital role for planning, early warning, and rehabilitation and reconstruction. Therefore effective information management systems and sharing vital information among key stakeholders are necessary to achieve the outcomes of disaster management.
Competencies of managers and team members (Newport & Jawahar, 2003)	Disaster preparedness will not be implemented without the participation of the vulnerable community or target beneficiaries. Hence implementing the policy should not become an individual manager's responsibility. People in vulnerable areas can be provided with effective development training to tackle crisis and emergency situations and, at the same time, government can also provide people with high level competences to train the community.
Effective consultation with key stakeholders and target beneficiaries (Moe & Pathranarakul, 2006).	Participation of all stakeholders is critical to formulate strategy and action plans that suit the local needs.
Effective communication mechanism (Turner & Muller, 2004)	Effective communication is described as a collaborative working relationship between multiple stakeholders as a key success factor in addition to government staff expertise.
Clearly defined goals and commitments by key stakeholders (Diallo & Thuillier, 2004; Youker, 1999)	Goals must be clearly defined and key stakeholders must share agreement and commit to implement the goals. Goals can be obtained from previous disaster experience that may provide important lessons for creating good policy.
Effective logistics management (Perry, 2007).	Effective logistics management related to people, expertise and technology is necessary in the all phases of disaster – before, during and after. It is commonly found that most transportation problems stem from transportation bottlenecks, lack of coordination in different relief works, and poor national transport infrastructure.
Sufficient mobilization and disbursement of resources (Diallo & Thuillier, 2004; Youker, 1999)	A resource planning process determines what resources (people, equipment, and materials) are needed and in what quantities, in order to undertake the required activities.

Source: Adapted from (Charoenngam & Leungbootnak, 2005; Diallo & Thuillier, 2004; Moe & Pathranarakul, 2006; Newport & Jawahar, 2003; Perry, 2007; Turner & Muller, 2004; Youker, 1999)

Quarantelli (1997) also provides ten criteria for good disaster management based on the results of empirical research conducted by social scientists over the past 40 years, which may be applicable in the developing countries.

Table 2.6 Criteria for Good Disaster Management

Criteria	Indicators	Explanation
1. Recognise correctly the difference between agent- and response-generated needs and demands	• Effective mobilisation of personnel and resources • Proper task delegation and division of labour • Adequate information flow • Considerable decision making	Agent-generated demand such as in an earthquake can generate a preparedness need for tents to live in temporarily. Conversely, response-generated demand is produced by

			the very efforts responding organisations make to manage community disasters
2.	Adequately carrying out generic functions	• The function recognised early • The function carried out without too many problems • Disaster victims satisfied with the functions provided	Generic function refers to activities that may be useful in various disaster events and may adapt to situational demands such as warnings, evacuations, sheltering, emergency medical care, search and rescue, and protection of property
3.	Effectively mobilising personnel and resources	• Who will use volunteers/personnel • Where they will be sent/located • How they will be supervised • When they will be used	Effective means that a desired and intended result has been produced
4.	Generating an appropriate delegation of tasks and division of labour	• The ability to mobilise additional resources which do not lie within the normal responsibility such as large scale search and rescue, handling of mass casualties, establishing who should appear on missing-person lists, instituting and using a pass system to prevent entry into damaged areas • The ability to modify the established patterns of decision making • Authority relationship and information flow channels	Appropriate means that all necessary tasks are carried out relatively quickly with few problems
5.	Adequately processing information	• Organisations and/or citizens get the information they need • How the information flows within every responding organisation, between organisations, from citizens to organisations and from organisations to citizens	Information flow emphasises what is communicated rather than how communication occurs
6.	Properly exercising decision making	• Determining the organisational authority to make decisions • Determining the emergent groups' responsibility	Proper decision making required when knowledge and officials with the appropriate information will not always be physically capable of working beyond routine activities
7.	Developing overall coordination	• A clear role, so that a particular individual or organisation controls a specific situation	Coordination informs other organisations or groups about what they will be doing
8.	Blending emergent and established organisational behaviours	• Determining purposes for which officials want to facilitate certain kinds of emergency • Facilitating emergent volunteers	Any disaster will be marked by the presence of emergent groups, behaviour or both, so that they should be blended with all relevant activities
9.	Providing appropriate	• Cooperative interaction between organisational and community	Good disaster management should

	officials and media representatives • Citizens trust media that give accurate information	encourage the development of patterns of relationship that are acceptable and beneficial to the responding organisations, the mass media and citizens in particular
reports for the news media		
10. Having a well-functioning emergency operations centre (EOC)	• Facilitate the information flow necessary for coordination activity such as adequate communication provision, computers and work space • Liaison personnel should be knowledgeable • Possess certain decision-making responsibilities	EOC serves as the master coordination, and it is also a function, place and structure

Source: (Quarantelli, 1997)

2.3.4. Disaster Management Approaches

There are several approaches to disaster management. Firstly, the pro-active approach is described in terms of activities that are well-planned and conducted before a disaster occurs. The aim of this approach is to reduce the impact of disasters. Activities in this approach cover mitigation, preparedness and partial response in the prediction of disasters and disaster warning. Secondly, the reactive approach covers activities of response and recovery after a disaster occurs (Moe & Pathranarakul, 2006).The reactive approach includes activities such as assessing impacts and their level, response and recovery activities, warnings, emergency relief, rehabilitation and reconstruction levels in disaster management.Thirdly, the integrated approach includes both the proactive and the reactive approach. Fourthly, the vulnerable approach is defined as the degree to which people are susceptible to hazard (Baird, O'Keefe, Westgate, & Wisner, 1975; Blaikie, Cannon, Davis, & Wisner, 1994; Cannon, 1994; Hewitt, 1997; Lewis, 1999; Maskrey, 1989; Winchester, 1992).

The vulnerability approach to disaster management was introduced in the 1970s and stemmed from the 'alternative perspective'. One of the doctrines of the alternative approach is that human behaviour determines the level of vulnerability in the event of a disaster (Bhatt, 1998; McEntire, 2001). The vulnerability approach, not surprisingly, takes vulnerability as the starting point for understanding why a disaster happened, who it impacted, why it impacted a

particular group, and how to estimate future vulnerability. This approach is important because its goal is to reduce future vulnerabilities. The emphasis of the vulnerability approach is on 'how communities are exposed to dangers or become unsafe', but the focus is on those who are affected (Hewitt, 1997). Indonesia has adopted integrated approach by changing institutions and policy related to disaster management with emphases on mitigation, preparedness, response and recovery activities.

2.3.5. Stage and Capability Requirements

This section summarizes the stage and capability requirements in mitigation, preparedness, response and recovery activities, which cover process, aim, output and key actors at each stage of disaster management

Table 2.7 Critical Stage of Disaster Management

	Stage	Capability Requirements	Process	Aim	Output	Key Actors
Risk Identification and Assessment	Mitigation	1. Evaluation 2. Monitoring 3. Dissemination	The process is based on a review of : 1. the technical features, such as location of disaster, intensity, frequency and probability 2. the analysis of the physical, social, economic and environmental dimensions The process should be coordinated with national meteorological or geological services, so that when the warning message is transmitted from the specialist forecasters to the disaster zone it may lessen the damaging effects of disaster	1. To reduce the chance of an emergency happening 2. To lessen the damaging effects of unavoidable emergencies 3. To detect an environmental change 4. To calculate the distribution of high risk areas and vulnerability areas 5. To suggest the best alternative for population withdrawal from risky areas	The issuing of: 1. timely and effective early warnings 2. temporary evacuation of people and property from threatened locations 3. risk and disaster assessment report 4. agreement with resources and commitments 5. early estimates of relief needs 6. administrative documents (scope, budget, organisational design, schedule)	Funding agency, consultant, implementing agencies, government
	Preparedness	1. Planning (on-site emergency planning and off-site emergency planning) 2. Exercise 3. Training	Increase awareness of potential disaster risk and vulnerability among communities through effective communication channels for providing early warning with accuracy and lead time	1. To provide early warning with accuracy and lead time 2. To increase public awareness 3. To educate the public on how to survive during a disaster	1. Report on early warning 2. Educational program on disaster	Consultant, implementing agencies, government, subcontractors, suppliers

Impact Assessment						
	Response	1. Needs assessment coordination 2. Information exchange 3. Logistical expertise	Emergency and relief services meet community expectations by carrying out timely and responsive relief activities without delay	1. To evacuate people and livestock 2. To estimate the expansion of affected areas 3. To arrange the logistics for the vulnerable people 4. To estimate economic damages, record deaths, injuries and missing persons 5. To coordinate with NGOs or national/international relief aid	1. Warning 2. Evacuation 3. Sheltering Report on disaster impacts 5. Emergency medical care 6. Search and rescue 7. Protection of property	NGOs, international/national development agencies, implementing agencies, government, suppliers
	Recovery	1. Damage assessment expertise 2. Debris removal expertise 3. Disaster assistance skill	In order to restore community life back to pre-disaster condition, the project assets should be transferred to the community and financial settlements should be completed	1. To reconstruct damaged houses and public utilities/facilities 2. To re-establish commercial and industrial facilities	1. Replacement of temporary living 2. Relief from economic constraints 3. Injection of capital into the community 4. Support and strengthening of existing economic enterprise	NGOs, international/ national development agencies, implementing agencies, government, suppliers, subcontractors

Source: (Indian Institute of Disaster Management, 2007; Moe, et al., 2007; Moe & Pathranarakul, 2006; Shaluf, 2008)

2.4. Local Government and Decentralisation

Discussion of local government and decentralisation cannot be separated from the paradigm of New Public Management (NPM). A paradigmatic break from the traditional model of public administration began in the late 1970s and early 1980s in the UK and in some municipal governments in the US. This was called New Public Management (NPM). NPM was a reaction to perceived weaknesses of the traditional bureaucratic paradigm of public administration and encompassed a 'critique of monopolistic forms of service provision and an argument for a wider range of service providers and a more market-oriented approach to management' (Stoker, 2006). The central idea of NPM was to improve government and public administration practices and to make the public sector 'lean' and more competitive while at the same time, trying to make public administration more responsive to citizens' needs by offering value for money, choice flexibility and transparency (OECD, 1994).

According to Hood (1991), the key components of the NPM paradigm are hands-on professional management, explicit standards and measures of performance, greater emphasis on output controls, disaggregation of units in the public sector, greater competition in the public sector, private sector styles of management practice, and greater discipline and parsimony in resource use. In addition, Hughes (2006) articulated the characteristics of NPM as management as a higher order function than administration, economic principles which can assist public management and modern management theory, and practices which can improve public management and service delivery.

NPM was implemented through three main themes: decentralisation, improved competitiveness by increased efficiency, and effectiveness and accountability for performance (Groot & Budding, 2008). However, NPM is now seen as outmoded, and possibly not descriptive of what actually happened. NPM has also produced some unexpected negative results. O'Flynn (2007) cites negative results in increasing transaction costs due to the high cost of contract

preparation, monitoring and enforcement. Minogue (2000) argues that the extensive literature on privatisation, contracting and the use of the market lacks evidence of any real efficiency gains, and that restructuring and downsizing of civil services in developed countries has produced a decline in accountability.

There is no doubt that many developing countries are experimenting with NPM reforms: for example, total quality management in Malaysia, the result-oriented management initiative in Uganda, and the implementation of decentralisation in Indonesia. However, many research findings have indicated that administrative reform has always had a high failure rate in both developed and developing countries (Caiden, 1991; Kiggundu, 1998). This is caused by lack of expertise and the unreliability of information systems in developing countries, and is also due to the management of government in developing countries being afflicted by corruption and nepotism (Kiggundu, 1998). However, despite the failure of NPM reforms in developed and developing countries, the adoption of NPM remains important because NPM develops a concept of citizenship, and emphasises participation and accountability as legitimate concerns of management in the public sector.

The concept of decentralisation as one of the main themes of NPM has been developed and widespread since the 1990s in considering the growth of local government and its important roles. Therefore many researchers have sought to shift the focus to local government issues rather than central government (Raadschelders, 1994). Decentralisation stimulated a shift of highly centralised authority and resources to local governments. Local governments grapple with how to carry out routine administration, provide good quality public services and plan for the economic development of their localities.

In developing countries, discourse about decentralisation emphasizes the structure, roles and function of government in achieving effectiveness of central power and the advantage of decentralising authority to local government bodies in promoting economic and social progress for the benefit of the community (Cheema & Rondinelli, 2007). Decentralisation has created new responsibilities and expectations for local government bodies, and the process itself has

brought significant new resources and power to local decision makers, but also new pressures and concerns. Local government bodies are also being created and restructured, employees need to be trained and new procedures have to be put into effect. According to Oluwu (1999), local government is the sphere of government that comprises local community management and administration, and encompasses the political and bureaucratic structures and processes that regulate and promote community activities. It is the tier of government closest to the constituents and it is involved in the provision of a wide range of services that affect the lives of inhabitants residing in its area of jurisdiction, through institutions called local authorities. In this study local government refers to levels of government that are subordinate to central government, but does not include provincial government in a republic system of government.

2.4.1. Local Government and Disaster Management

Discussion about the importance role of local government in managing a disaster commenced in the disaster literature in the mid-1950s (Cigler, 1987; Herman, 1982; Labadie, 1984a; May, 1985; Perry & Mushkatel, 1984; Wolensky & Wolensky, 1990). Much recent attention paid to disaster management at local government level is for the following reasons. Firstly, disaster management is implemented by local governments (Perry & Mushkatel, 1984). Secondly, there is a growing understanding that local governments play the most active role in emergency operations (Herman, 1982; Labadie, 1984a). Thirdly, there is a shift in central government to decentralise power and authority to local government in terms of disaster activities (May, 1985). Fourthly, there is the emerging need to adopt and develop a sense of locality in emergency planning, because local government is crucial in terms of responsibility for emergency management (Cigler, 1987; Somers & Svara, 2009), and faster and more effective in responding to disaster (Kapucu, 2009; Kapucu, Arslan, & Collins, 2010).

According to Solway (2004), the objectives of local government in managing a disaster consists of:

1. identifying vulnerable people and areas within the district;

2. ensuring that all members of the community are aware of the potential effects of natural disasters;

3. disseminating advice notes and good practice guides for disaster mitigation by the community;

4. maintaining contact with officials responsible for planning, construction, health and welfare, by issuing warnings, or fire and crowd control systems;

5. ensuring that members of the community receive suitable first aid training;

6. implementing community education and awareness programmes by working with local schools; and

7. identifying escape routes and the location of 'safe sites' and refuges.

Disasters may create crisis conditions for local governments facing uncertainty because their systems may not fit with the current paradigm that declares disaster as a product of nature. To deal with unpredictable events, the system must be carefully prepared to handle crises. In short, local government needs to produce a plan for rapid change and adaptation. However, most disaster response by local government relies on command-and-control management, which follows a structured approach (Neal & Phillips, 1995).

Bureaucracy at the local level is designed to decentralise responsibility from central government. It focuses on short-term goals and creates specialised job roles and functions. On the other hand, to have the ability to cope with disaster, bureaucracy must adopt a holistic management model which is supported by continuous learning, adaptation to change, a long-term focus, a low rate of errors, and a high capability of incorporating new information and learning (Takeda & Helms, 2006). Traditionally, the vital elements of bureaucratic management systems are a focus on formal rules and operations, which emphasize process rather than outcomes. Takeda and Helms (2006) argue that the failures of the bureaucratic approach result from the combination of decentralised knowledge with centralised decision making, tend to ignore information from outside and have a commitment to failing courses of action. Bureaucratic management systems depend on group decision making, because roles are formalised and information is codified. Moreover, this approach may lead to fostering people who have limited expertise.

Relevant information is sometimes neglected because it is not currently part of the local system, even though it is relevant to the task faced by the system. In addition, bureaucratic knowledge and information sharing structures encourage a high degree of commitment by organisation members (Ishikawa, 1988). The roles are made contiguous by a codified system of decision making and have the potential to obstruct the system's capability to identify and respond appropriately when crisis situations occur. Because people perform rigidly in their roles, the uncertainty of circumstances may not be properly resolved, even when the agents' commitment may increase and their loyalty may be constructive.

2.4.2. The Problem of Local Government in Managing a Disaster

In many cases of disaster in developing countries, local government has argued that disasters illustrate the extreme costs and inefficiency of central decision making, and has complained about the lack of appropriate power and responsibility to respond in emergency and crisis situations. No plans may be available for coordination between stakeholders at the local level; as a result, local government must often wait to consult with the central government on actions or responses which might be implemented as central mandates (Hoetmer, 1983; Perry & Mushkatel, 1984; Wolensky & Wolensky, 1990). Previous experience with disaster events should enhance high capability in disaster management planning, but it seems that most local governments allocate a low priority to comprehensive disaster management, even though some local governments may take an interest in a specific disaster (Cigler, 1987). The chief obstacle for bureaucracy in central or local government is their practice of doing a task regularly; therefore they occasionally refuse to adopt better and faster innovations. Thus, when a disaster occurs, daily tasks cannot be extrapolated as a response to a major disaster. There is a 'tendency on the part of officials to see disaster planning as a product, not a process,' as well as their tendency to isolate disaster planning 'from the day-to-day planning process by assigning it to organisations or units within organisations that are separated from traditional, institutionalized sources of social power within the community' (Wenger, James, & Faupel, 1980).

Another reason why local government fails in its response to disasters is ineffective planning and implementation, ambiguous lines of authority, blurred methods of information and dissemination, lack of inter-organisational coordination, neglect of recovery problems and violation of established planning procedures (Dynes, Quarantelli, & Kreps, 1972b; Turner, 1976a). Even local government in developed countries may lack responsiveness to disasters, as Wyner and Mann comment: 'Risk level decision making in local government… is characterized by low visibility, incrementalism, and low priority' (Wyner & Mann, 1983).

The problems of local government in managing a disaster start from the common perception by stakeholders that disasters are unexpected, unplanned and Acts of God, so that planning becomes less important and incurs high cost in preparing for such events. Inadequate preparedness relates both to unwillingness and to inability to plan (Cullen, 1976; Godschalk, 1988). Another problem may be triggered by ineffective leadership and the political pressures (Rossi, Wright, & Weber-Burdin, 1982).

Local government is commonly unable to cope with the overload and is substituted for by an improvised emergency government agency, such as a citizens' association, or by authorities from state or national agencies (Barton, 1970). A citizens' association is important because local people know their local needs best. Decentralized government brings a proliferation of semi-autonomous boards and authorities that can work against emergency coordination. At the same time, almost all communities are disorganized when it comes to coping with disaster, even in localities with extensive pre-disaster planning. Therefore the deficiency of the bureaucracy in preparing for disaster is seen as limiting its capacity for emergency response. Highly decentralized disaster response and planning involve a diversity of bureaucratic personnel and organisations, which allow the bureaucracy to adapt rapidly to changing disaster and a changing environment.

Labadie (1984b) highlights several problems in local emergency management. *First* there is organisation. The position of the emergency leader within the local

government structure is usually under a line agency such as police, fire or public works. Emergency management must therefore compete with all other line agencies for limited funds. During a disaster, it is difficult to coordinate all resources effectively when operating from a line agency that is itself a source of resources. Moreover, at the response stage, communication and coordination become the most frequent problems in local government response to disasters (Drabek, Tamminga, Kilijanek, & Adams, 1981). *Second* is the budget. Even though local government may have large amounts of money, demands on their funds are correspondingly large, and, because of rigid bureaucratic procedures, it is not easy to switch budget allocations, particularly in developing countries. *Third* is attitude. The most obvious attitudinal problem that emergency leaders face is apathy from elected officials, department heads and the general public. Most people would rather not think about disaster until it occurs, and it is difficult to change this perception. Disaster is considered part of an unimportant discourse, and most disasters are seen as Acts of God, so that thinking about disaster is seen as a waste of resources. However, it is too late to start planning and developing an emergency organisation when a disaster occurs.

Table 2.8 Local Governments' Problems in Implementing Disaster Management

Stage	Problems
Mitigation	1. Low public awareness because disaster is seen as an Act of God 2. Low commitment of government (for instance, low priority and low visibility in government goals, in dealing with regular tasks and refusing innovation), political pressure, ineffective leadership and organisation, financial
Preparedness	1. Inadequate early warning system 2. Financial
Response	1. Communication, especially inter-agency information flows 2. Difficulty in coordination, both horizontal and vertical, is encountered at times 3. Public Information such as the warning system is proved inadequate, initial media reports overstate the extent of the disaster, increasing the volume of inquiries about the well-being of local residents, and some victims report temporary difficulty in locating family members during the response period 4. Volunteer help: those unaffiliated with organized relief agencies could have received better direction and been more effectively integrated with the rest of the network
Recovery	1. Budget constraints 2. Lack of expertise 3. Command and control from central government

Source: (Dynes, et al., 1972a; Labadie, 1984b; Wolensky & Wolensky, 1990; Wyner & Mann, 1983)

Based on the previous discussion, it can be concluded that the problem of local government in managing disaster can be identified in each stage of disaster management (mitigation, preparedness, response and recovery), summarized in Table 2.8. This summary may then provide guidelines to develop a conceptual framework and it aims to to answer research questions that arise in this study.

2.4.3. The Role of Central Government in Disaster Management

Bureaucratic management relies on clearly defined objectives and formal structures to coordinate all activities at all government levels, through a clearly stratified division of labour so that redundancy and confusion are avoided, and policies and procedures designed, developed and enacted by organisation members that respond effectively in a highly chaotic environment (Takeda & Helms, 2006). The bureaucratic system is designed to facilitate rational reactions in a highly irrational and chaotic set of circumstances (Schneider, 2001). Disasters require a very different management mindset in order to tackle a crisis and the complex situation that may be faced by bureaucracy, because no two natural disasters are alike and as they unfold they often have to be technologically, culturally, socially and politically constructed.

Disaster management activities involve all levels of government agencies, in terms of mitigation, preparedness, response and recovery. Each level of government has a proper role in comprehensive disaster management. Managing a natural disaster is at the core of national policies. Therefore all levels of government must have clear roles and policies for natural disaster risk reduction and management.

In general, the role of central government is to be able to carry out generic functions in the event of a disaster. As Kreps (1984) states, activities such as mobilising emergency personnel and resources, assessing the damage, coordinating emergency management activities and restoring essential public services are the common functions that central government should do. Moreover, Labadie (1984b) adds that, although local government plays a most

active role during disasters, central government can normally provide resource support and information to supplement responses and recovery efforts at the local level if local officials are themselves casualties of disaster, or cannot be contacted by their customers, or are unable to provide needed information, knowledge or skills (Quarantelli, 2006). Maor (2010) adds that the objective of central government in disaster events is to ensure uniformity in a very high risk area, and therefore having central control is a clear means to accomplish this.

During a disaster, the channelling of information in the organisation becomes more complex for a number of reasons: several individuals may occupy a work position that was previously held by another person; officials must often work on non-routine tasks; and officials may have been reassigned to work in temporary positions within the organisation (Quarantelli, 1997). These factors can lead to difficult situations, and central government can play an important role to limit any potential conflict between government officials. The information channel becomes similarly difficult in inter-organisational, citizen-to-organisation and organisation-to-citizen information flows (Drabek, 1985; Quarantelli, 1985).

Beside these functions and roles in managing disasters, central government must ensure positive interactions among all levels of government, community officials and media representatives (Quarantelli, 1997). The United Nations Organisation (1989) has also emphasised several functions of central government in managing disaster. Firstly, it should formulate national disaster-mitigation programs, as well as economic, land use and insurance policies for disaster prevention, and, particularly in developing countries, fully integrate them into their national development programs. Secondly, it should encourage local administrations to take appropriate steps in mobilising the necessary support from the public and private sectors. Thirdly, it should take measures, as appropriate, to increase public awareness of damage risk probabilities and the significance of preparedness, prevention, relief and short-term recovery activities with respect to natural disasters, and it should enhance community preparedness through education, training and other means, taking into account the specific role of the news media. Fourthly, it should pay due attention to the impact of natural disasters on healthcare, particularly to activities that mitigate

the vulnerability of hospitals and healthcare centres, as well as the impact on food storage facilities, human shelter and other social and economic infrastructure. Lastly, it should improve the early international availability of appropriate emergency supplies through the storage or earmarking of such supplies in disaster-prone areas.

Solway (2004) also points out that the functions of central government as follows:

1. to adopt a disaster management strategy covering mitigation, preparedness, prevention, response, recovery, reconstruction and development, to ensure that the existing disaster management structure enhances its system and constitution, and to ensure a sufficient emphasis on mitigation and preparedness;

2. to allocate an adequate proportion of the national budget for disaster mitigation;

3. to define an appropriate role of the military sector in planning mitigation strategies for the physical infrastructure;

4. to consider the establishment of volunteer organisations in providing civil aid in emergency situations; and

5. to develop existing centres of expertise and the scope of technical data available to enhance public awareness.

During a disaster, citizens have the right to receive accurate data and a clear picture of what is happening from the media. Therefore, along with the coordination of local government, central government must be responsible for gathering data and providing relevant details for dissemination to the mass media.

2.4.4. Relations between Central, Provincial and Local Government

The National Academy of Public Administration acknowledges the need for increased capacity and understanding on intergovernmental research particularly on disaster management issues (National Academy of Public Administration, 2006). Intergovernmental relations are those that occur between

central, provincial and local government. In other words, it is 'the subject of how these three levels of governments deal with each other and what their relative roles, responsibilities, and levels of influence are and should be' (O'Toole, 2000, p. 2). Mutual aid agreements and relations between central, provincial and local government to disaster response represent the varying levels and complexity of intergovernmental relations (Kettl, 2004). At the same time, local government and disaster vulnerability at community levels are directly connected to national government and the global economy. Disaster mitigation strategies are set in political agendas at all government levels and this makes local-level disaster preparedness even more complex. Local governments therefore must comply with national and provincial demands, must work within a local budget, and must satisfy their local community. Disaster responses are often stimulated by political rivalries and conflicts of interest, and these can render disaster management ineffective(Winchester, 1992). Winchester adds that politicians, often at the central state level, bargain for funding because they have both local and state power groups and interests in protecting certain areas. In addition, decisions at the local level sometimes reflect national ideologies and global market demands.

In an era of global markets, the agendas of national governments and the power relationships between the central government and local governments strongly influence disaster responses and planning. As a result of this, the coping strategies and interests of the community at the local level often go unheard. However, in order for mitigation efforts to be successful, disaster management planning has to include local-level public participation and people should be encouraged to rebuild their lives and respond to disaster (Maskrey, 1989; Pearce, 2003a) .

Local-level engagement in disaster management is a crucial issue for disaster management; thus, to be effective in managing disasters, central and provincial governments should decentralize decision-making power to local government (ADPC, 2003; Blaikie, et al., 1994). Stoker and Wilson (2004, p.3) add that centralization is not just a question of how much central government controls,

but how it is distributed. In addition to this, disaster management program may be centrally determined but designed to fully cater for local government needs.

Although the existence of disaster preparedness strategies at the national and provincial level is important, it is equally important that local government has the capability to contribute design and policy implementation of these strategies at regional or local levels. Newport and Jawahar (2003) add that community involvement, in both pre-disaster preparedness and disaster response, are important in order to effectivelymitigate disasters. Local government must be supported by communities, provincial and national policies for effective disaster responses. This is especially important for rural areas which have limited expertise in rescue teams and it may result in the highest disaster-related impacts. Moreover, the local government objective is to obtain a tailor-made local preparedness plan and designed emergency training exercises, irrespective of the uniform central and provincial government plans (Maor, 2010, p. 316).

Disaster management requires intergovernmental networks between central, provincial and local government in order to share responsibilities, information, expertise, and communication (Kapucu, 2009). According to many researchers, central, provincial and local government disaster management efforts are difficult for several reasons. These are the diversity of disasters, the low salience of disaster management as an issue, historical resistance to regulation and planning, lack of strong political and administrative constituencies, uncertainty of risks from disasters, the technical complexity of some regulatory, planning and response efforts, jurisdictional confusion, economic and political circumstances that are inhospitable to expanding government activities, and questionable capacities of central and local government officials to design, implement, finance, maintain and operate effective disaster management systems (Cigler, 1988; May & Williams, 1986; Petak, 1985; Waugh, 1990). To some extent, local capacities can be augmented because financial resources and technical capacity can be provided by provincial and central government. However, local government is required to manage disaster during the first hours

or days, or until help comes, and this will determine the success or failure of a disaster management policy.

In terms of development, local government needs to ensure that growth is sustainable and aimed at reducing disaster effects. However, even if local bureaucrats pay attention and have the right intentions, central and provincial government agendas and policies for economic growth often compete with or override priorities of sustainable development. Local-level government is often engaged in national ideologies and development agendas. Therefore central, provincial and local government relationships can be detrimental in a disaster, or, conversely, when national and local governments cooperate, disaster responses can be very effective. Effective local government which is aimed at reducing vulnerability and building adaptive capacity is vital to disaster preparedness and mitigation. However, in order to mitigate and reduce risks, there must be a commitment from all levels of government and clear collaboration between multi-stakeholders, such as national government, provincial government, local governments, non-governmental organisations and civil society.

2.5. Theory Explaining Organisation Capability

With natural disaster management, there is a need for theories to frame mitigation, preparedness, response and recovery efforts. Framing develops the plans, coordinates the exercises, presents the contingencies and allows for improved natural disaster management (Herzog, 2007). Disaster management could benefit from a multitude of theories and approaches. Determining which set of theories and approaches to select will require evaluation criteria. These criteria would help to choose between competing theories and may become goals and ideals for the future development of theory related to natural disaster.

The present study is mainly focused on organisation capability, which in management research is represented as a critical success factor. Every organisation today wants to be perceived as being capable of doing something in an outstanding manner. The following section briefly reviews the theory and

approach which describe the meaning of organisational capability, what should be done to gain such capability and how this knowledge would assist in identifying the constraints related to local government capability in managing a disaster.

2.5.1. Resource-Based Theory

This study aims to assess the capability of local government bodies, particularly in dealing with earthquake disaster. This focus requires that the issue of resource management be carefully considered. The purpose is to draw all resources together and to achieve the organisation's goal to protect the community from vulnerability. Understanding resource-based theory (RBT) will therefore support the explanation of what resources an organisation should have in order to achieve its aims. RBT also sees the requirements of an organisation in achieving its goals from the perspective of the organisation's capabilities. As Acedo, Barroso and Galan (p. 509) argue, RBT has widespread application, and it is heterogeneous and useful as a strategic approach in management discourse (p. 237).

RBT is an efficiency-based explanation of sustained superior organisation performance. There are many definitions of resources. An organisation's resources can be its assets (Barney, 1991; Wernerfelt, 1984), its competences and capabilities (Stalk, Evans, & Shulman, 1992), and also its knowledge (Grant, 1996; Liebeskind, 1996; Spender & Grant, 1996).

Barney and Clark (2007) point out that there are many prerequisites for an organisation seeking to acquire sustained competitive advantage. Firstly, the resource must be a valuable one, which exploits opportunities and neutralizes threats. Resources become valuable when they enable an organisation to consider or implement strategies that enhance the organisation's performance. Secondly, the resource must be rare. Some strategies require a particular combination of physical, financial, human and organisational capital resources, so that the organisation needs to access specific managerial talent in order to gain competitive advantage (Hambrick, 1987). Thirdly, the resource has to be

imperfectly imitable. By this experts mean that the combination of unique historical conditions, causal ambiguity and social complexity will allow an organisation to gain competitive advantage. Fourthly, one should be able to develop the organisation's resources as organisational processes. Numerous aspects of an organisation, such as formal reporting structures, management control systems and compensation policies, can influence the ability to exploit to the full its competitive resources and capabilities (Dierickx & Cool, 1989).

2.5.1.1. The Organisational Dynamic Capability

The concept of organisational capability has attracted much interest, primarily in management research. In RBT, organisational capabilities have been identified as one major source for the generation and development of sustainable competitive advantage (Barney, 1991). Recently, in the capability debate, issues of environmental uncertainty and change have come to the fore. Therefore the emphasis on organisational capability has now shifted to the ability to change and quickly develop critical prerequisites for sustaining competitive advantage (Schreyögg & Kliesch-Eberl, 2007).

Uncertainty and change are key characteristics of disaster (Moynihan, 2008).But disaster also has a catalytic effect, focusing political attention, widening the interest of publics, incorporating new ideas and breaking down resistance to change (Birkland, 2006). Schwartz and Sulitzeanu-Kenan (2004) warn that, although disaster draws political attention, policy change requires certain conditions such as a perception of a problem in need of a solution, a perception that increased legal and hierarchical accountability is a feasible solution, and a political climate that is conducive to policy change. Disaster can also limit learning by fostering defensive reactions and opportunism. The politics of accountability tends to seek guilty individuals, overlooking systems failures and fostering defensiveness (Drabek, 1994). As a result, leaders disassociate themselves from perceived negative outcomes and deny that a problem exists, or deny that they made an error or that they are responsible for a solution (Argyris & Schön, 1996). Information is suppressed or used as ammunition to

rationalize behaviour and deflect blame rather than to identify useful lessons (Boin, 2005).

Observing capabilities is perhaps the most significant structural problem in managing complex organisations today (Van de Ven, 1986). Leonard-Barton (1992) assumes that descriptors of capabilities such as 'unique', 'distinctive', 'difficult to imitate', or 'superior to competition' render the term self-explanatory, especially if reference is also made to 'resource deployment' or 'skills'. There are many varieties of names in the literature on labelling capability. Various authors have called capabilities by different names, such as distinctive competences (Hitt & Ireland, 1985; Snow & Hrebiniak, 1980), core or organisational competencies (Hayes, Wheelwright, & Clark, 1988; Prahalad & Hamel, 1990), organisation-specific competence (Pavitt, 1991), resource deployments (Hofer & Schendel, 1978), invisible assets (Itami & Roehl, 1987), and complex routines, collective skills and best practices (Schreyögg & Kliesch-Eberl, 2007).

It is also important to define capability, since this is a key concept for this research. According to Williamson (1991), the leading efficiency approach applicable in order to achieve an organisation's goals is the capability approach. Makadok (2001) defines capabilities as special types of 'resources that are organisational embedded non-transferable firm-specific resources whose purpose is to improve the productivity of other resources' (p. 389). Barney and Clark (2007)define capability as the attributes of an organisation, such as financial, physical and individual/organisational capital, that enable it to exploit its resources in implementing strategies. Teece, Pisano and Shuen (1990) provide a clear definition of capability as 'a set of differentiated skills, complementary assets, and routines that provide the basis for an organisation's competitive capacities and sustainable advantage in a particular business' (p. 509). Also, capability is a collection of knowledge sets which is distributed and is being constantly enhanced from multiple sources. Organisational capabilities represent the power of planned and coordinated specialized divisions of labour to achieve organisational goals (Lazonick, 1995).

Amit and Schoemaker (1993) refer to capabilities as an organisation's capacity to deploy resources, usually in combination, using organisational processes, to affect a desired objective. This definition has two key features. Firstly, capabilities are those attributes of an organisation that enable it to exploit its resources in implementing strategies. Secondly, the primary purpose of a capability is to enhance the productivity of other resources that an organisation possesses. Resources are an organisation's fundamental financial, physical, individual, and organisational capital attributes (Hill & Jones, 1992; Hitt, Ireland, & Hoskisson, 1997). Capabilities tend to focus on the ability of an organisation to learn and evolve, and also on 'the antecedent organisational and strategic routines by which leaders alter their resource base – acquire and shed resources, integrate them together, and recombine them – to generate value-creating strategies' (Eisenhardt & Martin, 2000, p. 1107).

Capability does not represent a single resource in the concert of other resources such as financial assets, technology or manpower, but is rather a distinctive and superior way of allocating resources (Schreyögg & Kliesch-Eberl, 2007). Organisational capability is conceived as collective and socially embedded in nature. It is brought about by social interaction and represents a collectively shared 'way of problem solving' (Thorpe & Holt, 2008). Capability is not attributed unless outstanding skills have proved to solve extraordinary problems understood in terms of complexity (Levinthal, 2000). Complexity refers to the characteristics of a problem situation and of decision making under uncertainty (Dosi, Hobday, & Marengo, 2003). Solving complex task requires abilities with a broad capacity. The complexity of a capability therefore reflects the internal requirement for mastering complex tasks (Schreyögg & Kliesch-Eberl, 2007).

There are four dimensions of capability. Firstly, there is the dimension of knowledge and skills. This is the one most often associated with capabilities and the one most obviously relevant to new organisational development (Teece, et al., 1990). Secondly, knowledge and skills are embedded in technical systems. Thirdly, the processes of knowledge creation and control are guided by managerial systems. The fourth dimension is represented by the values and

norms associated with the various types of embodied and embedded knowledge and with the processes of knowledge creation and control. Figure 2.5 shows that capability is an interrelated interdependent knowledge system.

Figure 2.5 The Four Dimensions of Capability

Skills and KnowledgeBase

Technical Systems

Managerial systems

Values and Norms
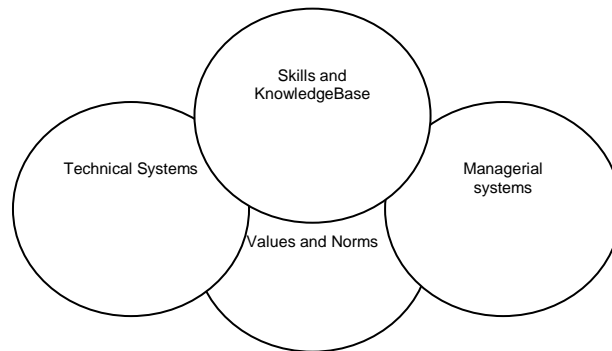
Source: (Leonard-Barton, 1992)

Studying capability of local government in managing disaster has many reasons in its support. According to Moynihan (2008), administrative man intends to be rational when facing a disaster and has a general goal of returning to normal conditions, but there are obstacles limiting his knowledge of how to return to normalcy. Moreover, Boin (2005) emphasises that when the need to learn how to return to normal conditions is at its peak, the institutional capability of public leaders and of organisations may be disappointingly low. The mistakes that local government normally makes when preventing disaster may frequently be connected to rigid institutional beliefs, ignoring outside complaints, difficulties in handling multiple sources of information, and the tendency to minimise danger (Turner, 1976b).

In relation to disaster events, it is fundamental to identify the demands (dynamic and evolving conditions, role uncertainty, and situational constraints) that characterise the disaster response environment and develop the management capabilities required to deal with disasters. Cigler (2007) defines capability as capacity, and in terms of capacity local government must have financial, technical, legal, political, institutional and human resource capacity to perform activities in all stages of routine emergencies. The capability needed in disaster

management relates to delegation, communication, decision making and inter-agency coordination (Paton & Jackson, 2002).

One of the aims of this study is to show that the capability needed by local government is in fact parallel to the critical success factors for implementing disaster management. Therefore through such capability the local government has at the same time initiated critical success factors for disaster management.

Table 2.9 Relations between Capability Requirements and Critical Factors of Disaster Management

Local Government Capability	Critical Success Factor for Disaster Management
Institutional ⟶	Effective institutional arrangements
Human ⟶	Resource effective logistics management
Legal ⟶	Supportive laws and regulations
Political ⟶	Clearly defined goals and commitments by key stakeholders
Financial ⟶	Sufficient mobilisation and disbursement of resources
Technical ⟶	Coordination and collaboration Effective information management systems Effective communication mechanisms
Leadership ⟶	Effective consultation with key stakeholders and target beneficiaries Exercising decision making

Local government's attributes can be seen as resources in disaster management and they reflect the capability of an organisation to manage every stage of disaster management. This study defines capability as an organisation's resources (financial, physical, individual and organisational capital) that are required to achieve an organisation's goal.

2.5.2. Institutional Theory

Resource-based theory has been one of the key theories in management because access to resources is central to the success of an institution. While resources are certainly vital, it has increasingly become clear that issues such as culture, environment, tradition and an institution's history can impact on the success of organisation (Baumol, Litan, & Schramm, 2009). The core premise of institutional theory according to Glynn and Azbug (2002) is that institutions aspire to external legitimacy by complying with their institutional context. External legitimacy can be derived from social and cultural factors that require

an organisation to play particular roles in society (Hatch & Cunliffe, 2006). Institutional theory has been used to explain individual actions and institutional actions (Dacin, Goodstein, & Scott, 2002), as well as aspects of administrative and management practice (Tolbert & Zucker, 1983). According to the theory, institutional variables reflect a pattern of cultural factors that evolve over time and become legitimized within an institution and society (Eisenhardt, 1988). Because institutional arrangements define the social context of institutions and their environment, such arrangements will invariably shape the actions of public officials. Furthermore, Kostova, Roth and Dacin (2008) add that institutional arrangements are shaped by local culture and are therefore local-specific. An institutional environment grants legitimacy to public officials based on compliance and the level of acceptance of certain practices (Pillay & Dorasamy, 2010). Institutional theory is thus concerned with regulatory arrangements, social aspects, norms, beliefs and cultural influences that promote survival and legitimacy of an organisation (Fang, 2010; Roy, 1997; Scott, 2007).

Institutional theory, therefore, provides a theoretical lens through which researcher can examine and identify these issues in the context of the Bantul local government in analysing the key cultural dimension of response and recovery disaster management. By recognising the social and cultural basis of external influences on an organisation, this study aims to link cultural dimensions with the nature of disaster management practice at the local government level.

2.5.3. Network Theory

The idea of a network response to disaster is not new. Dynes et al. (1972b) were discussing the role of inter-organisational relationships as far back as 1970. They argued that new and non-regular crisis tasks would require an ad hoc network. Recently, the most important drivers in understanding networks in building a government for the 21st century are the imperative for knowledge-driven organisations, the increase in non-routine problems, and the growing need for non-hierarchical solutions (Kettl, 2005).

In very broad terms, networks are defined by the enduring exchange relations established between organisations, individuals and groups. Hall and O'Toole (2004) clearly explain that these relationships may be a simple inter-organisational arrangement agencies or a complex combination of organisations, groups, and individuals from a variety of sectors. Network analysis focuses on the structure of those relationships, on the implications for behaviour and performance, and on ways to measure collaborative capacity (Milward & Provan, 1998; Weber, Lovrich, & Gaffney, 2005). Networks may evolve gradually, to govern a shared resource, or evolve suddenly, to deal with impending problems (Gerberding, 2004; Ostrom, 1990). Networks are also understood to demonstrate several desirable characteristics for accomplishing complex tasks. Networks are considered to be flexible, efficient and innovative organizing hybrids that enable leaders to accomplish collectively something that could not be accomplished individually (Powell, 1998). Networks have the potential to create value (Buchel & Raub, 2002) and to accumulate the vital resources and power (Pfeffer & Salancik, 1978) needed to carry out shared tasks and missions.

Networks are examined as an alternative to the limitations of hierarchical and fragmented administrative systems in public policy development and delivery (Jennings & Ewalt, 1998) and as a more democratic means of developing public policy (Kenis & Raab, 2003). A growing literature examines the challenges facing public managers in supporting and utilising networks to accomplish public goals (Bardach, 2001; Klijn & Koppenjan, 2000). Weber and Khademian (2008) define network effectiveness in terms of collaborative capacity (i.e., long- and short-term problem solving capacity), improved policy performance, and the maintenance of accountability for public action. Therefore knowledge sharing and integration are crucial in building collaborative capacity.

According to Comfort (1988), a disaster response network is 'necessarily a learning system because it depends upon the ability of its participants to generate valid information, facilitate informed choice and foster timely commitment to action' (p. 237). Further, the network is strengthened when the participants reflect upon the actions taken, retain the procedures that have

proved effective and discard those that have not. Wollmann (2003, p. 595) adds that a 'network is loosely formed associations of voluntary organisations where the network is based on shared values, trust, solidarity or consensus'.

The scope for understanding networking, particularly in disaster management discourse, is inherently greater due to the need to recognise the most basic aspects of the causes, consequences and solutions in disasters (Moynihan, 2008). Disaster is characterised by high consequentiality, limited time, high political salience, uncertainty, ambiguity, and too much information that is met with limited human cognition, which restricts search and evaluation (Boin & Hart, 2003). Disaster can be seen as an extreme example of societal problems that cut across traditional public boundaries and require a network response. Disaster requires an inter-organisational network rather than an organisational network, since any single organisation may lack relevant experience, standard operation procedures and technologies (Moynihan, 2008). The response to disaster involves many different organisations, both government and NGOs, which have different roles, responsibilities and goals. They undertake different tasks at different times and places and may overlap or even compete with one another. Coordination is therefore required, but in many cases coordination and networking are frequently under-funded, poorly resourced and may be ignored by NGOs, government departments and politicians (King, 2007).

Following Hall and O'Toole's (2000) studies of networks, the definition of a network is a multiplicity of organisations dependent on one another to achieve a common goal. Though the network is sometimes presented as an ideal type with decentralised structural forms and voluntary participation, much research has shown that a network employs varying levels of centralisation while centralisation itself is distinct from hierarchy.

Turner (1976b) found that preventable disasters could frequently be connected to rigid institutional beliefs, ignoring outside complaints, difficulties handling multiple sources of information and the tendency to minimise danger. Improving the level of networking among organisations and government levels has been viewed as critical to optimise the flow of resources among agencies and

increase the accountability and effectiveness of disaster management policy (Rey, 1999). Scholars have argued that the need to procure materials, resources or revenues to guarantee organisational survival has been the primary reason that organisations establish inter-organisational relations (Galaskiewicz, 1985). Inter-organisational networking is characterised by the exchange of information, staff, goods, cash and other items needed during disasters (Moore & Eng, 2003). Aldrich (1979) has also emphasised the same point as Moore and Eng, that organisations are linked together in inter-organisational networks through processes of voluntary exchange.

During times of disaster, human processes are incapable of matching information systems (Comfort, 1989) and this will correlate with a low level of decision capacity of an organisation's staff (Moynihan, 2008). Therefore an information system fosters network coordination by providing timely and accurate information and can act as an error-detection system, identifying discrepancies between plans, actions and outcomes.

Koppenjan and Klijn (2004) categorise three types of network uncertainty. Firstly, there is substantive uncertainty, which can be described as lack of knowledge about the problem or overload of non-definitive information. Secondly, there is strategic uncertainty. Strategic uncertainty arises because networks contain multiple actors who retain some measure of strategic autonomy, creating uncertainty about what choices they will make. Lastly, there is institutional uncertainty, which arises from trying to coordinate actors who have their own perceptions, norms and objectives, and who come from different institutional backgrounds, administrative levels or organisations. Through planned coordination, an organisation can integrate the various types of knowledge needed to develop new policies (Lazonick, 1995).

Disaster management is primarily a civil government activity that is coordinated from local level through state or provincial governments and up to a central government response, with the extent of the activity being dependent upon the severity of the disaster. Although local-level government has become the critical point in a collaborating network, the capability of the governing authority at this

level is limited (Douglas, 1999; Norman, 2003). Therefore all other government levels must require the same commitment to creating a better network, in order to provide social and welfare services to the community.

2.6. Brief Framework of Local Government Decentralization in Indonesia

Decentralization policy was introduced in Indonesia by enactment of Law No.22/1999 on Regional Government[4]. This new policy substantially intended to empower provincial and local government to initiate local policies while central government was obliged to guard the unity of the country, to maintain national integration and to supervise the implementation of decentralization policy (Rasyid, 2002). This Law provided the opportunity for local governments to elect their own institutions, develop them, manage their own financial resources and mobilize support from their own communities. Before this Law was implemented, most development activities that took place at the provincial and regency/municipality levels were carried out by the central government, and, therefore, all central departments had their field offices at the provincial and regency/municipality levels. In 2001, these regional offices were abolished and the functions transferred to the regions and they were to be performed by provincial and district service units. In terms of authority, before decentralisation had taken place, governors and mayors were also made representatives of the central government. They were appointed by and accountable to the central government. However, under this new Law, governors and mayors only serve as regional heads. They are now elected by and accountable to the local parliament body.

In principle, Law No.22/1999 determined that, except for authorities in the fields of security and defence, foreign affairs, fiscal and monetary spheres, justice and religious affairs, all authorities were decentralized. The exception was then

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[4] In Indonesia, the structure of regional government is stratified into two levels of autonomous regions. These are the provincial level, which is headed by governor, and the municipality (for urban areas) or the regency (for rural areas) level. The municipality/regency level is administratively stratified into two levels below, the district and the village. The head of a municipal region is called *Walikota* (mayor) and for the regency *Bupati* (also translated as mayor). The head of district is called *Camat* and the village head *Lurah* or *Kepala Desa*.

added by this Law that central government was also responsible for making policies to organise national planning and development, allocate financial subsidies to the regions, strengthen the national system of economic institutions and public administration, promote human resources development, control the exploitation of natural resources (including conservation) and determine the use of high technology and national standardisation (Article 7, Law No.22/1999). However, at the implementation level, some weaknesses were found, such as conflict in the exercise of authority between different levels of government, the creation of large and inefficient structures and the use of a relatively greater percentage of the local budget for local government apparatus and local legislative bodies than for public services (Legowo & Djadijono, 2006). Furthermore, under this Law, the local parliament often dominated policy making, which led to the instability of regional government and decreasing quality of public services delivered by local government.

In order to address the weaknesses of Law No.22/1999, a new Law No.32/2004 on Regional Administration was introduced. The philosophy and substance of Law No.32/2004 are reflected in the following concepts (Legowo & Djadijono, 2006):

1. Decentralization has reduced the authority of central government and extended the authority of provincial and local government to have their own discretion and to implement local policies as far as they do not violate national law and public interests.
2. It emphasizes the balance of power between the legislative and executive branches in the region. The formula highlights not only public participation but also the public service in more detail. The new Law has also provided a formula for direct election of Regional Heads as part of the effort to strengthen public participation in local government.

In regard to the relations between central government and local government, Law No.32/2004 Article 2 emphasizes that the local government in managing governmental affairs must have relations with the central government and with other local governments in terms of authority, finance, public service, exploitation of natural resources, and other resources. The central government

must therefore facilitate the management of regional autonomy, which includes administrative coordination between all levels of government; it must provide guides and standards in implementation of government affairs; and it must provide guidance, supervision and consultation in the implementation of government affairs, education and training, and planning, research, development, monitoring, and evaluation in implementation of government affairs.

With a mandate embedded in this Law, local government institutions have their own discretion to initiate and implement local policies and to bring administrative units and public services closer to the local community. In terms of disaster management, therefore, this Law has supported the Law on Disaster Management that places local government and the community in a position to play an important role in managing disaster.

Further discussion on activity at the local government level in managing disaster is presented in the next subsection.

2.6.1. Disaster Management at the Local Government Level

The major responsibility of local government is to protect its community from any potential hazard that may disrupt normal life. However, lessons learnt from many local governments in Indonesia in managing disaster have shown that local government's limited knowledge in any phases of disaster management has potentially caused more victims during a disaster. Table 4.5 presents the lessons learnt from many local governments experiencing disaster in many parts of Indonesia.

In order, therefore, to strengthen local government's role in managing disaster, a shift in the organisation of disaster management has occurred. Since the issue of Law 24/2007, the government has established the BNPB to strengthen the responsibility and functions of disaster management. At the local level, the government has mandated the establishment of the BPBD, which has been set up in all provinces and districts in Indonesia. The National and Local Body of Disaster Management is intended to specify platforms, priorities, action plans

and mechanisms for providing implementation and an institutional basis for disaster management in Indonesia. It is also meant to elaborate interests and responsibilities of all stakeholders through a participatory coordination process, and to provide guidelines and information that facilitate decision makers in securing commitment to cross-sector and jurisdictional priority programs, based on strong and systematic foundations.

Table 2.10 Local Government Lessons Learned in Managing Disasters

in Indonesia

Area	Lesson Learned
Preparedness	Preparedness and national capacity building for risk management is essential
Information	Immediate availability of up-to-date and credible information is essential for assessing, monitoring and taking actions in emergencies
Cluster Approach	Positive experience but future implementation is required for additional efforts in management, planning and institutional capacity building
Response	Improvement of response is needed in mass casualty management, water and sanitation, nutrition, non-communicable diseases, maternal and newborn health and mental health.
Private Sector Involvement	Private sector and the military are frequently involved, therefore there needs to be agreement on procedures and criteria for collaboration and joint efforts.
Local Expertise	Local experts need to be trained to international standards; these will form a valuable resource for their region and provide long-term support for the community
Human Resources	Identification and mobilization of appropriately equipped and trained personnel quickly is essential; it is also important to have a roster of experts on call.

Source: (Leitmann, 2007)

The government of Indonesia has had a policy and regional strategic framework for building local government capacity since 2007. These have supported provincial and district/city government in mainstreaming DRR into annual and medium-term development plans, building awareness among executive and legislative branches of the government and other relevant stakeholders on the importance of DRR, and facilitating provincial and district/city authorities in

formulating action plans for DRR. They have also supported the provincial and district/city government in the establishment and institutional building of disaster management institutions at their respective levels, the conduct of capacity building for DRR mainstreaming and facilitating coordination and ensuring cooperation among local stakeholders for the purpose of setting-up appropriate disaster management institutions.

By establishing institutions which were responsible for disaster management activities and implementing policies such as the Law on Disaster Management, the National Action Plan, the National Medium-Term Development Plan and the National Framework in Disaster Risk and Reduction, Indonesia intends to undertake non-structural mitigation; as Coppola (2007) put it, 'man adapts to nature'. This activity is important because, according to King (2007), mitigation is a measure taken in advance in order to decrease or eliminate the impact of disaster on society and the environment. Mitigation can also be reflected as a cornerstone of government activity in managing disaster (Federal Emergency Management Agency (FEMA), 2006). Furthermore, some of the indicators of critical success factors in managing disaster are having effective institutional arrangements and supportive law and regulation (Moe & Pathranarakul, 2006; Tingsanchali, 2005), because they have a positive impact on the success or failure of the implementation of disaster management policy in a country.

However, implementing mitigation at the national, provincial and local government levels must be considered as a continuing planning process rather than just the production of a written plan. In the early stage of disaster management, it is imperative to judge whether its implementation in Indonesia has been successful or not, because policy and institutional arrangements should be realised and reflected in effective mobilisation of personnel and resources, along with adequate processing of information from government bodies to citizens (Quarantelli, 1997). This also should address inter-organisational coordination and should recognize that planning and management are different functions and that the true test of a plan rests with its implementation during disaster.

2.7. Conceptual Framework

From the previous discussion, it is apparent that local government plays significant roles in disaster management; therefore capabilities are needed to manage a disaster. Based on this, the researcher identifies the capability requirement for local government and the obstacles that become the main problem in managing a disaster, and highlights social networks and the relationship between central, provincial and local government bodies as important issues for understanding disaster management at the local level. Figure 2.6 presents the conceptual framework of this study. The aim of this conceptual framework is to connect the research questions, the purposes of this study, the literature review, the methodology, data collection and discussion. Hence, the conceptual framework acts like a map that gives coherence to the empirical study that presents a broad concept of local government and disaster management in the case of the Bantul local government.

Figure 2.6 Conceptual Framework: Local Government Capability in Earthquake Disaster Management

Critical Action: Capability Requirements

Mitigation
1. Evaluation
2. Monitoring
3. Dissemination

Preparedness
1. Planning (On-site and off-site emergency planning)
2. Exercise
3. Training
4. Logistic management expertise

Response
1. Need assessment coordination
2. Information exchange
3. Logistic management

Recovery
1. Damage assessment
2. Debris removal
3. Disaster assistance skill

(Indian Institute of Disaster Management, 2007; Moe, Gehbauer, Senitz, & Mueller, 2007; Moe & Pathranarakul, 2006; Shaluf, 2007a, 2007b)

Network
- Inter-organisational
- Citizen- to-organisation
- Organisation-to-citizen

(Drabek, 1985; Quarantelli, 1985)

Local Government Capability: Key Functional Success Factors

1. Institutional — Having a clear structure, role, responsibilities and relationship between all levels of government
2. Human Resource — Having sufficient personnel, proper task delegation and division of labour
3. Policy for Effective implementation — Availability of appropriate policies, rules and regulations for making decision, mobilising resources and engaging relevant public/private organisations
4. Financial — Having sufficient financial resources to support activities in all stages of disaster management
5. Technical — Having effective logistic management system, sufficient technology information system and communication network between organisations, communities and media representatives
6. Leadership — Building local level leadership to make quick and appropriate decision if and when needed

(Charoenngam & Leungbootnak, 2005; Diallo & Thuillier, 2004; Moe & Pathranarakul, 2006; Newport & Jawahar, 2003; Perry, 2007; Quarantelli, 1997; Turner & Muller, 2004; Youker, 1999)

Provincial Government

Central Government

Barriers
- Organisation
- Budget
- Attitude
- Local Expertise/Volunteers

(Labadie, 1984; Leitmann, 2007)

The following discussion explains the justification of the conceptual framework in order to answer the research questions of this research.

2.7.1. Local Government Capability

This study aims to assess the capability of local government in managing a disaster. In this study, capability is defined as the ability of the Bantul local government to organise assets, competence and knowledge to achieve its goals. In the case of disaster, local government's goal is to protect the community from disaster's potential effects. Capability in managing disaster is a function of institutions, human resources, policy for effective implementation, financial, technical resources and leadership. In addition, the operation of capabilities is transformed into the key success factors of disaster management. Key success factors are competitive factors that affect local government's ability to manage disaster.

In terms of institution-related capability, local government is most capable when it has a clear structure, role, responsibilities and relationship with all other levels of government. The competitive factors of human resource-related capability are visible when local government has sufficient personnel, proper tasks, delegation and division of labour within the organisation in order to manage disaster. The key success factors contributing to policy for effective implementation-related capability are the availability of appropriate policies, rules and regulations for making decisions, mobilising resources and engaging relevant public or private organisations. Having sufficient financial resources to support activities in all stages of disaster management is crucial for enhancing financial capability of local government. Important factors in strengthening technical capability of local government institutions are an effective logistic management system, a sufficient technology information system, and a communication network between organisations, the community and media representatives. A significant factor that contributes to leadership-relatedcapability at the local level is the local quality of the leaders to make quick and appropriate decisions if and when needed also to strengthen the confidence of disaster-struck people. Natural disasters require extraordinary

leadership capability because extreme events overwhelm local capabilities. Therefore leaders at the local level must adapt and rebuild the emergency system and aim to minimize the adverse effects of disaster in the quickest possible time. Their actions and competence in dealing with this especially difficult condition may emerge as a key indicator of the accomplishment of leadership.

These capabilities and key functional success factors are presented in the middle box (Local Government Capability: Key Functional Success Factors) and will answer the research question on how the capabilities of the Bantul local government will affect the management of an earthquake disaster.

2.7.2. Capability Requirements

The box on the left (Critical Actions: Capability Requirements) of the conceptual framework shows the capability requirement in each stage of disaster management. This will answer the research question about what capability requirement local government should have in order to sustain disaster management, particularly in earthquake management. It starts with the mitigation phase, preparedness and response and ends in recovery – as Moe and Pathranarakul (2006) term it, the four critical activities in the life-cycle of natural disaster management. The life-cycle will return to the first stage after the local government institution evaluates the four stages in natural disaster management policy.

In the mitigation stage, institutional and human resources, policy for effective implementation, and financial, technical and leadership-related capabilities must address evaluation, monitoring and dissemination in order to reduce the chance of an emergency occurring, to lessen the damaging effects of unavoidable emergencies, to detect an environmental change, to calculate the distribution of high risk areas and vulnerability areas and, lastly, to suggest the best alternative for population evacuation from risky areas. If an institution has managed all related capabilities in the mitigation stage the outcome will be the issuance of timely and effective early warnings, temporary evacuation of people

and property from threatened locations, risk and disaster assessment reports, alignment of resources and commitments, early estimates of relief needs and administrative documentation (scope, budget, organisational design, schedule). In the preparedness stage, all related capabilities must tackle planning, exercising (rehearsal and simulation), training and having logistic management expertise as the capability requirements needed by local government. The purposes of these requirements are to provide early warning with accuracy and a sufficient lead time, to increase public awareness and to educate the public on how to survive during a disaster. The outputs from this stage are reports on early warning and educational programs on disaster.

In the response stage, the capabilities are required to address the importance of needs assessment, coordination, information exchange and logistics management. The purposes are to evacuate people and livestock, to estimate the expansion of affected areas, to arrange logistics for service delivery to the vulnerable people, to estimate economic damage, to record deaths, injuries and missing persons and to coordinate with NGOs or national/international relief aid. The outputs that can be seen are an evacuation system and procedures, shelter, reporting on disaster impacts, emergency medical care, search and rescue and protection of property.

In the recovery stage, the capabilities needed to overcome damage include debris removal and disaster assistance skills in order to reconstruct damaged houses and public utilities/facilities and to re-establish commercial and industrial facilities. These aims can be seen from outputs such as replacement of temporary accommodation, relieving economic constraints, injecting capital into the community and supporting and strengthen existing economic enterprise.

2.7.3. Barriers of Local Government in Disaster Management

According to Labadie (1984b) and Leitmann (2007), the main barriers for local government in implementing disaster management are organisation, budget, attitude and local expertise/volunteers. These barriers lead to a research questionon what is the source of problems that local government in Bantul faces

in dealing with the situation before, during and after the disaster event. This is presented on the box on the bottom (Barriers) of the conceptual framework.

The barriers for local government are viewed from the perspective of organisation, budget, attitude and local expertise/volunteers. From the organisation perspective, the barriers that may arise are political pressure, ineffective leadership, communication, especially inter-agency information flows, difficulty in coordination (both horizontal and vertical problems of coordination are encountered at times), inadequate public Information such as the warning system, initial media reports overstating the extent of the disaster, lack of expertise and tight control from central government.

From the budget perspective, limited financial resources and rigid bureaucratic procedures in switching budget allocations are the common barriers found in local government. The attitude barriers can be seen from low commitment, priority and visibility of government in dealing with regular tasks and refusing innovation, and low public awareness because the disaster is seen as an Act of God. Local expertise/volunteers may also become barriers for local government in managing disaster when volunteer help and those unaffiliated with organized relief agencies cannot receive better direction and integration with the government's network.

By identifying the barriers that confront local government in managing earthquake management, the recommendations enhance the policy that local government must prepare in anticipating future disaster.

2.7.4. Networks in Disaster

In very broad terms, networks are defined by the enduring exchange relations established between organisations, individuals and groups. Hall and O'Toole (2004) clearly explain that these relationships may be a simple inter-organisational arrangement of agencies or a complex combination of organisations, groups and individuals from a variety of sectors. Network analysis focuses on the structure of those relationships, the implications for

behaviour and performance, and ways to measure collaborative capacity (Milward & Provan, 1998; Weber, et al., 2005).

Drabek (1985) and Quarantelli (1985) have also emphasised that building networking through inter-organisational, citizen-to-organisation and organisation-to-citizen is important in order to maintain information flows during disaster. During a disaster, the channelling of information in the organisation becomes more complex because several individuals may occupy a work position that was previously held by another person, officials must often work on non-routine tasks and officials may have been reassigned to work in temporary positions within the organisation (Quarantelli, 1997). These factors can lead to difficult situations and central government can play its role in limiting any potential conflict between government officials. The information channel becomes similarly difficult in inter-organisational, citizen-to-organisation and organisation-to-citizen information flows.

Social networks positively influence the local government body to acquire capability in managing a disaster. Therefore this study assess networks from inter-organisational, citizen-to-organisation and organisation-to-citizen perspectives in order to answer the research question on how local government in Bantul and social networks interact in the different stages of disaster management.

2.7.5. Relations between Central, Provincial and Local Government

In an era of global markets, the agendas of national governments, and the power relationships between central, provincial and local government, strongly influence disaster responses and planning. As a result of this, the coping strategies and interests of the community at the local level often go unheard. However, in order for mitigation efforts to be successful, disaster management planning has to include local-level public participation and people should be encouraged to rebuild their lives and respond to disaster (Maskrey, 1989; Pearce, 2003a) .

Local-level engagement in disaster management is a crucial issue for disaster management; thus, to be effective in managing disasters, central governments should decentralize decision-making power to local government (ADPC, 2003; Blaikie, et al., 1994). Though it is important for there to be disaster preparedness strategies at the national level, it is equally important that local government has the capability to contribute design and policy implementation of these strategies at regional or local levels.

This study assesses the nature of relations between the Bantul local government, the Yogyakarta provincial government and central government in managing the 2006 Bantul earthquake. It is formulated in order to answer the research question on how relations between central, provincial and local government bodies can affect the management of disaster events in Indonesia. With regard to answering this research question, decentralisation will be put forward as the main foundation of local government in its relationship with provincial and central government. As well as decentralisation, New Public Management (NPM) will also be used to develop guidelines for local government in implementing disaster management, since this approach is the main focus in the concept of citizenship and emphasises participation and accountability, which are important factors in each of the disaster management stages.

2.8. Conclusion

Thepurpose of this chapteris to integrate a comprehensive literature review in the areas of RBT, organisational capability, local government and disaster management, specifically of natural disasters such as earthquakes. This was in order to develop a framework for the study.

Under RBT, organisational capability was discussed with special reference to disaster management. These theories framed the study in answering research questions. The network theory was also discussed as an important factor in implementing disaster at each government level.

The second section reviewed the debate on New Public Management and decentralization. The role of central and local government was also discussed in the context of decentralization in developing countries. This section also outlined the role of central and local government when maintaining disaster and how they should relate in this particular function during a crisis.

The third major area of literature review was disaster. The meaning of 'disaster' from many perspectives was described, in order to clarify what disaster means. Also, this section discussed disaster trends, paradigms and implications of disaster for all aspects of life. Lastly, it focused on the disaster management the capability requirement at each stage of a disaster and the indicators of good disaster management.

The conceptual framework for this study is then presented by identifying critical aspects in disaster management and local government capability, which then become the five research questions of the study. This research is a case study, and the following chapter discusses in detail its methods and research design.

Chapter 3. Research Design and Methods

3.1. Introduction

This chapter discusses the research design and methods used in this study. It also justifies the procedures and instruments used for data collection and analysis. The objective of the study is to assess and examine local government capability in Bantul, Indonesia, in managing disaster and thereby to contribute to existing knowledge of the application of resource-based theory in times of disaster.

This chapter is divided into six sections. First, it explains the nature of the study and the rationale for selecting the research design. Second, it deals with the sampling process for qualitative and quantitative data collection. Third, it discusses data collection through in-depth interviews, secondary data and surveys of community leaders, reliability and validity issues. The fourth section presents the method of analysis adopted. The fifth section explores ethical considerations. The final section is the chapter conclusion.

3.2. Research Design of the Study

This section elaborates a research design for this study which, in the language of Denzin and Lincoln (2003), is a flexible set of guidelines that connect theoretical paradigms to strategies of inquiry and the methods for collecting empirical materials. This research design situates the researcher in the empirical conditions in Bantul and connects her to the key informants, community groups, institutions and bodies involved in the 2006 earthquake in Bantul. It also provides a way to find out the relevant interpretive material, including documents and archives about the quake.

This subsection explores the approach taken in order to meet the purpose of the study.

3.2.1. Case Study

The research design of this study is the case study, which is the most common form in management research (Tharenou, Donohue, & Cooper, 2007). According to Bennet (2001) and Orum (2001), a case study is a research design and it must involve utilization of a wide array of different data sources. In this study, the actions of Bantul's local government in managing the 2006 earthquake is the case study for this research.

Yin (2003, p. 13) describes the case study as 'an empirical enquiry that investigates a contemporary phenomenon within its real-life context'. A case study is useful for examining and understanding why and how contemporary real-life organisational phenomena occur under conditions where the researcher has minimal control (Lee, 1999; Yin, 2003). A case study is often associated with a qualitative research design, which aims to get closer to the reality, to emphasize episodes, and to understand the sequentiality of happenings in context (Denzin & Lincoln, 1994).

Although this case study focuses on a single case, the researcher is expected to understand the complexity of this single case and to look for detail of interactions between the Bantul local government, other institutions and society in the context of disaster management. A single case study may be appropriate when it promises to yield fundamental insight into a rare but important process or event that offers no obvious point of comparison (Adams, Clemens, & Orloff, 2005; March, Sproull, & Tamuz, 1991) and when it explores a crucial case that will shed light on an established theory (Emigh, 1997; Schrank, 2006). Moreover, Stake (1995) states that a case study is the study of the particularity and complexity of a single case, to understand its activity within a context of important circumstances. Choosing a single case for this study is thus suitable and related to the context of local government as an institution. In terms of Bantul as a single case study, it is essential to identify why Bantul as a local government institution implemented such a policy on disaster management, how it was implemented and what the results were.

Since this topic is relatively new in the context of developing countries, particularly in learning about local government capability in managing disasters, this study is called an intrinsic case study (Stake, 1995). As an intrinsic case study, the case is pre-selected: Bantul as a local government institution was selected as the unit of analysis because of its uniqueness of having experienced the management of the 2006 local earthquake disaster.

3.2.2. Mixed Method Research

The current study uses a mixed method approach, employing qualitative and quantitative research methods. Utilizing both qualitative and quantitative seeks to express and communicate the researcher's ideas and findings using a variety of forms, media and means. Qualitative data were gathered through interviews with 40 selected key informants who have knowledge of the issues surrounding the 2006 earthquake in Bantul. In-depth interviews were conducted with informants not only from government but also from national and international NGO and funding agencies to gather information and identify issues related to the 2006 earthquake. Since the researcher lived in the area where the quake struck and was also involved in humanitarian assistance to victims in Bantul, this experience advantaged her in understanding the situation and in better constructing interview guidelines. Quantitative data were collected from a survey of community leaders in three selected districts in Bantul. The survey was intended to support the findings of the qualitative data as well as to provide balancing information from the community as the target for the local government's policy.

Mixed method research was therefore applied in this study because it aims to fill the gap between quantitative and qualitative methods. Mixed method research also increases the reliability and validity of the case study. By using this approach, the researcher aimed to match the qualitative methods employed with the quantitative methods in order to combine the analysis into dichotomous categories, that is, exploration versus confirmation (Howe, 2004, p. 49). Collecting different kinds of data by different methods from different sources provides a wider range of coverage that results positively in a fuller picture of the research problems, as Kaplan and Duchon (1988, p. 575) emphasize: '… it

provides a richer, contextual basis for interpreting and validating results'. It also aims to diminish the weakness of qualitative and quantitative research methods and to enrich and deepen the research findings to answer the research questions more comprehensively. At the same time, this method is used to help reduce the chances of bias associated particularly with the qualitative data and to provide evidence of variable association. Under these circumstances, therefore, there can be considerable advantage in combining quantitative and qualitative approaches through mixed method data collection; as Gable (1994) emphasizes, combining case study and survey methods has been particularly lauded.

3.2.3. Qualitative and Quantitative Research

The information for the case study can be either qualitative or quantitative or a combination of the two (Schrank, 2006). As Dabbs (1982) remarks, 'qualitative and quantitative are not distinct', but distinctions between research designs are particularly important for determining what types of questions specific research may be able to answer and what threats to validity a study may face.

The words 'quantitative' and 'qualitative' summarize distinctions between various dimensions of research approaches. Qualitative research consists of a set of interpretive material practices that make the case visible, while quantitative research emphasizes the measurement and analysis of causal relationships between variables, not processes (Denzin & Lincoln, 2003, p. 17). Qualitative research turns the case into a series of representations, including field notes, interviews, conversations, photographs, recordings and memos. Qualitative research highlights survey findings in its data collection methods.

In this case study, although qualitative and quantitative methods are used for data collection, qualitative methods normally predominate in the study of processes in which data collection, analysis and action often take place concurrently (Gummesson, 2000, p. 2). This study attempts to make more vivid the insights of key informants through qualitative data from key stakeholders in local, provincial and central government institutions, NGOs, funding agencies and community leaders, in order to understand the context and to contribute to

existing knowledge. Quantitative data collection methods and self-administered questionnaires are used to gather primary data from community leaders which can be combined with the findings from the qualitative data.

3.2.4. Triangulation

In mixed method research, the first step is to design strategies of integration that counterbalance the weaknesses of one method with the strengths of another (Axinn & Pearce, 2006). The combination of multiple methodological practices, empirical materials and perspectives in a single case study is best understood as a strategy that adds rigor, breadth, complexity, richness and depth to any inquiry (Flick, 1998). The structured nature of survey methods and the flexibility of in-depth interview methods combine to provide data useful for learning from key informants and respondents in their own words. This combined approach is called triangulation. Triangulation is restricted to the use of multiple data-gathering techniques to investigate the same phenomenon. This is interpreted as a means of mutual confirmation of measures and validation of findings (Leedy, 2001). Denzin (2003) emphasizes that triangulation actually represents varieties of data, investigators, theories and methods, because no single method will ever meet the requirements of interaction theory. However, the use of multiple methods or triangulation reflects an attempt to secure an in-depth understanding of the phenomenon in question. Triangulation is not a tool or a strategy of validation, but an alternative to validation (Flick, 1998). By combining several lines of sight, the researcher obtains a better, more substantive picture of reality, a richer, more complete array of symbols and theoretical concepts, and a means of verifying many of these elements.

Qualitative data gathered during data collection from interviews with key informants, such as the Bantul Mayor and the national, provincial and local government officials who were in charge at the time of the 2006 earthquake, were triangulated with quantitative data by examining the community leader survey results, along with secondary data such as government reports and international and NGO reports. This aimed to build a coherent justification for

answering the research questions. Furthermore, triangulation helps the researcher develop interpretation logically and clarification accurately.

3.3. Sample Design

Sample design for data collection in research is a critical aspect. The current research utilized two main sources for primary data collection. These are the qualitative and quantitative research methods. Methods used for sample selection are discussed in this section.

3.3.1. Sample Design for a Qualitative Approach

Qualitative research is interpretative research; it therefore introduces a range of strategic, ethical and personal issues into the process (Creswell, 2003). The use of qualitative research is to get an opinion from a participant who has knowledge of a particular issue and to engage in conversation with the respondent in order to attain data richness.

Selecting participants is the crucial part of qualitative method. In this case, qualitative data were gathered through in-depth interviews, and since the purpose of the in-depth interview is to understand the experience of those who are interviewed and not to predict or to control that experience or even to test hypotheses, the researcher is obliged to generalize the findings of an interview and deepen the understanding of the issues.

Consequently, selecting a large number of participants is not important. Selection of participants must be concerned with aspects such as the setting (where the research takes place), the actors (who will be interviewed), the events (what the actors interviewed were doing), and the process (which is the evolving nature of events experienced by the actors within particular settings) (Miles & Huberman, 1984). From a qualitative perspective, non-probability tends to be the norm because it offers the benefits of not requiring a list of all possible elements in a full population and the ability to access a highly sensitive or difficult-to-research study population (Berg, 2007). This study uses a purposive sample method (Patton, 1980); Hagan (2006) calls it 'judgmentalsampling', in

which the researcher selects participants who have knowledge and expertise in the area on which the research focuses (Creswell, 1994).

Participants in this research have been selected from many different groups. From the government institutions, participants were chosen from central government in Jakarta, Yogyakarta Provincial Region and Bantul local government. The names of the selected persons were collected from government reports or on the recommendation of another participant. Participants from NGOs included local and international NGOs which dealt with the 2006 earthquake. The names of NGO representatives were gathered from the Profile and Directory Disaster Risk Reduction Organisations in Indonesia, published by the National Agency for Disaster Management, Indonesia. The last group was selected from community leaders in Bantul who actively participated in the phases of response and recovery. Information was collected from the Bantul Mayor, NGO representatives and the community survey. Details of the interview respondents are presented in Table 3.2 (section 3.4.1.2, below).

3.3.2. Sample Design for a Quantitative Approach

Quantitative research is concerned with probability sampling, which is based on the notion that a sample can be selected that will mathematically represent subgroups of some larger population (Berg, 2007). Sampling is one of the most critical aspects of any survey because it forms the basis for the key claim of generalizability, which is the main strength of quantitative research (Park, 2006). Sampling is the pursuit of representativeness through random selection. The sampling method in this study uses non-probability sampling, which according to Fink (2003) does not guarantee that all eligible units have an equal chance of being included in a sample. However, the main advantage is that it is relatively convenient, economical and appropriate for use in many surveys, although such a sample is vulnerable to selection biases.

The data discussed here were collected from three districts in Bantul: Bambanglipuro, Jetis and Pleret. In terms of the number of human fatalities and damage, impacts were greatest in these areas. In addition to their having to confront recovery issues associated with the widespread damage, a substantial

majority of respondents in each district had experienced the effects of the earthquake directly. In this research, the criterion is people who became community leaders or who hold leadership positions in the chosen area and have a good knowledge of the 2006 earthquake. The researcher obtained data about community leaders in Jetis, Bambanglipuro and Pleret districts by contacting the head of each of these districts. Each district has a village profile that contains the list of community leaders. The researcher then categorised respondents according to their different backgrounds, experiences and district. Afterwards, the sample was taken variously from the leaders of the community, teachers, imams of the mosques, youth leaders, women leaders and leaders of associated organisations.

Purposive sampling was chosen because the researcher aimed to get responses from those in the community who were knowledgeable about local government performance in the previous disaster. In purposive sampling, the researcher has a clear idea of what sample units are needed and then approaches potential sample members to check whether the units meet eligibility criteria. Between March and May 2009 a questionnaire was administered to 75 community leaders in the selected areas.The researcher targeted 25 survey responses for each district to analyse. Thus it was expected that 75 questionnaires would be returned, although questionnaires sent out numbered 82. It was anticipated that there would be a number of unreturned questionnaires. The response rate for this survey is detailed in Table 3.3 (section 3.4.2.3, below).

3.4. Data Collection

According to Fink (1995), in collecting quantitative data, there are four types of data collection: self-administered questionnaires, interviews, structured record reviews to collect financial, medical or government information, and structured observation. This study used a self-administered questionnaire which consisted of questions that individual respondents completed by themselves. The questionnaire can be completed 'on site' or collected directly from the respondents within a specified time (Groves, et al., 2004). This method saved time and guaranteed that the response rate was high.

However, data collection in qualitative research has a longitudinal character because it often takes place over an extended period of time (Johnson & Christensen, 2000). Multiple methods were used in data collection, for instance interviews, documentation and archival records. The primary data were collected by interview and the list of questions was prepared before commencing the research. The specific information that might become relevant to the current study was not readily predictable. Accordingly, in such circumstances Yin (2003) has suggested that a researcher with an inquiring mind is a major prerequisite during data collection. Minor changes in the questions were therefore built in, in order to identify a new 'case' for the study. Thus the need to balance adaptiveness and flexibility is the emphasis in case study research (Yin, 2003).

During data collection in Indonesia over a period of about five months, the researcher first conducted the community leader survey as soon as permission to conduct the research was obtained from the Regional Development Planning Agency both at provincial and at regency level. After completing the survey, the researcher started in-depth interviews of selected key informants at the central, provincial and local government levels. The resultant findings from the survey have also become additional information for the researcher as part of the interview-guided questions. The objective was to gain in-depth understanding of the issues in the research topics. While conducting interviews, the researcher was also seeking secondary data from key informants. After all data were gathered, data entry and interview transcribing commenced.

The following section specifies the process undertaken for data collection in both the qualitative and quantitative approaches.

3.4.1. Interview

The aim of interviews in qualitative research is to discover and to portray multiple views of the case. For that reason, interviews can be described as the main path to multiple realities (Stake, 1995). Interviews provide access to the context of people's behaviour and a way to understand the meaning of that behaviour (Seidman, 1991). Interviews conducted in this research were face-to-

face and in-depth. Creswell (1994) comments that this type of interview has advantages and is useful when participants cannot be directly observed, although it also provides 'indirect' information filtered through the views of interviewees.

A basic assumption in in-depth interviews, which Weiss (1994) calls semi-structured interviews, is that the meaning people make of their experience affects the way they report that experience. The importance of an in-depth interview is '… the opportunity for the researcher to probe deeply to uncover new clues, open up new dimensions of a problem and to secure vivid, accurate inclusive accounts that are based on personal experience' (Burgess, 1982, p. 107).

In-depth interviews can be much more flexible, allowing the respondent to change the course of the conversation and bring up new issues that the researcher had not preconceived (Weiss, 1994). The main limitation imposed is the time required for field interviews, compiling notes, transcribing audio recordings and analysing transcripts. Less-structured interviews offer more opportunity for new respondents to introduce new topics. Interviews are considered the appropriate process for measurement. Less-structured interviews and observations have greater advantages for generating insights into the lives of the study population than other methods.

The researcher conducted face-to face interviews with participants by way of unstructured and generally open-ended questions that were few in number and intended to elicit participant views and opinions. The nature of an in-depth interview should be to collect information which captures the meaning and interpretation of a phenomenon in relation to the participant's worldview (Kvale, 1996). The researcher must therefore be able to conduct interviews in such a way that there is the opportunity for these insights to be gained. In order to be able to achieve these insights, the researcher needs to be sensitive and sufficiently skilled to ensure that the participant's view emerges, as well as to assist individuals to explore their own beliefs (Easterby-Smith, Thorpe, & Jackson, 2008). The researcher, who has been working as a lecturer and

researcher for almost a decade, used all her skills and possible contacts for reaching these goals.

3.4.1.1. Design of Interviews

Stake (1995) explains that formulating questions for interviews and anticipating probes that evoke good responses are a special art. The purpose of designing questions for interviews is to elicit a description of an episode, a linkage and an explanation, rather than to get a simple answer. In order to conduct an interview, the researcher must conceptualize the study, establish access, make contact with participants, interview them, transcribe the data and, finally, work with the material and share what has been learned (Seidman, 1991).

The questions used in the interview were open-ended. According to Seidman, the intention of these types of questions is to build upon and explore participants' responses to the questions. At the same time, the process also reconstructs the participants' experience within relevant topics. There are two types of open-ended questions: the 'grand tour' question in which the interviewer asks the participant to reconstruct a significant segment of an experience, and questions which focus more on the subjective experience of the participant than on the external structure (Seidman, 1991).

The first stage of the research involved in preparing for data collection was preparing the research instrument. The interview guide that provides the focus of each interview was established. However, further questions most used in an in-depth interview followed what the participants had said. In designing the interview guide, the researcher developed a matrix that classified the questions asked based on the research questions. Each research question then covered information needed for this study, those who became key informants, the type of question that would be asked and evidence from discussion. For instance, to answer the research question on the human resource capability of local government in Bantul, the researcher concluded that the information needed involved capability on the mitigation, preparedness, response and recovery stages, and key informants were the Mayor of Bantul, senior public servants/officials of the national/provincial coordinating board for disaster

management and senior public servants/officials of the district implementation unit for disaster management. The question was constructed to ask how the local government body mobilized human resources through structural and non-structural measures to limit the adverse impact of an earthquake (mitigation), how to respond to the earthquake, including the provision of an early warning system (preparedness), the action taken immediately after the earthquake (response), and the activities that restore infrastructural systems and guide long-term efforts designed to return to normal life (recovery). The evidence from discussion was expected to accord with policy documents or government reports related to this issue. Details of other questions can be found in the Appendix.

The English version of the interview guide was translated into the Indonesian language and the interviews conducted in the Indonesian language, since many key informants have limited ability in understanding English. A certified translation of the interview guide, the explanatory statement and the consent form were provided by IDP Education, Indonesia as a qualified translator. A certified translation is needed as one of the requirements of Standing Committee on Ethics in Research involving Humans (SCERH) at Monash University. Before interviewing the participants, the researcher established participants' schedules and availability and fixed the length of each interview at 60 minutes. This was to ensure a standard unit of time for asking questions of participants (Seidman, 1991). Next, a key informant was given the explanatory statement of the research along with the consent form. By signing the consent form, key informants signified that they were willing to provide information about the 2006 Bantul earthquake. They also allowed the researcher to audio-tape the interview. The length of interviews for this study took approximately 45 minutes to one hour, and, if sufficient information had not been gathered in that time, the researcher asked participants to arrange another time on the following day, according to what was convenient for the participant.

3.4.1.2. Response

Responses of purposively selected key informants in this research amounted to 40 people and these are classified into six different groups as presented in Table 3.1.

Table 3.1 Classification of Key Informants

Group Category	Key Informants
Group 1 **Central Government**	1. Directorate Special Area and Disadvantaged Region, Deputy Minister for Regional Development and Local Autonomy, National Development Planning Agency 2. Deputy for Prevention and Preparedness, National Disaster Management Agency 3. Primary Secretary of National Disaster Management Agency
Group 2 **Yogyakarta Provincial Region**	1. Provincial Government and Community Welfare Office of Yogyakarta 2. Provincial Development Office of Yogyakarta 3. Provincial Community Protection Office of Yogyakarta 4. Provincial Coordination Board of Disaster Management
Group 3 **Bantul Local Government**	1. Mayor of Bantul Regency 2. Primary Secretary of Bantul Regency 3. Regional Development Planning Agency of Bantul Regency 4. Community Protection Unit of Bantul Regency 5. Implementation Unit Coordinator, Bantul Regency 6. District Implementation Unit for Disaster Management, Bantul Regency 7. Heads of Jetis, Bambanglipuro and Pleret districts of Bantul Regency
Group 4 **Community leaders**	1. Heads of selected villages in Jetis, Bambanglipuro and Pleret districts. The villages are Sidomulyo, Sumbermulyo, Patalan, Ploso Wonolelo, Canden, Sidomulyo, Sumber Agung. 2. Board members of task force groups in Jetis, Bambanglipuro and Pleret district 3. Volunteer Disaster Corps, Bantul Regency
Group 5 **Local NGOs**	1. Indonesian Society for Disaster Management (MPBI) 2. NGO Lingkar Association, Yogyakarta 3. NGO Syarikat, Bantul Regency 4. NGO Independent Community of Bantul 5. Search and Rescue (SAR), Yogyakarta Provincial Office 6. Yakkum Emergency Unit, Yogyakarta, Indonesia 7. Center for Disaster Study, Gadjah Mada University, Yogyakarta 8. Research and Development Department, Yogyakarta Private Sector Ombudsman
Group 6 **International NGOs**	1. Environment Coordinator, World Bank Indonesia 2. Senior Disaster Management Adviser, World Bank Indonesia 3. Early Recovery Assistance Programme, United Nations Development Program (UNDP) Indonesia 4. Disaster Risk Reduction Adviser, UNDP Indonesia 5. Crisis Prevention and Recovery Division, UNDP Indonesia 6. Training and Media Coordinator of International Organisation for Migration (IOM) Yogyakarta office 7. Emergency Response Unit, Oxfam Great Britain, Yogyakarta office

Source: Primary Data, 2009

3.4.2. Survey

A key feature of any survey is standardized questions, although social scientists recognize that respondents' interpretations of questions are not standardized. For the purposes of standardization, survey questions are compiled in a questionnaire. The use of a questionnaire imposes a high level of structure on the survey interview, which makes it difficult to use surveys to uncover new hypotheses. The great advantage of survey data is that they facilitate quantitative analysis that allows for generalization to an entire population. A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population (Creswell, 1994, 2003).

The survey data for this research were gathered employing a sample of community leaders in the selected districts, as explained above. The following section explains how the survey was conducted.

3.4.2.1. Questionnaire Design

Defining the research question is the first step in designing an effective questionnaire. The survey is designed as a short survey to avoid the respondents becoming bored but at the same time to make sure of the quality of information gathered, because survey methodologists have suggested that the quality of information that survey respondents provide declines significantly after more than 30 minutes (Park, 2006). The type of question used in this study is the closed question. Closed questions, sometimes referred to as close-ended questions (Dillman, 2000) or forced-choice questions (De Vaus, 2002), provide a number of alternative answers from which the respondent is instructed to choose. This type of question is quicker and easier to answer, as they require minimal writing (Saunders, Thornhill, & Lewis, 2003). According to Fink (2003), the result of this type of question is more readily amenable to statistical analysis and interpretation, as well as being easier to compare. Also, because the respondent's expectation and researcher's interpretation are more clearly spelled out in closed questions, the answers have a better chance of being more reliable or consistent over time.

The questions included in survey instruments were worded in culturally appropriate language. The design of questions was simple, direct and familiar to the respondents. Each question was stated in a neutral not leading manner and was written out in full to avoid misinterpretation. Since this research was using a self-administered questionnaire, it assumed that individual respondents understood the questions and could complete these by themselves (Fink, 2003).

The type of scale used to measure the research questions is an ordinal scale. The widely used Likert scale, also called a summated rating scale, uses a five-point range such as from worst to very good, very ineffective to very effective, very little to very high, very slow to very fast, none to very extensive and none to very high. The Likert scale is composed of multiple items that are designed to measure the same idea. The benefits of using a Likert scale are more reliable and consistent scoring and greater variability, which helps the researcher to make finer distinctions between respondents (Johnson & Christensen, 2000).

The current community survey questionnaire had four sections spread over four pages, all with closed questions. The first section consisted of respondent characteristics such as name, address, age, gender, education, occupation and length of time living in the area. Age was divided into four categories: 20-29 years old, 30-39 years old, 40-49 years old and 50 years old and older; the level of education was divided from none/elementary to postgraduate. The main occupation of respondents was classified into fishery, agriculture, manufacture, business, government servant, private sector employer and housewife. This classification was based on the categories that the Indonesian Statistics Bureau used.

The second part dealt with the four stages of disaster management, starting from mitigation capability, preparedness capability, response capability and recovery capability. The aim of this part was to have input from community leaders about what they thought of local government capability before and after the 2006 earthquake. Every question of each section in this questionnaire derived from the literature review that the researcher undertook.

In the mitigation capability section, the questions covered the activities that local government and the community undertook to identify and monitor disaster-prone areas in Bantul before and after the 2006 earthquake. Since mitigation is understood as the activity taken in advance to reduce loss of life and property disruption, so the questions also asked about the availability of information from local government in order to create disaster awareness to the community. The type of scale used for this section was none, little, medium, extensive and very extensive.

In the preparedness capability section, the question involved the level of readiness of local government and community for facing disaster, and how they understood the early warning system before and after disaster. The type of scale used for this section was none, low, medium, high and very high.

In the response capability section, the questions covered aspects such as the availability of local government resources, the clarity and flow of information from local government to the community after the earthquake struck and the delivery of emergency aid to the community. Respondents assigned their perceptions to a scale from worst to best.

The questions in the recovery capability section were seven in number. The questions asked the opinion of respondents about how local government staff assessed damage to and loss of houses, how they rebuilt community housing and social infrastructure, managed financial assistance to the community, generated a new image of the district as a safe place to live after the 2006 earthquake, and how they were committed to creating new jobs for those in the community who had lost their jobs and experienced ongoing problems after the disaster. Options in answering varied from very ineffective to very effective.

Part three of the questionnaire dealt with requirements for capability. In this part, the objective was to draw perceptions from community leaders about what local government should have as resources to improve their disaster management activities. The options of the resources were: having national coordination, greater availability of data, better telecommunications, more accurate warnings, better dissemination of information, an enhanced public

awareness campaign about risk, enhanced public education to improve understanding of disaster, effective distribution of aid to disaster victims, and improved networking with national and international NGOs. The scale for this section was very little, little, medium, high, and very high.

The last part reviewed the network which the Bantul local government used during and after the 2006 earthquake. This section dealt with opinions from respondents about issues such as the level of communication flow with regard to aid distribution and disaster information, and coordination among local government staff and other organisations related to aid distribution. The questionnaire is attached in the Appendix.

The questionnaire was also translated into the Indonesian language, along with the interview guide, explanatory statement and consent form, as discussed in the previous section. After the questionnaire was developed but prior to its full use, the researcher undertook a pilot test. The purpose of such a test is to refine the questionnaire so that respondents will have no problems in answering the questions (Saunders, et al., 2003). In addition, the pilot test also ensures questions' validity and the reliability of data to be collected. Initially, the researcher sent the questionnaire by email to local government experts who mostly dealt with disaster issues in Indonesia. The questionnaire was also pre-tested with group of community leaders outside the three selected districts chosen. This aimed to identify difficult questions or problems with the wording. Some refinement was made, particularly on the respondent's characteristics, and one question on the involvement of third parties in rebuilding houses was eliminated since there was no third party or house constructor involved.

3.4.2.2. Questionnaire Administration

Based on the list provided by the village office in each selected area, as discussed in section 3.3.2, above, the researcher selected potential respondents. After designating 25 respondents in each district, or 75 respondents for the three chosen districts (Jetis, Bambanglipuro and Pleret), the questionnaire was then distributed. Each questionnaire set included the explanatory statement and the questionnaire. Once the initial conversation took

place, contact details were also recorded, as well as agreement about the time within which the respondent could return the questionnaire. Since this study was using a self-administered questionnaire, its format was made user-friendly. For every outgoing questionnaire, the researcher kept a record of all necessary information such as dates, addresses and contact telephone numbers.

Once the survey was completed, decisions were made about data storage, data entry and cleaning. Any information or data collected from respondents was managed and handled carefully in order to safeguard confidentiality during and after completion of this research. As Huberman and Miles (1994, p. 46) say, 'How data are stored and retrieved is the heart of data management ....' A clear and working storage procedure is critical if the researcher expects to keep track of the data that have been collected, to flexibly access and use the data, and to assure systematic analysis and documentation of the data (Berg, 2007).

3.4.2.3. Response Rate

A high response rate in a survey is clearly important because it gives a larger body of data which the researcher can use to address research questions, and it makes it much more likely that the sample is representative of the relevant population. Since providing data is a cost to each respondent, the principle applied was to reduce the effort involved and to increase the perceived benefit as much as possible (Easterby-Smith, et al., 2008). The shorter the questionnaire and the simpler the questions, the more likely it is that people will reply. The response rate is the number of actual respondents divided by the number of eligible respondents. No single response rate is considered standard; response rates of between 95% and 100% are often expected, but 70% is considered adequate and acceptable (Fink, 1995; Johnson & Christensen, 2000).

The respondents were selectively chosen after intensive discussion with each district head in order to identify potential respondents. The researcher distributed 82 questionnaires spread over 12 villages in three districts. The number of returned questionnaires was 75. The response rate of this

community survey is therefore 91.5%. Details of the responses and rates are summarized in Table 3.2.

Table 3.2 Response Rate for the Community Leader Survey

District	Village	Distributed	Received	Response Rate Percentage
Jetis	Patalan	7	7	96.2
	Canden	6	6	
	Sumberagung	6	6	
	Trimulyo	7	6	
Bambanglipuro	Sidomulyo	10	8	80.0
	Mulyodadi	10	8	
	Sumbermulyo	10	8	
Pleret	Pleret	5	5	96.2
	Segoroyoso	5	4	
	Bawuran	6	6	
	Wonolelo	5	5	
	Wonokromo	5	5	

Source: Primary Data, 2009

3.4.2.4. Missing Values

Identifying missing values is designed to help in examining the data for patterns of missing data. One very important consideration with missing data is whether or not they seem to be missing randomly or due to some fault in the research design or instruments. Data in this research finding are categorised as Missing Completely at Random (MCAR) and do not constitute a large proportion of the data (Cooksey, 2007). To handle the missing data, the researcher used a passive method called variablewise or pairwise deletion. This means that if respondents are missing a score on any one variable, it will be removed from calculations involving this variable. Thus each correlation is based on only those respondents who had a legitimate score (Cooksey, 2007).

Since the missing data for each variable were less than 3% (two respondents did not answer the question in the network variable), this did not influence the overall findings of this research. Details about analysis of the missing data are shown in Table 3.3.

Table 3.3 Analysis of Missing Data

Variable	Missing	Percentage
Preparedness		
B7. How ready did the local government understand official warnings and react before the 2006 earthquake?	2	2.7
B8. How ready did the local government understand official warnings and react after the 2006 earthquake?	2	2.7
B10. How readily did the community understand official warnings and react after the 2006 earthquake?	1	1.3
Recovery		
D5. How effective was the commitment of local government to reimage Bantul as a safe place to live after the 2006 earthquake?	1	1.3
D6. How effective was the local government's commitment help people continue their lives (open new jobs) after the 2006 earthquake?	1	1.3
D7. How did local government deal with problems or conflicts that occurred after disaster?	2	2.7
Capability Requirement		
C3.To what extent does local government need to strengthen disaster management policy: Better telecommunications	1	1.3
C4. To what extent does local government need to strengthen disaster management policy: More accurate warnings	1	1.3
Network		
N1. What was the level of communication flow from local government to the community about disaster information after the earthquake occurred?	1	1.3
N4. What was the level of communication flow from NGOs to local government about disaster information?	4	5.3
N5a. How did local government coordinate among local government staff in responding to disaster at the response stage?	2	2.7
N5b. How did local government coordinate among local government staff in responding to disaster in the recovery stage?	2	2.7
N6c. How did local government coordinate distributing aid with volunteers?	1	1.3
N6d. How did local government coordinate distributing aid with community groups?	1	1.3

Source: Primary Data, 2009

3.4.3. Reliability and Validity

Reliability and validity are functions of the method by which the data were collected and the source (Saunders, et al., 2003). Dochartaigh (2007) refers to this as assessing the authority or reputation of the source. Reliability and validity are important for qualitative and quantitative methods. As Fink (1995) emphasizes, a reliable instrument is consistent and a valid instrument is accurate. Therefore a valid instrument is always reliable. Foddy (1994), as shown in Figure 3.1, suggests some stages that must occur if a question is to be valid and reliable.

Figure 3.1 Stages for a Question to be Valid and Reliable

Researcher is clear about
the information required
and designs a question

Respondent decodes
the question as the
researcherintended

Researcher decodes
the answer in the way
the respondent intended

Respondent answers
the question
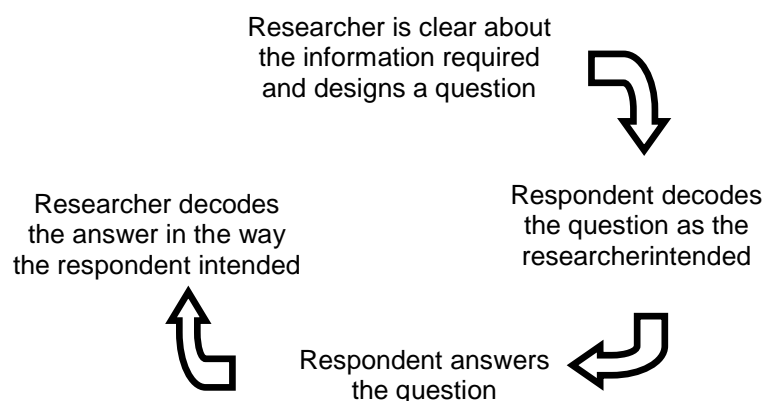
Source: Developed from Foddy (1994)

3.4.3.1. Reliability

A reliable survey instrument is one that is relatively free of 'measurement error', in which individuals' scores are different from their true scores, which can be obtained only from perfect measures (Fink, 1995). In other words, the reliability of a measure is an indication of the stability and consistency with which the instrument measures the concept and helps to assess how good a measure is. In assessing reliability, the researcher tries to establish whether the study could be repeated by another researcher or at another time with the same results (Tharenou, et al., 2007). This concept involves two different levels: the reliability of the measuring instrument and the overall reliability of the research (Thiétart, 2001). Even though these criteria have long been considered as applying only to quantitative research, the question of the validity and reliability of research applies as much to qualitative as to quantitative work (Saunders, et al., 2003; Thiétart, 2001).

Since this research is a case study, the accuracy of the information collected was increased by cross-checking from different stakeholders. Data were collected from multiple sources, such as in-depth interviews and surveys, which required cross-verification and reliability improvement. For instance, in the in-depth interview, the researcher had asked relevant sources in the Bantul local government who dealt with the earthquake about the activities that the local

government undertook before and after the 2006 earthquake. The same questions were also put to the community leaders to check whether the information given by bureaucrats was correct and consistent. The findings of this research were therefore a combination of cross-checked information, multiple sources and verification in order to increase reliability.

On the other hand, for the quantitative data, the Cronbach's alpha reliability coefficient was used to test the consistency of respondents' answers to all the items. The closer the reliability coefficient gets to 1.0, the better the reliability achieved. The inter-item consistency reliability of the five independent and dependent variables of the survey result was obtained. The coefficient for the mitigation variable was 0.725, 0.758 for the preparedness variable, 0.842 for the response variable, 0.649 for the recovery variable, 0.883 for requirement capability and 0.752 for the network variable. The coefficient ranged from 0.649 to 0.883 and five of six variables had coefficients >0.7. According to Sekaran (2003), those in the 0.70 range are acceptable and those over 0.80 good in most social science research situations. Thus it was concluded that the internal consistency reliability of the questionnaire used in this study could be considered to be satisfactory.

3.4.3.2. Validity

One of the most important criteria for the suitability of any data set is measurement validity. A valid survey instrument is required in order to provide correct information. Validity is concerned with whether the findings are really about what they appear to be about. More generally, there are two main concerns in relation to validity: assessing the relevance and the precision of research results, and assessing the extent to which researcher can generalize from these results (Thiétart, 2001).

In a case study, internal and external validity can be potential problems, which are referred to as projection, and these occur when the researcher's own values and experiences are projected onto the case (Tharenou, et al., 2007). Concern about internal validity arises through the researcher's interpretation. Therefore a case requires an explanation of the processes under investigation, and to

provide it the researcher needs to categorise and interpret the information in a case in order to minimise errors (Creswell, 2003).This study gathered data from multiple sources (primary and secondary data) and through multiple methods (in-depth interview and survey), and thus validity has been fulfilled through data triangulation.

External validity is another concern in a case study. External validity is the extent to which findings drawn from one group are generalizable or applicable to other groups or settings. Generalizing one case study into another case is often difficult. However, since this research is a case study, which is the most common form in management research (Tharenou, et al., 2007), it can be described as 'an empirical enquiry that investigates a contemporary phenomenon within its real-life context' (Yin, 2003). A single case study is valid because the case study seeks analytical generalization rather than statistical generalization (Yin, 2003). The topic of my study is relatively new in the context of developing countries, particularly in considering local government capability in fighting disaster. The Bantul local government was chosen mainly because its experience of managing disaster in 2006. Detailed explanation about this chosen district was presented in the Chapter 1, section 1.2, on the Statement of the Research Problem.

The case study is therefore useful in examining and understanding why and how contemporary real-life organisational phenomena occur under conditions where the researcher has minimal control (Lee, 1999; Yin, 2003). Multiple sources were reviewed and analysed at the same time, so that the research findings were based on the convergence of information in order to increase external validity.

3.5. Data Analysis

The general aim of data analysis is to enable the researcher to 'see the wood for the trees' (Thomas, 2004, p. 204). The researcher then seeks structure in the data: generalities and commonalities within all the variety and the differences that are displayed in the dataset, and linkages, patterns and categories. The data which were collected during field research must undergo

data reduction in order to condense and summarize them so that they are meaningful in terms of the study's objectives. Whether quantitative in the form of numbers or qualitative in the form of words, raw data are reduced in various ways. Qualitative data are reduced by textual interpretation, while quantitative data are subjected to statistical analysis (Thomas, 2006). The data analysis phase for each was therefore different and is discussed in the following section.

3.5.1. Qualitative Data Analysis

Data produced by qualitative research are able to lead to significant distinctions from those that result from quantitative work. These are helpful in terms of understanding what is necessary in order to be able to analyse these data meaningfully. Qualitative data are associated with concepts and are characterised by their richness and fullness, based on the opportunity to explore a subject in as real a manner as is possible (Robson, 2002). A contrast can thus be drawn between the 'thin' abstraction and description that results from quantitative data collection and 'thick' or description associated with qualitative data (Dey, 1993; Robson, 2002). The nature of qualitative data therefore has implications for both its collection and its analysis. To be able to capture the richness and fullness associated with qualitative data, they cannot be collected in a standardised way, like that of quantitative data (Saunders, et al., 2003).

In this section, the researcher will use some of the principal approaches to the analysis of qualitative data. Qualitative data analysis is based on meanings expressed through words gathered from in-depth interviews and transcribed into written format. It results in the collection of non-standardised data that require classification and are analysed through the use of conceptualisation (Saunders, et al., 2003). The raw data were taken from many forms of texts such as interview transcripts or notes, field notes, documents and textual records. Textual interpretation is a more subtle process than statistical analysis, natural language being so much more complex than the formal languages of logic and mathematics (Thomas, 2004). Textual analysis generally involves interpretation rather than calculation, although statistical methods may be used in some forms of content analysis.

3.5.1.1. Content Analysis

Having collected the qualitative data through in-depth interviews, the researcher analysed them in order to answer research questions using content analysis. Content analysis has been used as the main technique in a research project and its most common use is as a secondary or supplementary technique in mixed methods research (Saunders, 2008).

Content analysis has been defined as 'a research technique for the objective, systematic, and quantitative description of the manifest content of communication', and as 'any technique for making inferences by objectively and systematically identifying specified characteristics of messages' (Berg, 2007). Typically, content analysis deals with the surface or manifests features of a text and involves classifying and quantifying its content. Content is quantified in units of enumeration such as words, sentences, paragraphs and items. The internal validity of a content analysis is relatively unproblematic when it simply describes manifest content. Documents that have been subject to content analysis are varied in type and scale, ranging from text through to images, and they include minutes of meetings, organizational policies, newspaper articles, and websites (Tharenou, et al., 2007).

The process of content analysis starts with a research question. Where a large number of documents exist, the next stage is to select a sample using a clear rationale, both in terms of the nature of the documents and the time at which they were created (Creswell, 2003). The next stage is a coding scheme which is developed to enable data-relevant research questions to be recorded. This consists of a coding schedule and a coding manual. The schedule comprises a form into which data relating to the document being coded are entered while the manual defines all the codes or categories that will be used and gives clear instructions regarding their precise interpretation (Creswell, 2003; Saunders, 2008). Computer-aided qualitative analysis software (*NVivo*) was used to facilitate this content analysis.

3.5.1.2. Software for Qualitative Analysis

This study used QSR *NVivo* 8 software to analyse qualitative data. *NVivo* is software which has been used widely across methodological barriers and paradigms in social research. It therefore ideally suits research which is inductive rather than deductive (Gibbs, 2002). QSR *NVivo* was used as a tool in the empirical analysis of the interview transcriptions. Since qualitative research involves the researcher attempting to make sense of a mass of data, a computer program can provide an efficient means to store, code and sort data (Hall, Hall, & Campling, 1996).

Initially, *NVivo* was introduced to integrate the themes that originated from theory and analysed data guided by a conceptual framework. The themes served as a lens through which the data could be viewed and *NVivo* helped to guide the analysis of interview and observational data collected (Easterby-Smith, et al., 2008). The software is not based on automatic analysis of data; rather it supports the interpretations and constructions of the researcher by organising and reorganising the data according to the interpretations. *NVivo* allows the development of 'trees' of sub-nodes that are related to categories or branches of higher level 'nodes'. While the main categories of tree-nodes were developed *a priori*, the identification of the sub-nodes for the coding framework came about in an emergent manner. The new categories were produced through the process of close reading of the transcript. The relevance of these was then viewed in order to see how they might be interpreted. In the context of *NVivo* the objective of this particular process of coding and recoding is to create a code book.

One of the benefits of using *NVivo* is that it handles the creative 'messiness' of the research process, allowing the researcher to merge, delete or rename nodes as the analysis progresses. Where nodes are merged or renamed, the data that is coded is automatically updated without having to recode texts and all the nodes in the new code book are stored electronically. A useful tool is the inclusion of a description or definition for each node which can all be handled by the software (Easterby-Smith, et al., 2008).

After completing in-depth interviews, the researcher transcribed the interviews into a written format. All data records of this research, such as transcription, field notes and memos, were converted into RTF format and placed in the *NVivo* project. After importing the documents into the *NVivo* database, the analysis continued by reading, fixing, coding and analysing the documents. This brought together passages of the text that were about the same topic or indicated similar ideas, concepts, actions and description.

Each of the transcriptions was first read through and categorized according to the theoretical approach which is taken in terms of research domains. Each of the transcriptions was analysed in terms of identifying all the sections of text expressing the main units of this research. This activity is called coding; as Gibbs (2002) says, it plays a fundamental role in qualitative research. The section of text can vary from a short clause to a few sentences. The criteria for selection were that each section should provide a micro context to understand the conceptual description related to the research questions. These sections were coded also as 'placeholders' for the further analysis of the meanings expressed in these sections (Gibbs, 2002, p. 131).

The categories or tree nodes created have been used according to the contextual analysis. These are: Disaster Management Organisation, Disaster Management at the Local Level, Community Involvement, Capabilities Existing in Bantul Local Government, Capabilities Requirement for Local Government, Gaps between the Capabilities required and the reality, Relations between Central, Provincial and Local Government, Networking, and Local Government Barriers (Table 3.4). Tree nodes led to ideas and thoughts to answer the questions of this research. However, each of the text sections or the free nodes can be coded by using more than one category. The reason for this is that each expression can consist of many different descriptions as combinations referring to different dimensions of disaster discourse. The expression in the transcription data can be understood differently depending on the emphasis in the text. Categorising free nodes into tree nodes provided a macro context for the interpretation of the concept analysis. This is necessary to establish a broader context of this research based on the empirical data. The last step of the

analysis is to test how the findings of rhetoric expressions represent the context of the research. This is to validate the categories and to ensure the representatively of this research.

Table 3.4 Classification of the Tree and Free Nodes

Tree Node Category	Free Node
Disaster Management Law	Law about Disaster Management
Disaster Management Organisation	Changing role of National Planning Board (*Bappenas*) to National Body for Disaster Management (BNBP) Disaster Mainstream Disaster Management in Indonesia Disaster Management System Role of BNBP Role of *Bappenas*
Disaster Management at The Local Level	Example of Local Disaster Body Local Disaster Body Role of Local Body for Disaster Management (BPBD) Provincial Coordination Board for Disaster Management Provincial Disaster Body
Local Government Institutions	Role of Community Protection Office Role of Legislative Body Role of Local Government Bureaucracy Image
Provincial Government	Role of Provincial Government Provincial Performance
Central Government	Central Government Performance Central Government Problems Role of Ministry of Home Affairs
Civil Society Organisations	Role of Mass Media Role of NGO Role of United Nations
Experience Other Places	Another Countries Experience in Managing Disaster Another Local Government Experience in Managing Disaster
Community Involvement	Community Participation Cultural Behaviour Local Wisdom
Mitigation Stage	Disaster Awareness
Preparedness Stage	Disaster Education for community
Response Stage	Distributing Aid Damage and Lost Assessment Disaster Victims
Recovery Stage	Cases in Recovery Phase
Capabilities Exist in Bantul Local Government	Bantul performance Leadership Capability Financial Capability Human Resource Capability Institutional Capability Local Government Capability Technical capability
Capabilities Requirement for Local Government	Capability Requirement
Gaps between the Capabilities Required and the Fact	Lesson Learnt
Relations Between Central, Provincial and Local Government	Conflict Central and Local Government Provincial, Central and Local Government Relations Role of Central and Local Government
Networking	Coordination Networking between Community and NGO Networking NG0 to NGO Networking NGO-Bureaucracy
Local Government Barriers	Barrier Local Government Budget Matters

Source: Primary Data, 2009

3.5.2. Quantitative Data Analysis

All research will involve some numerical data or contain data that could be usefully quantified to answer research questions and to meet research objectives. 'Quantitative data' refers to all such data and can be a product of all research strategies (Saunders, et al., 2003). It can range from simple counts, such as the frequency of occurrences, to more complex data. The process of qualitative analysis generally involves the development of data categories, allocating units of original data to appropriate categories, recognising relationships within and between categories of data and developing and testing hypotheses to produce well-grounded conclusions (Saunders, et al., 2003). The objective of quantitative data analysis is to obtain results that test the study's research questions as accurately and easily as possible (Tharenou, et al., 2007).

3.5.2.1. Statistical Approach

There are several ways of categorising techniques of data analysis in terms of their broad purposes and applicability. Most techniques for answering research questions in management research can be classified as 'univariate' and 'bivariate' (Tharenou, et al., 2007). Univariate analysis is used to answer simple research questions involving one variable; bivariate analysis assesses the relationship between two variables (Easterby-Smith, et al., 2008). Frequencies have been used to deal with univariate data and cross-tabulations have been utilized for bivariate analysis. This study used both univariate and bivariate analysis. Univariate analysis was used to describe demographic details of participants. Bivariate analysis was used for comparison of responses from the three selected districts.

To be useful these data need to be analysed and interpreted. Data were analysed using the statistical program, SPSS (Statistical Package for the Social Sciences) 16.0. SPSS is the most widely used statistical package and contains a comprehensive set of procedures for organizing, transforming and analysing quantitative data (Thomas, 2004). The software is also characterized by great

flexibility and user-friendliness, as well as accompanied by excellent manuals which provide concise overviews of the main statistical techniques.

3.5.2.2. Frequency Distribution

The simplest way of summarising and organizing data so that specific values can be read is to use a table or frequency distribution (Thomas, 2004). The aim of presenting frequency distribution is to show one variable so that any specific value can be read easily (Saunders, et al., 2003). For descriptive data, the table summarises the number of cases (frequency) in each category. In this research, only percentages were used in tables or diagram. Since tables attach no visual significance to highest or lowest values unless emphasized by alternative fonts, diagrams were used because they can provide visual clues, although both categorical and quantifiable data may need grouping (Tharenou, et al., 2007). Furthermore, the exploratory data analysis approach emphasized the use of diagrams to understand data; descriptive statistics enable description and comparison of variables numerically. The findings of the quantitative data are presented in Chapter 6.

3.5.2.3. Cross-Tabulation

The relatively simple device of cross-tabulation can be used to great effect. The frequency distribution displays the distribution of the cases across the categories of a single variable. Typically, cross-tabulation is used when at least one of the measures is a nominal variable (Thomas, 2004). Cross-tabulation, also called contingency tables, is common in reporting data (Tharenou, et al., 2007). The analysis is usually conducted on nominal and ordinal variables in order to show the interdependence between two or more variables so that any specific value can be read simply (Saunders, et al., 2003). In the current analysis, cross-tabulation is used to analyse ordinal variables with dichotomous nominal variables (the three districts). This was aimed at understanding whether the responses varied due to geographical aspects.

3.5.2.4. Kruskal-Wallis Test

The Kruskal-Wallis test is the non-parametric alternative to a one-way between-groups analysis of the variance in order to compare the scores on some continuous variable for three or more groups (Pallant, 2007). This test evaluates the significance of the difference between three or more independent groups on the basis of mean ranks (Cooksey, 2007). The information gathered from this output is **chi-square** value, the degrees of freedom (*df*) and the significance level (presented as **Asymp.Sig**.). The Kruskal-Wallis test, if statistically significant, simply tells the groups which differ in terms of average ranks. However, it does not tell exactly which groups actually differ, it only gives an indication that among the set of groups being compared there is at least one significant difference. The groups in this study are the three selected districts, Bambanglipuro, Jetis and Pleret.

3.6. Ethical Issues

In conducting research studies, the researcher may sometimes infringe on people's rights to privacy through asking personal questions. However, this is the only way in which the researcher can collect the information. Therefore consideration of research ethics constitutes an integral part of the development and implementation of any research study (Johnson & Christensen, 2000). The main issues that need to be considered by the researcher in conducting ethical research are avoiding conflict of interest, ensuring that there is no exploitation of the research participant and always respecting the personality, rights, wishes, beliefs, consent and freedom of individual research participants (Tharenou, et al., 2007). To a large extent, concerns about research ethics revolve around various issues of harm, consent, privacy and the confidentiality of data.

3.6.1. Ethical Issues with Interviews

Consideration of the ethics of any research study is necessary to assist the researcher in preserving human rights and preventing abuses that could occur and in delineating the responsibilities of the researcher (Johnson & Christensen, 2000). In addition, involvement in any research study must be undertaken on a

completely voluntary basis. 'Voluntary' means that the participant freely, without threat or inducement, agrees to be involved in the research project. This voluntariness relates not only to their initial involvement, but also to their continued involvement, since research participants must be able to withdraw from the project at any time. Obtaining participants' informed consent prior to conducting the study is therefore very important.

Before obtaining clearance from the SCERH of Monash University, the researcher provided the consent form, which signifies the informed consent of individuals to participate as an exercise of their own choice, free from any element of fraud, deceit, duress or similar unfair inducement or manipulation (Berg, 2007). The objectives of providing a consent form are to make participants aware of the research methods, any agreement, any potential adverse effects of the research and the ultimate fate of the research (Gregory, 2003). Consent must be given by subjects certifying that participants are participating with full knowledge of the risks and benefits of participation (Fink, 1995).

In order to obtain informed consent, researcher also provided participants with an explanatory statement (see the Appendix) written in plain language. The outlines of the explanatory statement included the purpose of the study, the benefits of this, research methods, time requirements, the participants' freedom to refuse to participate or to withdraw, information on results of this study, the contact name and number for questions or concerns and, lastly, the address of the Ethics Committee for contact.

The consent form and explanatory statement were provided at the start of each interview and permission for recording the interview was obtained through obtaining the signature of participants. All recordings were stored in a secure place and will be erased when transcription is complete. A copy of the consent form is attached in the Appendix.

Next, the researchers asked the subjects if they understood the information and were still willing to take part in the tape-recorded in-depth interview. This procedure was repeated in every interview. After obtaining ethics approval from

SCERH, proposed organizations were contacted by mail in order to obtain permission letters.

3.6.2. Ethical Issues with the Survey

In the context of research, ethics refers to the appropriateness of behaviour in relation to the rights of those who become the research's subject (Saunders, et al., 2003). Wells (1994) defines ethics in terms of a code of behaviour appropriate to academics and the conduct of research. This appropriateness or acceptability of researcher behaviour will be affected by broader social norms of behaviour (Zikmund, 2000). A social norm indicates the type of behaviour that a person ought to adopt in a particular situation. However, as Wells (1994) recognizes, the norm of behaviour that prevails will in reality allow for a range of ethical positions.

Ethical issues with regard to quantitative data were pursued in ways similar to those employed with qualitative data. These were around the privacy of actual participants, the voluntary nature of participation and the right to withdraw partially or completely from the research process, the consent form of participants, and the maintenance of the confidentiality of data provided by individuals or identifiable participants. A copy of the explanatory statement and informed consent are given in the Appendices.

Since my research was categorised as high risk, several requirements were needed to gain ethics approval, such as obtaining letters from the Occupational Health, Safety and Environment Unit, providing advice from the Security Manager to the DVC (I) in regard to higher risk travel approvals, and authorisation by the Faculty Dean. After all requirements were fulfilled, ethics approval was granted.

In summary, ethical issues must be considered at every stage of the research process and it is important that the researcher obtains informed consent from participants whose involvement should be completely voluntary. Privacy is seen as the cornerstone of the ethical issues that confront those who undertake research.

3.7 Conclusion

This chapter has discussed the research design and methods used in the current study. The nature of this study was defined as an exploratory and intrinsic case study. The rationale for selecting disaster management capability in Bantul, the sample population and key informants were explained and justified, along with the triangulation methods applied to develop the interpretation of this study logically and accurately. The processes of collecting both qualitative and quantitative data were also discussed in detail. Finally, this chapter also explained how the data were analysed and interpreted using *NVivo* for qualitative data and SPSS for quantitative data.

The next chapter presents the theme of disaster management in Indonesia and at the local government level.

Chapter 4. Disaster Management in Indonesia and at the Local Government Level

4.1. Introduction

This chapter provides a descriptive analysis of the study of public policy management and change in terms of disaster management discourse in Indonesia, particularly at the local government level. The purpose is to review the development of disaster management policy in Indonesia from 1966 to the present, the administrative structure, institutions and policy arrangements, as well as the practice of disaster risk reduction at the local government level. This aims to provide an overview of progress in management as evidence of how the Bantul local government managed the 2006 earthquake.

The following section describes natural disasters that frequently happen in Indonesia, for example, earthquakes, tsunamis, volcanic eruptions, floods and landslides. The next section deals with the emergence of disaster management activity in Indonesia, including institutions and national policy arrangements. Then it follows a review of the demographic and social background of the Bantul local government. A comparison between Bantul's condition before and after the 2006 earthquake is also presented, together with the impact on economic performance and employment. The last section summarises the chapter and relates it to subsequent analysis and discussion.

4.2. Natural Disaster Phenomena in Indonesia

Indonesia is populated by more than 237 million people spread across a wide-ranging archipelago. Geographically, Indonesia is located in South East Asia between two Oceans, the Indian and the Pacific. Indonesia is well known as an active tectonic region because it consists of three major active tectonic plates: the Eurasian in the north, the Indian Ocean-Australian in the south and the Pacific plate in the east. The southern and eastern part of the country features a volcanic arc stretching from the islands of Sumatra, Java, Nusa Tenggara and

Sulawesi. The rest features old volcanic mountains and lowlands partly dominated by marshes. Indonesia also has more than 500 young volcanoes, including 128 active volcanoes, representing 15% of the world's active volcanoes (National Development Planning Agency, 2006a).

Besides island arc building, the subducting processes also generate a seismic active belt along the volcanic arc. Fortunately, shallow epicentre earthquakes usually occur in remote areas where fewer of the population live. However, on occasion major earthquakes strike densely populated regions such as Bengkulu, Liwa, Bali and Nusa Tenggara (Flores Island). Other types of natural hazard generated by tectonic activities are volcanic eruptions and tsunamis. Some active faults well known as earthquake generators are the Great Sumatra Fault (Sumatra Island), the Palu-Koro (Central Sulawesi/Celebes) Fault and the Sorong Fault (Papua Island) (Asian Disaster Reduction Center, 2004). The particular geographical and geological characteristics of the country mark Indonesia as a country vulnerable to natural disaster[5].

The fact that Indonesia is a country vulnerable to disaster, both natural and man-made, has prompted the government to develop a proper disaster management system.

According to the Asian Disaster Reduction Center (2004), Indonesia has a high seismicity among disaster-prone countries in the world. Table 4.1 shows that Indonesia experienced the most people killed in natural disasters when compared with other major natural disasters.

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[5]ADB lists Indonesia as the country third most vulnerable to natural disaster after the Philippines and India in terms of severity of the disasters and their cumulative frequencies of occurrence for the period 1964-1986. UNESCO in the World Disaster Reduction Campaign places Indonesia seventh on the list of disaster-prone countries that suffered from natural disaster in 2005. The Asian Disaster Preparedness Centre (ADPC) in 1999places Indonesia with China, Myanmar, Pakistan, Philippines, Solomon Island, Tonga, Vanuatu, West Samoa and Papua New Guinea as countries most severely affectedby the relative intensity of earthquake disasters.

Table 4.1 International Comparison of Major Natural Disasters

Country	Disaster	Date	Number Killed	Damage & Loss ($US millions)
Turkey	Earthquake	17 Aug 1999	17,127	8,500
Indonesia (Aceh)	Tsunami	26 Dec 2004	165,708	4,450
Honduras	Hurricane Mitch	25 Oct-8 Nov 1998	14,600	3,800
Indonesia (Yogyakarta & Central Java)	Earthquake	27 May 2006	5,716	3,134
India (Gujarat)	Earthquake	26 Jan 2001	20,005	2,600
Pakistan	Earthquake	8 Oct 2005	73,338	2,851
Thailand	Tsunami	26 Dec 2004	8,345	2,198
Sri Lanka	Tsunami	26 Dec 2004	35,399	1,454
India	Tsunami	26 Dec 2004	16,389	1,224

Source: ADB (2006)

In the period 2002-2007, in Indonesia 1,782 disasters occurred. A total of 137,959 people died, 37,066 people were reported lost, 152,421 were injured, there were 8,307,679 displaced persons and billions of rupiah in losses were incurred (Table 4.2). The most frequent natural disasters were floods (1,183 instances), cyclones (272) and landslides (252). A series of major disasters that particularly affected Indonesia were the 2004 tsunami and the earthquakes, which devastated the cities of Banda Aceh and Meulaboh,[6] and the 2006 central Java earthquake, which impacted on the city and suburbs of Yogyakarta[7].

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[6] The fourth largest earthquake in the world since 1900 occurred on December 26,2004, at 00:58:53 UTC (or 07:58:53 local time), off the west coast of Northern Sumatra, Indonesia. The magnitude registered as 9.0 on the Richter scale, the focal depth was 30 km, and the epicentre position was at latitude 3.30° north and longitude 95.96° east. The epicentre was 255 km from Banda Aceh, the nearest provincial capital in Sumatra. This triggered a tsunami that hit Aceh 45 minutes later and devastated 75% of rural residents, 78% of private sector industries, and 63%of fisheries, agriculture and commerce. Furthermore, 12% of total damage was classified as environmental damage, which further diminished rural livelihood opportunities through damage to coral reefs and mangrove swamps, loss of land use, and destruction of the coastal zone. The 2004 tsunami left almost 130,000 dead, around 37,000 people missing, and 500,000 people displaced in Northern Sumatra. In addition to this human toll, total damage and losses have been estimated at US$4.45 billion. Much of the impact was in the cities of Banda Aceh (one-quarter of the city's 400,000 people were killed) and Meulaboh (30,000 of the population of 120,000 were lost).

[7] The earthquake occurred on May 27, 2006 at 5.50 am,and measured 5.9 on the Richter scale. It struck Java Island about 33 km south of Bantul district in the highly urbanized Yogyakarta Province. The earthquake trapped hundreds of people in their homes, which subsequently collapsed. This disaster left 4,659 people in Yogyakarta Province dead and 1,057 people died in Central Java province. Those injured totalled around 50,000. The total amount of damage and loss was estimated at US$3.1 billion.

Table 4.2 Natural Disaster in Indonesia (January 2002 – December 2007)

No.	Type of Disasters	Occurred	Victims			
			Dead	Lost	Injured	Displaced
1.	Flood	1,183	1,392	-	379	4,842,861
2.	Landslides	252	618	-	47	35,133
3.	Earthquake	53	7,038	-	1,729	2,628,109
4.	Earthquake & Tsunami	1	128,858	37,066	150,266	522,462
5.	Volcano Eruption	21	6	-	-	144,517
6.	Cyclone	272	47	-	-	134,597
	Total Victims	1,782	137,959	37,066	152,421	8,307,679

Source: www.bakornaspbp.go.id (retrieved 2 April 2008)

4.3. Institutions and Policy for Disaster Management in Indonesia

Indonesia is disaster-prone because of its geographical, geological and demographic conditions. This demands development of an efficient disaster management system. Institutions and policy that are responsible for disaster management have thus been created for two reasons.

Firstly, it is the government's responsibility to protect the community from disaster. Secondly, the institutions and policy created aim to reduce disaster risk factors from unsustainable development practices that are worsened by the impact of climate changes.

The following discussion explores the development of institutions and policy for disaster management in Indonesia from 1966 to the present.

4.3.1. Institutions for Disaster Management in Indonesia

The government has taken some important steps in managing disasters that often occur by establishing an organisation which is responsible for handling a complex situation. A coordinated national organisation was first developed in 1966, but the discourse on disaster management at the national and local levels has encouraged central government to adapt this organisation to become more accountable and to involve the participation of the community.

The following subsection discusses the development of the disaster management organisation from its first establishment in 1966 up until 2007, when Law No.24/2007 mandated creation of a national and local disaster

management agency that allowed local people and local government to participate and play important roles in proposed planning, implementation and evaluation of disaster management activities.

4.3.1.1. Disaster Management Organization 1966-1990

In 1966 the government, through Presidential Decree No.256 of 1966, established the Advisory Board for Natural Disaster Management. Its activities were focused on disaster victims. To improve coordination and integration of disaster responses, in 1979, by way of Presidential Decree No.28, the government established a coordinating body for natural disaster management called the *Bakornas PBA* (National Coordinating Body for Natural Disaster Management). Up to that year, relief measures in response to natural disasters were the sole responsibility of the Ministry of Social Affairs (MOSA). In line with a recommendation from the United Nations Disaster Reduction Organisation (UNDRO), the predecessor of UNDHA (which later became the United Nations Office for the Coordination of Humanitarian Affairs – UNOCHA), that natural disaster management should not be the responsibility solely of one ministry, the government established the *BakornasPBA*(Asian Disaster Preparedness Centre, 2007). This entity was chaired by the Coordinating Minister for People's Welfare. However, as reflected in the organisation's structure, the *BakornasPBA* had to rely on the MOSA as the authority. While the general chairmanship was in the hands of the coordinating minister, the executive chairmanship was delegated to the Social Affairs Minister, supported by the Minister for Home Affairs and the Minister for Public Works.

Presidential Decree No.28 of 1979 prescribes the concept of disaster management, which covered prevention, repression and rehabilitation measures, and was not limited to disaster relief. However, practically speaking, the focus was still on disaster relief directed by MOSA as the authority within the *BakornasPBA*. At the regional level, the activities of *SatkorlakPBA I* (at provincial level) and *Satkorlak PBA II* (at district level), which were the regional agencies of the *Bakornas PBA*, were much coloured by the activities of representative offices of MOSA at those levels. This resulted in the sidelining of initiatives supposedly under the authority or responsibility of the Ministry for

Home Affairs. MOSA regional representatives acted as the secretaries for *Satkorlak PBA I* and *Satkorlak PBA II*. The 1979 Decree also included the establishment of a similar arrangement at provincial and district levels.

4.3.1.2. Disaster Management Organization 1990-1999

Presidential Decree No.43 of 1990 was issued as an amendment to the previous decree (28/1979) to improve and facilitate integrated sectors related to disasters. It included Armed Forces back-up and it encompassed man-made disasters. The organization was called the *Bakornas PB* (National Coordinating Body for Disaster Management). Yet it still established MOSA as the leading sector (Asian Disaster Preparedness Centre, 2007). This decree introduced *Satlak PB* (Implementing Unit for Disaster Management) in place of *Satkorlak PB II*. *Satlak PB* was obliged to report immediately to *Bakornas PB* through the Governor about the occurrence or potential occurrence of disaster in a relevant area. However, in urgent circumstances, *Satlak PB* could directly report to *Bakornas PB* and inform the Governor afterwards. *Satlak PB* and *Bakornas PB* were obliged to prepare reports for submission to the President of Indonesia. This presidential decree (43/1990) did not begin to elaborate the structure of the disaster management organisation at the provincial level (*Satkorlak PB*).

4.3.1.3. Disaster Management Organization in 1999-2001

On 2 September 1999, Presidential Decree No.106 of 1999 was issued as an amendment to Presidential Decree No.43/1990, which had not included the management of human-induced disasters or social unrest. In order to facilitate this additional scope, the national organisation for disaster management, *Bakornas PB*, changed its name to become the National Body for Disaster and Internally Displaced Persons (IDP) Management (*Bakornas PBP*) (Asian Disaster Preparedness Centre, 2007). Membership of *Bakornas PBP* was enlarged to include 13 Ministers and relevant Governors. As the coordinating body, *Bakornas PBP* does not have direct implementation or policy-making functions. This agency, although its name indicates that it is a Body, is virtually a council or board chaired by the Vice President, with relevant ministers, the Police Chief, the Military Chief and the Governor(s) of affected province(s) as its

members. *Bakornas PBP* was to be 'activated' when disasters struck. During periods of 'no disasters' *Bakornas PBP* is dormant. Its work is very much represented by the work of the Secretariat and thus its performance is largely assessed by outsiders from the point of view of the performance of its Secretariat*.*

4.3.1.4. Disaster Management Organization 2001-2007

Disaster management in this period was very much influenced by the spirit of the decentralisation era that began in 2001 and which made significant changes in the Indonesian political and administrative system. The implementation of the new concept of regional and local autonomy under Law No.22/1999 on Local Government was substantially intended to empower provincial and local government. At the same time, from learning how each region has its own strength and constraints in terms of human resources and the wide-ranging impact of disaster in many regions in Indonesia, the government then established the National Coordinating Board for Disaster Management (*Bakornas PB*), in accordance with Presidential Decree No.111 of 2001. However, in order to support the duties of *Bakornas PB*, the central government established *Satkorlak PB* (Provincial Coordinating Board for Disaster Management) at the provincial level; this was chaired by the Governor. In addition, to cope with disaster where it occurs at the district or municipal level, *Satlak PB* (District or Municipal Implementation Unit for Disaster Management) was established, chaired by the *Bupati* (Head of District) or Mayor, as appropriate (Figure 4.1). The *Satlak* is composed of *Satgas* (task forces) of relevant institutions and services, such as health, Search and Rescue (SAR), the army, the police, social and public works, the Indonesian Red Cross (PMI) and NGOs. District units, as front-line organizations, can mobilize all related agencies in their respective districts, subdistricts and villages, along with local community organizations. This decree has also provided the opportunity for provincial and local government to arrange their own adaptation of *SatkorlakPB* and *SatlakPB* structures according to local needs (Asian Disaster Preparedness Centre, 2007).

Figure 4.1 Disaster Management Organization Structure in Indonesia Based on Presidential Decree No.111/2001
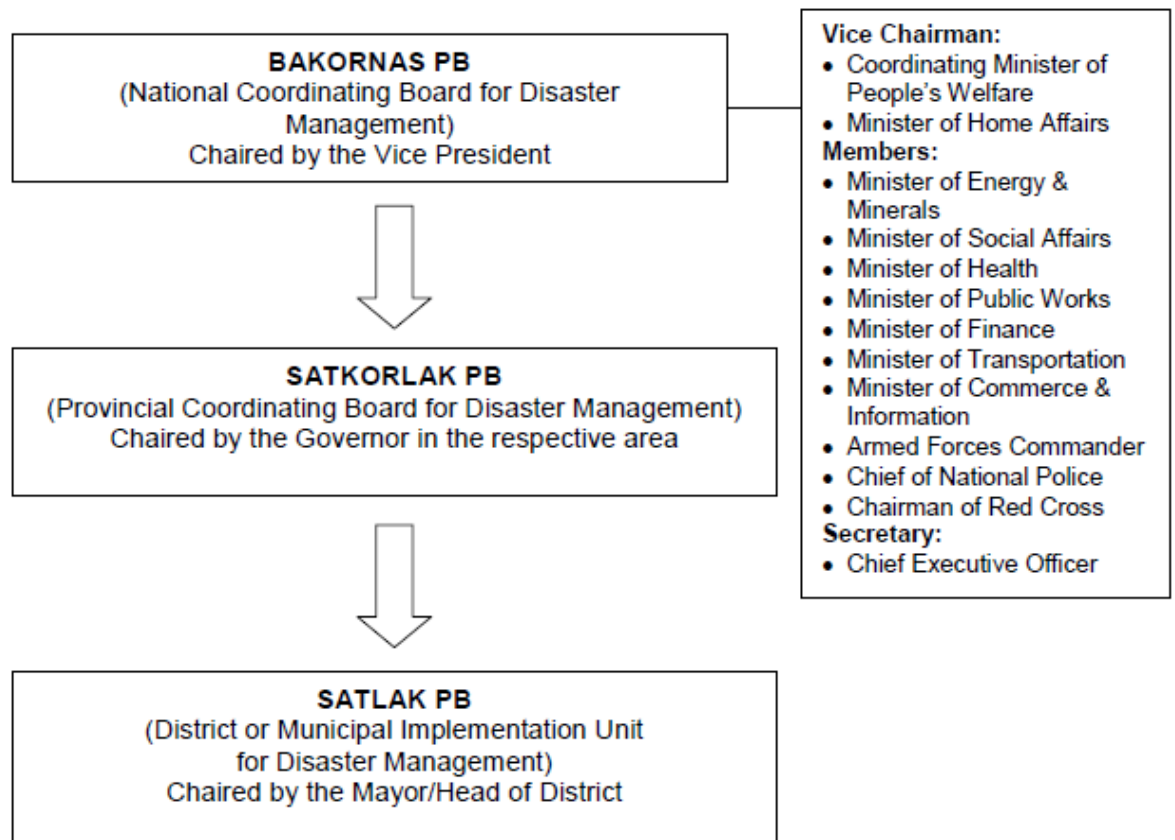
Source: www.bakornaspbp.go.id (retrieved 2 April 2008)

In a number of periodic national workshops that involve *Satkorlak PB* and are organised by *Bakornas PB*, the inclusion of disaster management into the respective provincial development plans has been deliberated and accepted. While the discourse on disaster management at the national and regional levels has been encouraging in accepting the need to include it in the overall development plan, and also accepting that disaster preparedness is crucial to mitigating the impacts of disasters, actual programmes that reach down to and involve the community in disaster preparedness have not been common. The *Bakornas PB* has introduced the concept of community-based disaster management through its Self-Initiative Disaster Management System. The concept was developed to increase the awareness of the community about potential disasters that might occur in their area.

Strategy and policy coordination in prevention and mitigation activities are handled by the *Bakornas PB*. In implementation, each ministry deals with its respective task. During a disaster, in the case of rescue, emergency relief is to be handled directly by the *Satlak PB* at the district level, the *Satkorlak PB* at the provincial level and the *Bakornas PB* at the national level. After a disaster, in the case of rehabilitation, this is to be handled directly by the *Satlak* or the *Satkorlak PB*, along with line ministry agencies and under coordination of the central government. Within the coordination system, as discussed above, all manuals, hazard mapping and risk assessment is handled directly by each ministry in accordance with their policy remit. To address post-disaster response, the National Planning Board of the Government of Indonesia, known as *Bappenas* (which fell under the central government's responsibility) and the *Bakornas PB* established a special agency for several recovery-related events.

4.3.1.5. Disaster Management Organization 2007 to the Present

In disaster-prone countries like Indonesia, understanding the link between development and disaster is crucial. Development activities are undertaken with appropriate consideration of the potential impact of disaster. In this regard, the government has taken significant steps to boost disaster risk reduction, starting with the passing of Law No.24 of 2007 on Disaster Management.

In 2007, the organizational structure of the *Bakornas PB*, its terms of reference and its role were modified and strengthened. A new Operations Manager was appointed to lead the *Bakornas PB* Secretariat. However, due to the scope and complexity of disasters that occurred, the government implemented Law No.24/2007 to cover all stages of disaster activities. According to the Law, *Bakornas PB* was replaced by the BNPB (the National Body for Disaster Management) and *Satkorlak PB* and *Satlak PB* were replaced by the BPBD (the Local Body for Disaster Management) (National Disaster Management Agency, 2008).

Before the establishment of this new agency, everything related to disaster had to be coordinated by *Bakornas PB*. Now its nature resembles that of a command post, so it is expected to be more hands-on. However, preparation

and post-disaster stages are still to be handled in part by ministries. However, prior to the enactment of the Law, the Ministry of Social Affairs took an important step in establishing what is now recognized as community participation in disaster risk reduction; this is called the *Tagana* (Volunteer Disaster Corps). The corps trains regularly as a human resource for dealing with disaster, particularly in helping reduce disaster risk at the preparedness stage. In the long term, every regional area is expected to have trained people who voluntarily help disaster victims throughout the country as members of *Tagana*. *Tagana* members now number 20,000; they are spread throughout the country and will be increased in the future to 40,000 members (National Development Planning Agency, 2006a).

4.3.2. National Policy Arrangements

The complexity of disaster and emergency situations demands that the government develop efficient disaster policy arrangements. This section describes the significant steps that the government has taken to support disaster risk reduction by formulating various policies, regulations and platforms that relate to disaster management.

4.3.2.1. The Law on Disaster Management

The 24/2007 Disaster Management Law is a legal umbrella for Indonesia's disaster management implementation and it includes community-based disaster risk management. Law 24/2007 was issued on 26 April 2007. It provided a new perspective on disaster management. The earlier perspective emphasized only emergency response or relief from disaster. The new perspective inserted disaster management as not only an emergency response but also as a driver for pre-disaster and post-disaster actions (National Disaster Management Agency, 2008). According to Law No.24/2007, disaster management is seen as comprising a series of efforts such as disaster-sensitive development policymaking, disaster prevention activities, emergency response, and rehabilitation.

The phases of Indonesian disaster management are as follows (National Development Planning Agency, 2006a):

1. Preparedness: a series of activities implemented to anticipate disaster through organizational arrangements and through efficient and effective steps;
2. Early Warning: a series of activities warning the public, by an authorized agency, at the most immediate stage about the possibility of disaster at specific locations;
3. Mitigation: a series of efforts to reduce disaster risks through built development, awareness and capacity building for addressing hazard;
4. Emergency Response: a series of activities implemented immediately upon occurrence of disaster to address resulting negative impacts; this comprises rescue and evacuation of victims, securing assets, delivery of basic needs, protection, IDP management, rescue, and recovery of facilities and infrastructure; and
5. Rehabilitation: repairing and recovering all public or community services up to a level that is adequate for the geographical post-disaster area; the main goal is to normalize (or return to normality) all governance and community life elements in a geographically specified post-disaster area.

Table 4.3 presents the sections in Law No.24/2007 that involve disaster management. The Disaster Management Law has been a trigger for a changing paradigm of disaster management in Indonesia. *Firstly,* it shifts the paradigm from emergency response to risk management. Disaster management should no longer be regarded as a series of special and limited actions in response to a catastrophic event. Rather, it should encompass systematic risk management in which multiple stakeholders can actively control, prevent, eliminate and identify potential hazards. *Secondly*, it has a better understanding that protecting people and the human rights of a nation are the government's responsibility. Disaster management should become a function of government for protecting the community from disasters. National and local government bodies should be established to support disaster risk reduction activities, promote community participation, and fund mechanisms to support disaster risk reduction activities.

Thirdly, it shifts the responsibility for managing disaster from the government to all stakeholders. This Law emphasizes that the roles in and responsibilities for managing disaster lie at all levels of government, communities and local and international agencies. Disaster management should also become part of the public domain, knowledge and effort, and be integrated with the government's role in planning and coordinating (Asian Disaster Preparedness Centre, 2008).

Table 4.3 Disaster Management Law Sections

Section 1	**GENERAL PROVISIONS** It contains the definition of disaster management in Indonesia.
Section 2	**PRINCIPLE OF DISASTER MANAGEMENT** There are several principles according to the Law: humanity;justice;equality before the law and government;balance, harmony, and synchrony;order and legal certainty;sense of community;environmental conservation; andscience and technologyrapidity;prioritization;coordination and cohesiveness;efficiency and effectiveness;transparency and accountability;partnership;empowerment; and non-discrimination.
Section 3	**RESPONSIBILITIES AND POWER** It explains that government and regional government are responsible for organization of disaster management.
Section 4	**INSTITUTIONAL** It mandates the formation of the National and Regional Disaster Management Agency in order to provide guidelines and efforts in disaster prevention, emergency response, rehabilitation and reconstruction activities.
Section 5	**SOCIAL RIGHTS AND OBLIGATIONS** It declares that every person is entitled to social protection and a sense of security and it implements disaster management activities.
Section 6	**ROLE OF PRIVATE AND INTERNATIONAL AGENCIES** It emphasizes the importance of private organisations and international agencies in participating in disaster management activity.
Section 7	**ORGANIZATION OF DISASTER MANAGEMENT** Organization of disaster management comprises three phases: pre-disaster; emergency response; and post-disaster.
Section 8	**FUNDING AND MANAGEMENT OF DISASTER ASSISTANCE** Disaster management funding is the joint responsibility of central government, regional government and public participation.

Source: Law 24/2007 on Disaster Management

In addition to this Law, the government also promulgated regulations related to disaster management, including government regulations, presidential decrees, presidential regulations and ministerial regulations (Table 4.4).

Table 4.4 Government Law and Regulations Related to Disaster Management in Indonesia

Category	Number	Content
Law	26/2007	Spatial Planning
	24/2007	Disaster Management
Government Regulation	21/2008	Disaster Management
	22/2008	Funding and Managing Disaster Aid and Donations
	23/2008	Role of International Agencies and International NGOs in Disaster Management
Presidential Decree	08/2008	National Board for Disaster Management
	03/2007	National Coordinating Board for Disaster Management
	83/2005	National Coordinating Board for Disaster Management
Presidential Regulation	111/2001	The Changing of Presidential Decree No.3/2001 on BAKORNAS PBP
	3/2001	Coordinating Board for Disaster Management and Displaced Persons
Ministerial Regulation	14/2006	Organization of BAKORNAS PB in Yogyakarta Special Region and Central Java Province

Source: www.bakornaspbp.go.id (retrieved 2 April 2008)

4.3.2.2. National Action Plan on Disaster Risk Reduction

The issue of Law 24/2007 on Disaster Management, and in accordance with the Hyogo Framework of Action[8] of 2005, paved the way for the government to develop a strategic National Action Plan (NAP) on Disaster Risk Reduction (DRR) 2006-2009 (National Disaster Management Agency, 2008). This explicitly addressed the issue of disaster risk management. The action plan which was created by the National Development Planning Agency (*Bappenas)* and BNPB was developed through a participative process involving various actors from the government, academics, civil society and the international community. The development of this plan was expected to provide guidelines and reference for all actors concerned in disaster risk reduction in implementing and strengthening the commitment to programs related to disaster risk reduction in an inter-sector and inter-regional manner. This was to ensure that DRR activities could be implemented in a continuous, focused and integrated manner (National Development Planning Agency, 2006a).

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[8] The Hyogo Framework for Action (HFA) is the main outcome of the World Conference on Disaster Reduction, held in January 2005 in Kobe, Hyogo, Japan. The framework aimed to build the resilience of nations and communities to disasters and recognize global guidelines to facilitate effective implementation of DRR at international, regional, national and local levels between 2005 and 2015. The conference also led to political commitment of 168 governments to implementing the HFA, allocating necessary resources and setting up the appropriate institutional and legislative frameworks to facilitate its implementation.

The action plan specified platforms, priorities, action plans and mechanisms pertaining to the implementation and institutional basis of disaster management in Indonesia. NAP provided guidelines and information that facilitate decision makers in pledging commitment to cross-sector and jurisdictional priority programs based on a strong and systematic foundation. DRR programmes were implemented by relevant departments/agencies using a sectoral approach and incorporated into their regular programmes. The action plan was intended to facilitate the identification of all the disaster risk reduction-related activities of each department/agency.

The implementation of the National Action Plan on DRR has set out five priority activities (Asian Disaster Preparedness Centre, 2008):

1. Incorporating DRR into national and local priority policies with a strong institutional foundation for implementation;
2. Identifying, assessing and monitoring disaster risks and enhancing early warning systems;
3. By means of knowledge, innovation and education, building a safety culture and resilience at all administrative and community levels;
4. Reducing underlying risk factors; and
5. Strengthening disaster preparedness for effective response at all levels.

The NAP provided the implementing mechanism through three major approaches: these were the regulatory framework, the institutional framework and the funding framework. This implementing mechanism will allow the respective line ministries and local government to include disaster risk reduction in the annual government plan, to build networks and to mobilize funding from authorized sources. Furthermore, the NAP for DRR provided national guidance for comprehensive planning and funding arrangements for disaster risk reduction at pre-, during and post-disaster stages and also included the community-based disaster management system (National Development Planning Agency, 2006a).

4.3.2.3 National Middle-Term Development Plan

In line with the agreement at global and regional levels, Indonesia has made DRR one of its priorities by mainstreaming disaster risk reduction into the national development framework, particularly in the National Middle-Term Development Plan (*RPJMN*) 2010-2014 and the Government's Annual Work Plan (*RKP*) since 2007. The *RPJMN* does not address the issue of disaster risk reduction specifically, but it incorporates it into the areas of social welfare, natural resources and the environment (National Development Planning Agency, 2006a). Programmes and activities related to DRR are generally developed independently by different sectors. Initiatives to reduce disaster risk in Indonesia tend to strive for sustainability and participation by all stakeholders. There are five key priority areas for disaster risk reduction that must be addressed. These are: to ensure that DRR is a national and local priority with a strong institutional basis for implementation; to identify, assess and monitor disaster risks and enhance early warning systems; to use knowledge, innovation and education to build a culture of safety and resilience at all levels; to reduce underlying risk factors; and to strengthen disaster preparedness for effective response at all levels (National Disaster Management Agency, 2008).

4.3.2.4. National Platform for Disaster Risk Reduction

The initial idea to form the National Platform for Disaster Risk Reduction (*Planas PRB*) Indonesia emerged after 2006. The argument to create this platform was that Indonesia is situated in a disaster-prone area. On 20 November 2008, therefore, a declaration about the nature, format and role of the National Platform was launched (UNDP, 2009). The platform consists of an independent multi-stakeholder forum, which was established to support and facilitate cooperation among stakeholders in disaster risk reduction. This platform provided a forum for coordination of civil society, academia, the international community and the government of Indonesia to accommodate the interests of all stakeholders in relation to disaster, and also to synchronize various DRR policies, programs and actions at the central government level. This was aimed at achieving Indonesian DRR goals and national resilience

toward disaster, as well as supporting Indonesia in realizing its commitment to implement the Hyogo Action Plan.

The *Planas PRB* was the venue for policy deliberation on DRR and the source of expertise in DRR. When there is a policy disagreement, the forum should act to synchronize the policy, as stated in the mission statements of the National Platform, which were to raise awareness about DRR, increase knowledge and skill on DRR, promote participation by encouraging and motivating people to participate in DRR matters, ensure smart resources in DRR activity and build networking for DRR (UNDP, 2009). The *Planas PRB* established collaborative networks both at the international and domestic levels. Support from international communities and donors for advocacy, funding and policy frameworks not only drove the evolution of the *Planas PRB* but also the mainstreaming of DRR into sustainable development. However, since the *Planas PRB* was led by the University Forum in Indonesia, this illustrates that a non-government entity can lead multi-stakeholder policy discussions.

4.3.2.5. Community-Based Disaster Risk Management

A series of natural disasters that occurred in Indonesia in the last decade changed the concern of the government towards focusing more on the impact of and how to manage a disaster effectively. A top-down approach in viewing disaster management overlooked local resources that have the potential to be involved in pre-, during and post-disaster activities. Such a gap in disaster management efforts serves as a lesson in creating a new and better approach. In order to fill this gap, the government enacted Regulation No.21/2008, which stated that national disaster management action was developed in a comprehensive and integrated manner in a forum involving elements from the government, non-government, community and business communities, under the coordination of BNPB (National Disaster Management Agency, 2008).

In addition, in providing greater roles for the community, the community-based approach was created in 2005 to encourage and invite more active participation from the members of the community to propose ideas in the planning,

implementation and evaluation of the prevention, emergency preparedness, response and recovery programs (Asian Disaster Preparedness Centre, 2008). Community-Based Disaster Risk Management (CBDRM) focused on the community as the main actor that develops and implements important policies most suitable to them in terms of disaster management. CBDRM involved multi-sectoral and multi-level participation that not only complemented government efforts in managing disaster but also considered these as agents of development to raise public awareness (National Disaster Management Agency, 2008). CBDRM involved activities such as workshops, mapping vulnerable areas, discussions, dialogues and hearings, contingency planning, drills, monitoring and evaluation that involved the community, NGOs, donor agencies and government institutions.

Figure 4.2. Community-Based Disaster Risk
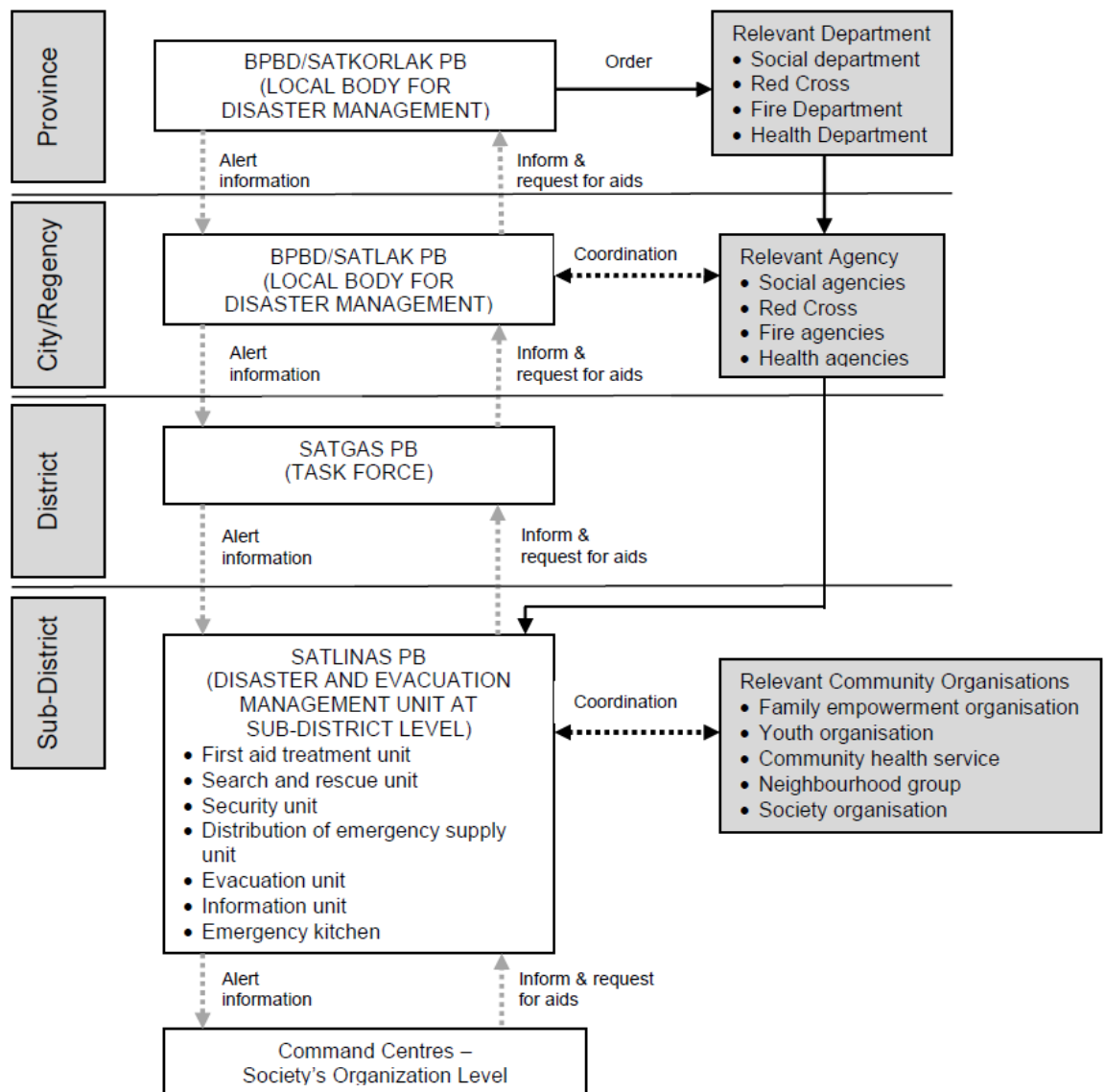
Management

Source: Asian Disaster Preparedness Centre, modified (2008)

Figure 4.2 provides a summation of how all the multi-stakeholders are involved and coordinated in an emergency situation under Community-Based Disaster Risk Management.

4.4. Socio-Economic Background of the Bantul Local Government

Bantul regency is located in the southern part of the province of Yogyakarta Special region and covers an area of 506.85 square kilometers or 15% of the total area of the province. This regency lies between latitude 07°44'04" to

08°00'27" south and longitude 110°12'34" to 110°31'08" east. The topography of the Bantul regency is chiefly a plain; most of the hilly areas are less fertile (Statistics Centre Bureau, 2008).

Bantul is one of the five regencies and cities of the province of Yogyakarta Special Region, which is bordered by Yogyakarta city and the Sleman regency in the north, the Gunungkidul regency in the east, the Kulonprogo regency in the west and the Indonesian Ocean in the south. The Bantul regency consists of 17 districts and 75 villages. Those districts are Srandakan, Sanden, Kretek, Pundong, Bambanglipuro, Pandak, Bantul, Jetis, Imogiri, Dlingo, Pleret, Piyungan, Banguntapan, Sewon, Kasihan, Pajangan and Sedayu (Figure 4.3).

Figure 4.3 Map of Bantul Regency

Source: Bantul in Figures, 2008

The population in the Bantul regency was 820,541 in 2004. With a total area of 506.85 km², the population density of the Bantul Regency was around 1,611 persons per km²(Statistics Centre Bureau, 2008).In Bantul, 99% of the population work in small-medium enterprises (SMEs), such as earthenware vessels, leather, wooden masks, bamboo souvenirs, Batik, silver, leather and puppets. However, the agriculture sector is also a principal source for domestic earnings, as can be seen in Table 4.5.

Table 4.5 Bantul Domestic Earnings

Year	2005		2006	
	Rupiah (million)	%	Rupiah (million)	%
Farming	791,592	24.48	814,742	24.69
Mining	32,784	1.01	34,000	1.03
Processing Industry	644,544	19.93	568,064	17.22
Electricity and Clean Water	29,001	0.90	27,127	0.82
Building	276,078	8.54	381,915	11.57
Trade, Hotel, Restaurant	612,904	18.95	624,196	18.92
Transport/Communication	222,436	6.88	219,535	6.65
Bank/Monetary Institution/Housing	205,177	6.34	193,399	5.86
Service	419,656	12.98	436,668	13.23
Total	3,234,172		3,299,646	

Source: Bantul in Figures 2006

Bantul has a large number of schools and colleges. In 2008, the primary school enrolment rates were close to the national average, with similar participation for boys and girls. In the health sector, the number of public health centres in the Bantul regency was 26; there were 67 Public Health Sub-Centres, one State General Hospital, seven Private General Hospitals, 15 Child Birth Clinics and 27 Family Planning Clinics/Polyclinics; there were 69 doctors and 30 dentists (Statistics Centre Bureau, 2008).

4.4.1. Bantul after the Earthquake

The earthquake[9] that shook Bantul on 27 May 2006 at 05:53:57 western Indonesian time destroyed most areas in Bantul, with the damage level reaching Scale VII of the MMI (Scale XII being the highest). The earthquake struck 11 districts, home to more than 8.3 million people. Six districts were heavily affected, including Yogyakarta Province, Sleman, Bantul, Gunung Kidul, Yogyakarta City and Kulon Progo. With more than 6.5 million inhabitants, these districts are very densely populated (Table 4.7). Bantul was the most heavily affected district. The affected area generates very little of its own revenues and

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[9] The earthquake was the result of the strong pressure of the Indo-Australian plate in the south against the Eurasian plate in the north. The conjunction of these plates was along Andaman and Banda Aceh in the western part of Sumatera, south of Java, south of Bali, West Nusa Tenggara, East Nusa Tenggara, Maluku and Papua seas. The pressure activated a shift in the fault lines. The energy released then caused the earthquake, which was a natural and inevitable occurrence.

depends heavily on the central government's general allocation transfer: Bantul's own revenue sources represent less than 6% of total revenues. Shared non-tax revenues from natural resources are less than 0.1% of total revenues. As many as 880,000 poor people live in the earthquake-affected areas. The earthquake also caused 246% total damage and losses by value when compared to Bantul's gross domestic product (National Development Planning Agency, 2006b).

Table 4.6 Demographic Summary

	Population (1000s)	% in Province	% in Indonesia	Area Km²	Density per Km²
Yogyakarta Province	3,224	100	1.5	3,133	1,047
Sleman	945	29	0.5	575	1.644
Bantul	820	25	0.4	508	1.611
Gunung Kidul	687	21	0.3	1,431	480
Yogyakarta City	396	13	0.2	33	12,192
Kulon Progo	376	12	0.2	586	641
Indonesia		100	100	1,981,122	107

Source: National Development Planning Agency(2006b)

4.4.2.1. Damage and Loss

The housing sector suffered the most severe damage and loss of any sector from the 2006 earthquake (Table 4.8). Most of the affected houses were between 15 and 25 years old. Less than 3% were houses of traditional design, that is, constructed of wood or bamboo and more resistant to the earthquake's tremors. In addition to the damage and loss in the housing sector, the impact in public and private infrastructure was estimated at Rp.397 billion and Rp.153.8 billion, respectively (National Development Planning Agency, 2006b). The sector worst affected was energy, with damage to electricity transmission and distribution facilities estimated at a total of Rp.225 billion and losses from physical damage at a further Rp.150 billion. In the transport sector, there was widespread but minor damage to roads, mainline railway tracks and associated infrastructure. Total damage was estimated at Rp.90.2 billion. In the water supply and sanitation sectors losses were estimated to be Rp.85.6 billion, mostly due to damage to the shallow wells as the main sources for water supply in Bantul. Telecommunications and postal services suffered very limited

damage, principally to base stations for mobile and fixed wireless access phone services and to some buildings; total estimated damage of telecommunications and postal sectors exceeded Rp.7 billion (National Development Planning Agency, 2006b).

Table 4.7 Yogyakarta – Central Java Earthquake Disaster Damages and Losses (Trillions of rupiah)

Sector	Damages	Losses	Total (Damage and Loss)	Percentage of Damage and Loss for which the Indonesian government accepts direct responsibility
Housing	13.9	1.4	15.3	46
Social Sectors	3.9	0.1	4.0	70
Productive Sectors	4.3	4.7	9.0	15
Infrastructure	0.4	0.1	0.5	70
Cross-Sector	0.2	0.1	0.3	65
Total	22.7	6.4	29.1	

Source: ADB(2006)

The 2006 earthquake had a major impact on the education facilities. In Bantul, over 90% or 949 of the regency's school buildings were damaged or destroyed. This was because the quality of school building was a major element in the high level of destruction, since they were built in the 1970s from special government grant funds. Bantul has 21,306 SMEs; however, it was estimated that about 14,000 SMEs have been directly affected by the earthquake, while more than 1.3 million workers were indirectly affected by the temporary or permanent loss of earnings (National Development Planning Agency, 2006b).

The most significant component of environment-related loss and damage was management of debris. Even though it was estimated that between 30% and 60% of the debris from each house could be reused directly in reconstruction, the volume of waste that needed to be disposed of outside village areas was around 2.25 million m³. Local government did not anticipate problems in finding disposal areas or significant impacts to the capacity of regency landfills. In the public administration sectors, the total damage and loss to governance structures and administration is estimated to have reached Rp.137 billion (Yogyakarta Provincial Government, 2008). That figure reflects damage to or loss of buildings, equipment, personnel and public records. Moreover, affected communities continued to suffer from poor access to district or village officials in

order to conduct needs and damage assessments or obtain information on the status of government recovery and rehabilitation interventions. The main public services, such as the water supply, drainage and electricity, however, still operated, although with shortcomings in the core of disaster-affected areas.

4.4.2.2. Economic and Social Impacts

After the earthquake struck Bantul in 2006, its economy declined by 23% compared to pre-earthquake projections (Yogyakarta Agency for Planning and Development, National Development Planning Agency, & Central Java Agency for Planning and Development, 2008). The decline in economic performance resulted in the loss of a large number of jobs. Table 4.8 presents pre-earthquake employment and job losses by sector. In Bantul, close to 30% of workers employed in licensed establishments were occupied in the handicraft and related industry sector and the employment losses in this sector contributed a large share of manufacturing job losses due to the earthquake.

Table 4.8 Pre-Earthquake Employment and Job Losses by Sector

Total Labour Force / Total Number of Job Losses	Total Employment/ Percent Jobs Lost			
	Total Employment	Agriculture	Industry	Services
414794	376,740	143,668	117,878	115,194
5956	1.6%	0.5%	2.0%	2.5%

Source: Bakornas Data and Calculations by ILO, Jakarta
(National Development Planning Agency, 2006b)

The disaster also impacted on disaster victims' mental health. According to a qualitative report,[10] trauma levels were high in severely affected areas. Children showed strong stress reactions, such as having problems with sleeping, feeling scared and experiencing fevers. Some of the communities were afraid to start repairing their houses or go to work, particularly in agriculture. Furthermore, since the victims, who mostly belonged to lower-income communities, had neither the financial nor technical means to build more earthquake-resistant housing, the disaster worsened their level of stress in coping with this difficult

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[10] A snap survey was conducted on June 6, 2006 by Gadjah Mada University and it collected information on 1600 households in 50 affected villages.

situation. Amongst the worst-affected victims were those already vulnerable due to poverty and who were rendered homeless and lost family members and access to livelihood. The particularly vulnerable included single women-headed households, children, the elderly, and those families with a large number of people left seriously injured or disabled by the earthquake.

Because the adverse effects of the earthquake were widespread across a greater geographical range and with greater effect on local economy performance, employment, the fiscal system and livelihoods, the economic costs associated with natural disaster increased compared with early patterns in 1990s (Coppola, 2007; Guha-Sapir, et al., 2004) and unfortunately poor people are those most victimized by disaster (International Strategy for Disaster Reduction, 2008). It can be said that limited ability to enforce building codes and zoning are a cause of the high number of deaths in the Bantul earthquake. The phrase 'earthquakes don't kill people, buildings do' (Hough & Jones, 2002) represents the real conditions in the community in Bantul.

As discussed above, limited knowledge about disaster management in the Bantul local government also contributed to the large number of victims of the earthquake. However, in this case, not only does the government have a lack of skills and expertise when dealing with crisis, the community itself must face the unexpected and worst situation because they did not know what to do in an emergency. In the 2006 earthquake, the survival rate would have increased if there had been knowledge about required actions and facilities for evacuating people who were trapped in their houses. Evacuation drills should be implemented and adequate evacuation areas provided, such as evacuation buildings, man-made hills and exit pathways (Iemura, et al., 2006). The lessons learnt by local government are that education, socialization and escape structures, warning systems and wave-resistant structures are important factors for safety against future earthquakes.

4.5. Conclusion

This chapter provided a descriptive analysis of the historical background of disaster management activity in Indonesia. Many efforts have been increased

and initiated by stakeholders in central, provincial and local government with regard to activities before, during and after a disaster event. Experience in facing disaster has caused all stakeholders at all levels of government to increase commitment to protecting the community from the adverse effect of disaster, particularly with the promulgation of Law No.24/2007 on Disaster Management. This Law has become a foundation for the development of the disaster management system in Indonesia, as well as a guideline for the role and responsibilities of central and regional governments in managing disaster.

The socio-economic background of Bantul local government has been discussed to present conditions before the 2006 earthquake and show how socio-economic conditions changed after it. Finally, this chapter summarises and analyses the implementation of the Bantul local government's response and recovery program for areas hit by the earthquake.

This chapter has been a basis for analysis as to whether the commitments and efforts have really been enacted by the Bantul local government in managing disaster and how a gap was found between policy and the fact as result of this study, as presented in chapter 5, chapter 6 and chapter 7; it also frames the analysis in the discussion chapter. In addition, this chapter helps the reader understand how and why the researcher developed the conceptual framework she did and its utility for examining the research questions of this study.

Chapter 5. Local Government Capability in Managing Disaster

5.1. Introduction

This chapter reports on the findings of qualitative data which were gathered through face-to-face, in-depth interviews with key informants from central government in Jakarta, Yogyakarta Provincial Region and the Bantul local government, as well as secondary data. The qualitative findings are presented in two chapters, chapter 5 and chapter 6. In chapter 5, some key themes have been developed to report the findings collected in analysing the research questions:

1a. What capabilities do exist in the Bantul local government for managing a disaster?

b. What disaster management capabilities does the Bantul local government require?

c. What gaps are there between the capabilities required and those in fact existing for managing disaster?

2. What are the problems faced by the Bantul local government in managing a pre-, during and after a disaster event?

In-depth interviews were undertaken with six different informant groups from institutions in central, provincial and local government, community leaders, and local and international NGOs. Data gathered from the interview were then transcribed, processed and categorised with the help of *NVivo* software, as detailed in chapter 3. For the purpose of reporting the findings, key informant groups are coded: CG 1-3 refers to central government interviewees numbers 1-3, PG 1-4 refers to provincial government informants numbers 1-4, LG 1-9 refers to local government respondents numbers 1-9, CL 1-8 refers to community leaders respondents, LN 1-8 refers to local NGOs informants and IN 1-7 refers to international NGOs informants.

This chapter has been divided into six sections. The first section is the introduction.

The second section covers the capabilities that existed in Bantul local government bodies in managing the 2006 earthquake. The aims of this section are to determine how local government institutions mobilized human resources at each stage of disaster management and identify the difficulties that might be faced and the solutions that were taken to overcome barriers. It also assembles information on how local government perceived the importance of education for local government staff and the community, the extent of the commitment of leaders in Bantul in terms of disaster awareness discourse, how the structure of local disaster organisations was established, how revenue was allocated for disaster management activities and to what extent the 2006 earthquake influenced local policy.

The third section focuses on the capabilities requirement that local government needed in order to implement effective disaster management in Bantul. The interview questions covered the necessity of damage and needs assessment, community-based disaster management, mitigation, preparedness, response and recovery planning, drills and simulation exercises and the need for public information. This section also discusses the gaps between the capabilities required and those that existed in Bantul's local government in regard to earthquake disaster management.

The fourth section relates to the problems that local government faced when managing disaster. The interview questions emphasised the role of local government institutions in complying with the law in the mitigation, preparedness, response and recovery phases, and also the obstacles they encountered in each phase. They also addressed the problems of local government in financial matters, decision making, political pressure, adverse attitudes from the bureaucracy and coordination with both horizontal and vertical institutions.

The last section summarises the chapter.

5.2. Capabilities Existing in the Bantul Local Government

This section deals with the capabilities which existed in the Bantul local government in managing a disaster. In this study capability is defined as the ability of the Bantul local government to organise assets, competence and knowledge to achieve its goals in managing a disaster. Therefore, as explained in the conceptual framework in chapter 1, capability in managing disaster is a function of institutions, human resources, policy for effective implementation, financial and technical resources and leadership. These factors were chosen based on the literature review; they clearly indicate the significant effect of the local government's ability to manage disaster.

5.2.1. Institutional Capability

The capability of local government to anticipate the 2006 earthquake was very limited. The quake was an eye-opener as it highlighted the fact that *Satkorlak PB* and *Satlak PB* offices were apparently not automatically functional in the wake of a disaster on that scale. *Satlak*, which should have been in the vanguard of a disaster relief operation, remained in limbo for some time after the quake, as the LG 3 informant said:

> *Even though we have Satlak PB* [District Implementation Unit for Disaster Management] *which is responsible for managing any disaster in Bantul and maintains relations with Satkorlak PB* [Provincial Coordinating Board for Disaster Management] *and Bakornas PB* [National Coordinating Body for Disaster Management]*, but this was only an institutional formality because there was no standard operating procedure and guidance available. The training and education of those institutions had never occurred, so this made the 2006 earthquake more devastating.*

However, after the experience of the 2006 earthquake, in terms of institutional capability, the Bantul local government has made efforts by having a clear structure, role and responsibilities, and appointing Bantul's Community Protection Unit as a leading institution to handle disaster. The Bantul local government has also considered including man-made disaster alongside natural disaster in its disaster management program. LG 6 informant said that, for a

major disaster, institutional networking with other institutions, local or international, needed to be maintained as a matter of capability that local government has lacked.

Besides making Bantul's Community Protection Unit a leading institution, the mitigation effort has also being implemented in Bantul's Middle-Term Development Plan (RPJMD) 2006-2010, with adequate funds allocated to this program. The Community Protection Unit of Bantul has also mapped the yearly cycle of natural disaster in Bantul such as floods, landslides, drought, tornadoes and coastal erosion. The Bantul Mayor has also implemented Policy No.166 Year 2006 on *Satlak PB*. This policy emphasised that all community organisations in Bantul must support the activity of *Satlak PB* so that every organisation had disaster awareness.

However, many local NGOs argue that institutional capability could actually be achieved if the Bantul local government established BPBD (Local Body for Disaster Management) under the mandate from the Law on Disaster Management. Making Bantul's Community Protection Unit and RPJMD disaster-sensitive was not sufficient for handling disaster; disaster needed to be dealt with by a powerful institution with wide authority and adequate funding.

From the research findings, it seems that institutional capability has made some progress after the 2006 earthquake. The earthquake can be seen as a blessing in disguise in the way that it led the local government to become more aware of any potential hazard and disaster in the Bantul area.

5.2.2. Human Resource Capability

The human resource capability of the Bantul local government is seen from the perspective of having sufficient human capital, proper task delegation and division of labour. In terms of having sufficient human capital, the Bantul local government has more than 12,000 personnel to provide service for 17 sub-districts, 75 villages and 933 hamlets (Statistics Centre Bureau, 2008). Proper task delegation and division of labour have also been managed well for running

routine daily activity. Since a disaster is a sudden event that totally differs from daily activity, proper task delegation and labour division in the Bantul local government did not run smoothly. Fortunately, all departments and offices in Bantul have additional tasks beside their main task, even though this is not the direct responsibility of those departments or offices. For instance, as a member of the Bantul Regional Planning Agency said, the head of the agency must be responsible in some sub-districts for numbers relating to malnutrition, maternity numbers and the mortality rate. This requirement has been imposed by the Bantul Mayor in an effort to change the mindset of the bureaucracy towards serving the people better. By having detailed information on sub-districts or villages, the Bantul Mayor explained, the development program of the government could be successful because it was on target. The Bantul Mayor also added that the success of government development really depended on cooperation between and among departments and offices in Bantul. Health problems could be solved if there was an understanding from every department and office in Bantul to see it as a common responsibility and not only as part of the responsibility of the Health Department.

In terms of managing human resources during an emergency, the Bantul Mayor explained that

> *We admitted that we were not ready to face the quake, but I do not think we could not do something. I contacted all the department and office heads in Bantul for one reason. The heads had power to mobilise their resources to help people and since they already have knowledge about all sub-districts in Bantul, the assistance for the victims could be prepared rapidly.*

CL 1 informant said that there was a lack of human resources for managing humanitarian aid from many organisations. By this, the informant meant that the aid must be checked for issues such as expiry dates or the ingredients. This potentially became a problem if the medicine or the food for victims had expired or the ingredients of the food were unsuitable for religion reasons. This has been acknowledged by LG 5 informant: the priority was saving the people first and making reports on humanitarian aid as accountable as possible for donor organisations.

However, having a strong commitment to serve the people is not enough without being equipped with appropriate skills in disaster management. Some efforts, therefore, have been directed towards educating the bureaucracy in disaster awareness. Training sessions on mitigation and preparedness have frequently been attended by staff from all departments and offices in Bantul. Tsunami drills and earthquake simulations have also been conducted with the community by local government in order to help them prepare if a real disaster occurred. The Bantul Prime Secretary added that the government has regularly trained the staff from hospitals, community health centres, and Department of Health and community leaders on how best to assist victims with broken bones. This can be assisted by international NGOs that have a commitment to disaster education.

Research reveals that in terms of human resource capability, there is indeed a lack of knowledge by the Bantul local government staff as to how to manage a disaster. However, the willingness to work hard and the capability of mastering local conditions has assisted the government to fill this gap. The researcher's own observation supports the information from key informants that the head of agency in Bantul has in fact mastered the social conditions of sub-districts there. The heads of agencies helped the researcher to identify community leaders and provided detailed information about the districts that the researcher selected for the community leader's survey.

5.2.3. Policy for Effective Implementation

Capability of the Bantul local government in terms of policy for effective implementation is a critical requirement for disaster management. This capability can be assessed by the availability of appropriate policies, rules and regulations for making decisions, and mobilising resources and engaging relevant public and private organisations.

Once the national policy arrangement on disaster management (see chapter 4, section 4.3.2) emerged through the implementation of Law No.24/2007 on Disaster Management after the 2006 earthquake in Bantul, it affected local government policy. At the time of the earthquake, there was no policy in the

Bantul local government on disaster management. The Bantul local government also identified shortfalls, in that Bantul is a disaster-prone area but lacked regulation on disaster awareness; there was no local body for disaster management; disaster coordination mechanisms were not optimal; community organisations had not been empowered; the number of Search and Rescue (SAR) members and SAR equipment were inadequate; Bantul maps had not yet identified vulnerable areas, the early warning system was not optimized, and no mitigation education had been conducted for the bureaucracy and the community. The absence of such policy was realized by a member of Bantul Regional Planning Agency:

> *We understand that each Bantul policy never anticipated disaster risk, although we definitely live in a disaster-prone area. We only thought of disaster such as flood and drought, but then we started thinking about the risk of disaster in our RPJMD.*

In the RPJMD, Bantul has classified disaster-vulnerable areas into four categories: flood-prone, landslide-prone, earthquake–prone and coastal erosion-prone. Each area designed programs on mitigation and preparedness, such as disseminating information on disaster awareness, conducting tsunami drills, preparing for evacuation and 'greening' the beach to prevent tsunamis by planting mangroves. The shift in the paradigm of the Bantul local government by putting disaster awareness into local policy after 2006 has been evaluated positively by local NGOs, although they still argue about the need for formal disaster institutions as an important factor for implementing disaster management successfully.

In order to anticipate the adverse effect of disaster in the future, the Bantul local government has made significant progress by making local policy that is sensitive to disaster. However, since a disaster is unpredictable event, the continuity of such policy should be maintained, particularly when there is another new mayor to govern Bantul. It is very important to make sure the disaster-related policy is included in the RPJMD in the future.

5.2.4. Financial Capability

During in-depth interviews, the question used to assess the financial capability of the Bantul local government asked: does the Bantul local government have sufficient financial resources to support programs in all stages of disaster management? Interviews were conducted with several key informants to answer this research question. The Bantul Mayor explained that 80% of the local budget was allocated for staff salaries and allowances while 20% was spent on public service. Therefore there was a very small amount of money allocated for disaster management activities.

When the earthquake struck Bantul, the government realized that the lack of a budget had become a major problem, particularly during the recovery period. According to LG 3, the local government negotiated with the central government to fund a housing rehabilitation program in Bantul. At the same time, the Governor of the Yogyakarta provincial government ordered the local government to switch budget allocations, where possible, to education and health sector rehabilitation. The LG 2 informant has explained that

> *The Bantul local government could access Rp.174 billion from switching programs that could not [now] be completed, such as from the Department of Fishery, which has a program on fish breeding but which it could not possibly implement since fish ponds were devastated. There were many budgets from 10 departments and offices in Bantul that could switch funds to support the recovery program. These funds are then allocated for the rehabilitation of 108 school buildings and health facilities.*

However, the budget provided by local government was still insufficient for the response and recovery stages, although, according to IN 5, Bantul maintained contact with international funding agencies to support these stages. This financial support, as presented in Table 5.1, was used to finance the response and recovery programmes in Bantul.

Table 5.1 Financial Sources from Overseas Grants

Donor	Amount
Australia	AUD 30 million
Japan	JPY 890 million
Canada	CAD 8 million
Germany	EURO 10 million
Asian Development Bank	USD 15 million
World Bank	USD 65 million
Islamic Development Bank	USD 1 million
UNDP	USD 28 million

Source: National Development Planning Agency(2006b)

To rebuild houses, the government used the national state budget (APBN) and the regional state budget (APBD). The largest budget was from APBN through the Budget Realization Inventory List (DIPA). The National Budget for Yogyakarta in 2006 was Rp.1.69 trillion and in 2007 Rp.1.70 trillion, disbursed in stages, with each family receiving Rp.15 million for rebuilding the home (National Technical Team, 2007). However, the provincial government also provided another Rp.5 million for the development of public facilities such as financial assistance for disabled people, housing for the disabled and rehabilitation of non-government orphanages (PG 2).

The government's financial mechanism for disaster relief in Bantul and Yogyakarta was in accordance with existing laws and regulations. These are Law No.17/2003 on Public Finance and Law No.1/2004 on the State Treasury. In a time of emergency, the government and the legislative budget approval process need to be able to speed up disbursement of funds for government goods and services procurement. The disbursement process was accelerated because activities funded were either undertaken directly by the government or by donor agencies. The Bantul local government and the local parliament also agreed to revise the 2006 budget and allocate funds for post-earthquake recovery. The government therefore provided assistance through funding which ranged from Rp.20 million to Rp.100 million, depending on the level of village destruction, to 75 villages, for the purchase of bamboo, materials and cleaning tools. Total funds allocated were Rp.7.8 billion. In addition, the budget provided Bantul with Rp.70 billion for road construction, strengthening the capital's Water Management Committee and the recovery of other sectors (PG 1).

The research reveals that, although the funds allocated for response and recovery stages was considerable, the local government budget did not prioritize mitigation and preparedness programmes so as to anticipate future disasters.

5.2.5. Technical Capability

Technical capability refers to the ability of the Bantul local government in effective logistic management systems, adequate technology information systems and communication networks between organisations, communities and media representatives. In logistic management, the Bantul Mayor and the Bantul Prime Secretary played an important role. As explained in the previous subsection, the Bantul Mayor managed all department heads to ensure swift responses in saving victims while the Prime Secretary ensured the availability of food for victims. The Prime Secretary said that

> *Much food from humanitarian aid was mostly suitable for adults but there was only limited food provided for around 40 million children in Bantul. I then decided to concentrate on the kids' food such as milk, bread and porridge. Also, I paid attention to specific women's needs because my friend from Aceh reminded me about the lesson learnt from the tsunami in Aceh – that the need for sanitary napkins for women was also important.*

The effective management system during the response stage in Bantul was also cited by a representative of a donor agency. IN 1 informant said that the Bantul local government could manage logistic management fairly well and was able to consider different courses of action for a number of reasons, such as the government's closer relations with the community, social dimensions, and the long history of government communication with the community and the support of community.

Networking with the media also ran quite smoothly, although in the first week after the disaster the media reported that the government was distributing aid very slowly; after a week, when the recovery program had started, the judgment of the media changed dramatically. During the first week, and until the recovery program finished, the local government contacted the local television station to

broadcast directly from the Bantul office to inform the community what the local government had been doing during the response and recovery periods (LG 2). However, according to CG 1 the role of the media sometimes worsened the situation during the emergency by informing the public that the government had responded slowly to the disaster or was experiencing delays in distributing humanitarian aid. The media did not realize how difficult the work during the emergency was and how limited was the capacity of government. But the most important thing was that the government worked very hard to restore conditions.

In order to support the community with technical assistance for rebuilding houses, the local government provided a facilitator, usually drawn from the final year student cohort in an engineering faculty. These facilitators helped the community rebuild earthquake-resistant houses and in less than two years around 157,000 houses were finished.

However, many local NGOs and international NGOs criticized the technical capability of the Bantul local government. LN 1 informant, for instance, took the view that the bureaucracy lacked the ability to manage disaster technically since the bureaucracy was designed to work under normal conditions. The government failed to provide help within the first 24 hours for victims and such actions as were taken tended to be spontaneous rather than planned. Conversely, IN 7 said that the capability of local government in managing disaster had not been understood properly, so that the response and recovery programs sometimes overlooked the need for mitigation. In the response stage, the government also neglected standards: for instance, one tent might be occupied by a certain number of people with a defined standard of living, but it appeared that the local government lacked technical capability knowledge on such matters (IN 6).

These research findings show that collaborative leadership played important roles in the response stage, although local leaders admitted that they faced problems in technical capability. However, with the support of many institutions and volunteers, this gap can be narrowed.

5.2.6. Leadership Capability

An emergency is indeed a testing time for a leader in making specific decisions because the leader can affect the fate of many victims. At such a critical time, an ability to make swift and appropriate decisions, if and when needed, is the main requirement of a leader. The Bantul Mayor demonstrated qualities of responsive leadership by providing adequate relief aid to victims. The Mayor was concerned that people would easily be provoked to anger if the government could not react quickly enough to deliver relief aid and the disaster had the potential to trigger social conflict if there appeared to be uneven distribution of relief assistance. This was not only stated by the national NGO activist but also recognized by international NGOs.

As stated at interview by LN 1, the quality of local leadership was high:

> *I myself know that the Bantul Mayor directly coordinated his officials very soon after the quake. I also appreciate how he dealt with the community during the period of uncertainty by making decisions, [providing] mechanisms and the plan on how to deliver relief assistance to the community in subdistricts and villages. He acted very fast and he was great.*

The Bantul Mayor emphasised that cooperation between local government and the community was the main factor contributing to the success of the response and recovery period in Bantul. The Mayor tried to convince the people that it was their responsibility to rebuild their lives and not to expect too much from humanitarian aid. The main requirement for a leader during a disaster is care. The Bantul Mayor said that, because of the care of the head of the Bantul office and departments, people were assisted with all their concerns. This is clear from the view of a community leader, who said that the Bantul Mayor always gave an opportunity for people to express a view, such as raising the need to have a SMS Centre for mitigation, which was finally adopted in the Bantul's Community Protection Unit office (CL 4).

PG 1 pointed out that the Bantul Mayor undertook operational leadership in which he coordinated the leaders of the sub-districts in Bantul in examining the level of devastation in their areas and in reporting it to the Mayor as soon as

possible so as to get aid distributed. The relief and reconstruction effort was led by the local government because they had the capacity and resources to respond. The most influential factor in the success in Bantul in managing disaster, according to IN 2, were the factors that Bantul is near Jakarta, people enjoy greater access, political influence is greater and there is an integrated market, it is easy to get building materials, and there are many skilled labourers for rebuilding houses.

IN 4 commented positively on the leadership of the Bantul Mayor during and after the quake: 'the Mayor has responded to the earthquake very quickly by forming a coordination meeting with multi–stakeholders, so that which organisations are involved in helping the community have always been identified by local government'. Further, IN 3 said that the Bantul Mayor had a good understanding that problems could be avoided by identifying vulnerable areas in Bantul in the RPJMD. Thus the disaster could be anticipated in future.

LN 7 has also expressed the view that the Bantul Mayor had the courage to take risks with decisions, such as determining to shorten the period of recovery in Bantul to only two years and ensuring that distribution of housing financial assistance was fair. These were all decisions that gain the support of NGOs, which had thought that the decisions were not possible to implement, whereas the decisions were well-implemented and with beneficial results. LN 2 also added that even though the Mayor lacked experience in managing disaster, he was a fast learner. Many recommendations and suggestions from NGOs were understood and adopted by the Mayor. One example of this was the Mayor's acceptance of the proposal that Bantul's RPJMD adopt disaster risk awareness – not many local governments had this in their RPJMD (LN1).

IN 4 said that fortunately Yogyakarta has the Sultan as its ruler and a Governor and the Bantul Mayor who have most people trust in, and this made it easier for the community to follow their instructions. IN 7 added that the Bantul Mayor played a progressive leadership role and the Governor delegated wide authority to local government without worrying about structural-institutional issues.

The roles of the Bantul local government leaders, the provincial government leaders, NGOs and the community have shown a significant effort in the response and recovery disaster management in Bantul. Leadership capability in Bantul's case was relatively better compared to other capabilities that remained a problem for the Bantul local government in managing the 2006 earthquake.

5.3. Capabilities Required for Managing Disaster

This sub-section discusses the capabilities requirement for the Bantul local government in managing disaster according to the viewpoints of government officers in central, provincial and local government and NGO and community leaders. It is based on interview findings.

Firstly, interviews with key informants from the Bantul local government, Yogyakarta provincial government and central government indicate that the availability of bureaucracy leaders (Governor or Mayor) who prioritized the need of community, the ability to manage human resources before, during and after a disaster, having adequate knowledge about potential risks that threaten the community and the ability to develop solutions, and the availability of an early warning system are the main capability requirements for managing a disaster (interview with CG 1, CG 2, LG 1, PG 4).

Regarding the early warning system, PG 4 added that provincial and local government should have good institutions for managing disaster, as well as an adequate budget to support programs in this sphere; the school curriculum should also include a disaster awareness program and regular practice in dealing with a range of disasters should be an important requirement for all government levels.

PG 2 also stated the need for networking between central, provincial and local government; linkages between all the departments and offices in those levels of government was a requirement of government capability in managing disaster. In terms of networking, the informant further explained that all levels of government should have an action plan, so that if a disaster struck in any area

in Indonesia the government would have the knowledge as to who to contact and what action to take in responding rapidly to a disaster.

LG 3 said that having personnel with good knowledge about disaster management is compulsory for government. The quality of these government personnel is more important than the quantity. Therefore, in order to achieve high quality of personnel in disaster management, the Bantul local government has now sent its personnel for training or workshop on disaster management annually. The Bantul Prime Secretary stated that the capability of local government in managing disaster could be learnt from any government with previous experience in facing disaster, just as Bantul learnt from the tsunami in Aceh to pay more attention to the needs of children and elderly people.

Secondly, the capability requirement for managing disaster was indicated by informants from national and international NGOs as well as funding agencies. Their points of view varied greatly. IN 3 said that political commitment was a critical capability requirement for local government; this political commitment was translated into government regulation and policy and the establishment of institutions to provide skilful resources and adequate financial resources. LN 3 added that, in order to provide the skilled resources, government should educate staff by sending them to undertake higher degree study or training related to disaster management. The most important factor was that local government should have the capability to conduct activities or programs for the community especially in the mitigation and preparedness stages, so that the community could gain disaster awareness.

Parallel with the statement of the local NGO activist, IN 2 also argued for a similar capability requirement for a government in managing disaster:

> *The government should have a good preparedness capacity to be able to make the community aware of the risk and should have a communication capacity. So if there is a disaster, they are able to have an early warning system. In addition to this, the government should also have a coordination function to ensure that different departments know what to do in cases of disaster. They should have standard operating procedures that have centralised*

> *command to help ensure coordination. And, lastly, the government should have financial resources available that can be accessed during a disaster.*

In addition to the importance of human resource capability for a government in managing disaster, LN 2 said that the government also required an up-to-date database which covered information on the population, the area and the environment. This is aimed at providing humanitarian assistance and accurate data in a particular area, as well as speeding up aid distribution if a disaster occurred.

Thirdly, the capability requirement was stated by community leaders. CL 3 said that a capability requirement for a government in managing disaster was availability of information dissemination to the whole community. This informant described how in many cases information about potential hazards threatening the community was rarely disseminated to the community. For CL 8, this also included information on how to maintain safety; this could be embedded in school curriculums; and a hotline that the community could contact if there was a disaster should be provided.

The findings of this study highlight that the local government should ensure consistency and sustainability in its disaster program in order to establish disaster awareness among the community. The consistency and sustainability disaster program should also cover the availability of trained survivors who would understand their role and responsibility to maintain safety and how to handle victims during and after disaster. Moreover, this research suggests that it seems important for local government to have a disaster-vulnerable area map as a capability requirement, so that every area is made more aware of potential disaster.

5.3.1. Gaps between Capabilities Required and the Existing Capabilities

This section describes the gaps between capability required and the existing capabilities gathered from in-depth interviews with key informants. The findings of this research show diverse views among the stakeholders.

CG 2 said that the gap between capabilities required and the empirical facts in Bantul was that, even though there was a law on disaster management, national regulation and presidential decrees, the Bantul local government chose not to implement an exclusive local agency on disaster management for many reasons, for example, lack of budget capacity for a new agency and structural obstacles. However, CG 2 argued, the availability of a local body for disaster management was pivotal for the sustainability of disaster management policy and action.

The other gap identified by BNPB was the need for a logistic distribution mechanism. CG 1 explained that Bantul local government staff should have training on how to distribute aid in times of emergency and should have knowledge about the variety of aid needed by disaster victims such as types of instant food that are easy to prepare but also nutritious. Another gap related to the lack of availability of maps of vulnerable areas in sub-districts in Bantul. CG 1 further added that the Bantul Mayor could appoint the head of the sub-district to identify such vulnerable areas. Based on such mapping the government could develop a policy of green areas prohibiting habitation in some areas.

The other gap according to LG 3 was the slowness with which humanitarian aid reached victims. This could give rise to mistrust in the community because the community might feel that local government was ignoring their needs. LG 4 viewed the gap in terms of the shortage of mitigation and preparedness facilities, such as the small number of evacuation signs and the distance of the assembly point for victims and its accessibility via a single route. CL 1 said that local government lacked livelihood programs; therefore, in order to fill this gap, PG 3 added that provincial and local government need to follow up with action such as providing jobs for disabled people and establishing centres for housing and building consultation which would provide assistance to people on how to build earthquake-resistant houses. .

Similar to national NGO activists, a community leader added that the gap could be seen in the lack of socialisation about how to remain safe from disasters such as earthquakes, fire, flood or landslides (CL 1). This in turn could be seen

as a gap between local government and the community: on the one hand, it is the responsibility of local government to protect the community but, on the other, socialisation on disaster awareness as a form of protecting the community has never been implemented (CL 5). Dissemination of disaster information and education should be delivered by staff from the Bantul local government because, as CL 2 said, if socialisation and dissemination are run by the head of a hamlet, it does not have a positive impact on the community, since many communities tend to undervalue the knowledge of the hamlet's head, particularly in disaster discourse.

IN 3 acknowledged that in order to fill the gap on disaster awareness, international NGOs and many humanitarian agencies were committed to supporting the Bantul local government in terms of interpreting law and regulation on disaster management so as to generate local action plans, as well as supporting adequate funds to finance the plans. Therefore, IN 1 argued, the need for networking between local government and international organisations should be maintained before disasters in order to establish good coordination in times of emergency; international agencies, for example, already had information about Bantul's conditions.

A community leader pointed out that local government should develop networks that aimed to help disaster victims rapidly, even though there were insufficient funds from the Bantul local government for disaster management programs (CL 2). IN 2 said that, although the Bantul local government had identified vulnerable areas, the government had never conducted a risk analysis of natural and man-made disasters. This was understandable, because such analysis in the mitigation stage required adequate funding.

The findings of this study show that some gaps are found in each stage of disaster management activities in Bantul. The main reason behind these gaps is that no experience existed in the history of the Bantul local government in facing such disaster. However, in many disaster programs, international NGOs and humanitarian agencies filled in this gap.

5.4. Local Government Barriers

This sub-section divides the local government barriers into four stages: mitigation, preparedness, response and recovery.

First are the obstacles in the mitigation stage. In this stage, the main problem was the local government mindset toward disaster. Disaster is viewed as a rare event – and according to some, it is God's punishment. Furthermore, dealing with disaster is not a popular task among the bureaucracy, according to CG 2: it just generates additional tasks on top of their daily routines. The local bureaucracy in Bantul did not therefore pay attention to mitigation and unfortunately, as IN 6 said, the local legislature also did not make mitigation a priority in Bantul development policy. This informant added that the low level of commitment in the legislature to mitigation programs was because members placed their political party's interest ahead of the public interest.

LN 5 argued that the problem of local government in the mitigation stage was overlap in tasks between agencies and offices in Bantul, in particular because the office or agency responsible for planning for disaster management was different from the office/agencies charged with implementation. In many cases, therefore, planning provided did not match the goals of those organisations selected to tackle disaster. The lack of mitigation programs in the Bantul local government was also caused by budget limitations (LN 8). In order to meet this shortfall, PG 1 said that cooperation between international funding agencies had been maintained to redress the lack of mitigation programs in Yogyakarta and Bantul. In addition to this shortage, a lack of alertness has always been a problem when it comes to handling a disaster. This happens not only in unpredictable disasters such as earthquakes but also in predictable disasters such as flooding and landslides, which had often rendered the local government and the people helpless, as the Bantul Prime Secretary explained.

Another obstacle that concerned many NGOs was the lack of data such as demography, population, vulnerable areas, and socio-economic status of the community (IN 4). Data provided by local government were usually out-of-date, particularly sub-district demography data, and one activist from a local NGO

said that 'data on the population numbers in one sub-district usually differs from one office to another in the Bantul local government' (LN 2).

Second are barriers in the preparedness stage. In this stage, simulation activities are not undertaken gradually and sustainably at local government level. If there is a simulation, it usually involves only a limited number of people and does not cover several of the typical disasters threatening Bantul such as flood, landslides or fire (CL 7). Shortfalls in disaster evacuation arrangements, signage and meeting points for survivors were also major problems for the Bantul local government.

According to LN 5, the office of the Community Protection Unit responsible for disaster preparedness was not capable of conducting earthquake or tsunami drills because of limitations in expertise and funding. In terms of lack of budget for disaster preparedness, IN 2 said that local government might not prioritize disaster preparedness; rather they paid more attention to sectors such as providing jobs or reducing poverty. He further explained that 'creating a disaster preparedness program rather wastes the local budget, which is mostly spent in financing the routine activities of local government'.

Third are obstacles in the response stage. Due to the lack of officers and data on heavily damaged areas, distribution of relief assistance was not adequately managed. This emerged in interview with IN 7, who said:

> *We think that Bantul has a lack of accurate data that can be used to see the profile of all villages and hamlets in the Bantul region, but this is commonly found in many local governments in Indonesia. Therefore, what NGOs mostly did was to hold a spot check on adverse areas before undertaking an in-depth assessment. No wonder many versions of data were found during this time, but we realize that it was very difficult to get data from local government as many of the officials were also victims of the earthquake.*

In the distribution of assistance during the 2006 earthquake, the procedure of starting from *Bakornas PB*, *Satkorlak PB* and *Satlak PB* and then down to sub-district offices sometimes caused problems when relief had to reach remote locations but the number of vehicles was limited. Victims who had lost patience therefore resorted to hijacking aid, which consequently stopped that assistance

from reaching its intended recipients (LN 4). In this emergency period, since the local bureaucracy was also disaster victims, they tended to save their own families first. According to PG 2, many staff at the Yogyakarta provincial level and local NGOs in the Yogyakarta area provided help for people in Bantul. However, since these volunteers had no education in search and rescue, the treatment they provided in many cases worsened the victims' plight, particularly those who had suffered fractures.

According to IN 3, coordination with other institutions is always a barrier because it relates to financial and other institutions. In fact, an informant underlined how it was not easy to coordinate all the agencies, particularly military agencies:

> *Does the bureaucracy have any power to give commands to army and policy institutions to carry out mitigation activities, for example? I don't think so. Once we become the coordinator, we have to make sure that that aspects of disaster risk reduction are included in every program that each institution should have. But it is not that easy. It's just as if we were interfering with someone else's institution program. That's why the ego issue remains one of the obstacles for local government in managing disasters.*

Last are barriers in the recovery stage. In the recovery process, most community complaints concerned the slow disbursement of housing rehabilitation assistance (CL 3). There are two reasons for this. First, it stemmed from the community's lack of understanding of bureaucratic procedure. Second, in the recovery process, particularly in the housing reconstruction stage, social issues emerged, such as whose house would be built first or how should funds be disbursed. In terms of social issues that emerged in the housing reconstruction process, LG 3 said that the local government in this case only played a facilitating role; its task, among other matters, was to ensure the smooth running of the rehabilitation and reconstruction process by maintaining stability of prices and stocks of basic construction materials, availability of workers, and technical earthquake-resistant requirements. Table 5.2 below summarises the obstacles of each stage of disaster management in the Bantul local government.

Table 5.2 Summary of the Bantul Local Government Obstacles

Stage	Obstacle
Mitigation	• Mindset toward disaster • Low level of commitment in the legislature on mitigation programs • Overlap in tasks between agencies and offices • Budget limitations • Lack of data such as demography, population, vulnerable areas, and socio-economic status
Preparedness	• No guarantee to take disaster simulation activities sustainably • Shortage of disaster evacuation arrangements, signage and meeting points for survivors • Limitations in expertise and funding
Response	• Delay in distribution of relief assistance • Volunteers' lack skill and knowledge • Difficult coordination with other institutions
Recovery	• Slow disbursement of housing rehabilitation assistance

Source: Research Findings, 2009

The findings of this research show that the Bantul local government faced many obstacles in each stage of disaster management. The problems found are common problems in many local government in developing countries in managing a disaster. However, in the recovery stage, Bantul's specific case does not apply to other countries, because the recovery model applied in Bantul is based on local wisdom and local culture.

5.6. Conclusion

The main interview findings reveal that the capability of the Bantul local government was relatively good, according to many stakeholders, although there were also some obstacles to managing such a disaster. With regard to the capabilities that existed in Bantul's local government, this research has found that in its institutional capability there were no clear structures, roles or responsibilities implemented under emergency conditions, particularly before the Law on Disaster Management was implemented. However, since Bantul's local government has its own ways of interpreting Law No.24/2007 on Disaster

Management, such as the obligation to establish a local body for disaster management, institutional capability has remained a problem.

In human resource capability, research has found that limited personnel had knowledge of managing disasters, although some training and education were frequently conducted after the 2006 earthquake. There was also a lack of proper coordination between provincial, district and sub-district administrative officers, NGOs and volunteers.

The capability of policy for effective implementation has shown that Bantul's local government had no written policy specifically on disaster management. Fortunately Bantul has now adopted disaster risk awareness in its Middle-Term Development Plan (RPJMD).

In terms of financial capability, the available budget was limited, although during the response and recovery phases Bantul's local government had the option to switch allocations away from programs that could not be completed because of the disaster in favour of disaster management responses.

Technical capability has been found to have problems associated with logistics, database management, telecommunications and transportation; these caused delays in distribution of humanitarian aid. Other problems related to the mitigation and preparedness phases, in which almost no risk identification and assessment had been done, including no early warning system or tsunami/earthquake drills.

In terms of leadership, the Bantul Mayor and heads of departments and offices in Bantul demonstrated qualities of leadership in making rapid and appropriate decisions and also in strengthening confidence in motivating the disaster-stricken to restart their lives and to participate in rebuilding the area.

The informants' views regarding capability of local government varied greatly between state and non-state. As significant factors in the capability requirement for local government in managing disaster, state respondents mainly focused on the need for training and education for bureaucracy staff, the importance of an

early warning system, an attitude of care for the community and knowledge of potential risks in their area. Non-state informants highlighted that the availability of a particular institution on disaster management, listening to the community, the importance of networking and political commitment, as well as the availability of an accurate data base, werethe main capability requirements.

The gap between capability requirements and the facts mostly concentrates on the lack of disaster information to the community, lack of livelihood programs, and lack of logistic distribution mechanisms. The findings on local government obstacles in managing disaster mostly emphasize low public awareness, low priority given to disaster planning, inadequate early warning systems, finance and coordination.

In conclusion, this study shifts the emphasis to the resources that an organisation possesses for developing strategies. The essence of understanding capability is not the resources that an organisation owns but its capacity to use, to develop and to combine them. What made the Bantul local government's achievement significant in managing the 2006 earthquake was how local leaders collaborated to combine their limited resources and deploy these to establish positions of sustainable competitive advantage and benefit for the community. Such capacities involve what Salaman and Asch (2003) say are bundles of skills that consist not simply of skills which are relatively easily obtained but combinations of such skills. These bundles of skills also point to the relationship between skills and holders of skills, such as patterns of cooperation and mutual support. Relevant capabilities in managing a disaster have grown slowly in the Bantul local government, particularly after the 2006 earthquake, and the result can be seen in the greater awareness of disaster-related issues in local government and the embedding of this in routine activities of government bodies. In these circumstances, capabilities then start to be built in (Mueller, 1998). The findings of this research reveal the important role of leadership at all levels of government in determining how well they use resources and the significant role of institutions such as cultures, structures, processes, ways of working and routines in determining how the Bantul local government's staff behaved and how their behaviour produced important and

hard-to-imitate outcomes from readily available resources. Indeed, a key type of organisational capability highlights the ability to manage change effectively.

The next chapter focuses the institutional roles of central, provincial and local government, the relations between all levels of government, networking and community participation, in order to complete answers to the research questions based on the qualitative data findings.

Chapter 6. Institutions Roles and Networking

6.1. Introduction

Understanding government institution roles and networking between institutions and community involvement in the event of a disaster is critical to disaster management. This is because every institution and community has different roles, responsibilities and access to resources which influence how each will be affected by a disaster and how each will cope with and recover from a disaster.

This chapter presents cases aiming at identifying the factors that influenced the relationship between the central, Yogyakarta provincial government and the Bantul local government affect the management of a disaster event in Indonesia. The questions asked at interview were designed to elicit information to assess the various activities and roles of each level of governments and how central government has decentralised decision-making power to provincial and local government.

This chapter also highlights interview findings on how the Bantul local government, national and international humanitarian organisations and the community work together to integrate response and recovery disaster management. These findings are important in order to answer the research question as to how the Bantul local government and social networks interact in the different stages of disaster management.

The case study presented in this chapter draws on the Bantul local government's practical experience in building capability and partnerships between each level of government, other institutions and the community which can lead to improvement of disaster management at the local government level. This chapter begins by explaining the role of disaster management at the central, provincial and local government level then discusses the performance of the Bantul local government in mitigation, preparedness, response and recovery stages. The next section explores government relations at all levels, community involvement and networking among stakeholders. This describes findings from the case study in order to demonstrate how networking comes to

exist, how it is put into practice, and what results are found. The last section of this chapter is the summary.

6.2. The Role of Disaster Management Institutions

Disaster management activities involve all levels of government institutions in mitigation, preparedness, response and recovery. Each level of government has a proper role in comprehensive disaster management; therefore all levels of government must have clear roles, responsibilities and policies for disaster management in order to protect the community from the adverse effects of a disaster. This section explores a range of roles of each disaster management institution at all government levels, starting with central government, Yogyakarta provincial government and the Bantul local government during the earthquake in 2006.

6.2.1. The Role of Central Government

In general, the role of central government in disaster management is to be able to carry out generic functions such as mobilising emergency personnel and resources, assessing damage, coordinating emergency management activities and restoring essential public services(Kreps, 1984). It is therefore expected that central government can provide resource support and information to supplement response and recovery effort at the local government level.

The central government of Indonesia declared the 2006 earthquake a local disaster because the Yogyakarta provincial government and the Bantul local government mostly continued to function and were able to provide assistance during the emergency to meet basic survival needs such as food, water, shelter, sanitation and medical assistance. However, central government also played an important role by setting up the President's emergency office in Yogyakarta in order to coordinate all disaster relief and provide necessary support. To ensure coordination, central government set up a task force to help with disaster relief under the direction of the Vice President as chair of *BakornasPB* (National Coordinating Board for Disaster Management). Later the Vice President established *BakornasAJU* (Advance Journey Unit) to coordinate disaster relief

operations. The function of *Bakornas AJU* was chiefly to coordinate support given to *Satkorlak PB* (Provincial Coordinating Board for Disaster Management) offices in Yogyakarta for its relief efforts. *Bakornas AJU* also had authority to mobilize soldiers and police to help with relief efforts (National Technical Team, 2007). One key informant stated that a meeting was held every night for almost a month after the disaster struck and it was led by the Indonesian National Army in order to make secure the distribution of humanitarian assistance and other logistical support (interview with PG 3).

During this period, the President took personal control of the delivery of emergency aid and handling disaster relief to ensure that all ran smoothly. The President was concerned about saving people's lives in search and rescue operations. At the same time, the central government managed to work on rehabilitation of damaged infrastructure and gave priority to restoration of the electricity supply and roads in order to ensure that logistical assistance to victims was distributed rapidly (CG 1). During the recovery stage, central government allocated Rp.2.7 trillion for state budgets, on top of additional financing from domestic and overseas donor agencies (Yogyakarta Provincial Government, 2008). The central government also provided financial assistance of a maximum of Rp.15 million to victims who lost their houses in specific circumstances[11].

The significant effort by the central government was acknowledged by the funding agency: 'central government was very supportive' (IN 1). CG 1 explained that

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[11]**Principles of Housing Assistance**
1. Assistance is to be prioritized for poor people whose houses have collapsed, are heavily damaged or are considered no longer liveable.2.The assistance is to be used solely for building houses and is to be prioritized for developing house structures that are earthquake-resistant such as footings, tie beams, columns, ring beams, roofs and walls.3. When there remain funds after the structures have been developed, the recipients should use these for building the house's other non-structural components such as doors, windows and others.4. The funds must not be used for purposes other than house reconstruction. (Source: Implementation Guidelines for the Housing Rehabilitation and Reconstruction in Post-Earthquake Yogyakarta and Central Java, 2006.)

> *For every disaster, the Social Welfare Department has distributed 50 tons of rice for each province and the Health Department has also supplied the necessary medicine. However, it really depends on the condition of the roads in the disaster area and the availability of delivery facilities that ensure this support is distributed rapidly to survivors.*

As a responsible institution managing a disaster at the central government level, *Bakornas PB* has also maintained coordination with *Satkorlak PB* in Yogyakarta provincial government and *Satlak PB* (District Implementation Unit for Disaster Management) in the Bantul local government. In addition to this coordination, central government also provided additional support for provincial and local government in a policy framework, developed by the National Planning Board (*Bappenas*), for managing post-disaster programs. The policy, Phases of Post-Disaster Rehabilitation, consisted of emergency, rehabilitation and reconstruction phases (PG 4).

The research findings have shown that central government in Indonesia played significant roles in developing a strategy covering response and recovery for the Bantul local government, ensuring that the existing disaster management structure enhanced its bureaucratic system at the provincial and local government level, allocating an adequate proportion of the national budget and defining an appropriate role of the military sector in the response and recovery disaster management. However, it seems that *Bakornas PB* at the central government level mostly played a coordinating role, particularly in the response and recovery stages, but paid less attention to disaster preparedness and mitigation. This is understandable because Law No.24/2007 had not yet been enacted during the 2006 earthquake and the National Body for Disaster Management (BNPB) had also not been formed. Therefore, although the law highlights the role of central government as a coordinator institution in the event of a disaster, the duty of BNPB has become complex and it has greater authority through providing guidelines and directives on disaster management efforts that address fair and impartial disaster prevention, emergency response, rehabilitation and reconstruction.

6.2.2. The Role of Provincial Government

The Yogyakarta provincial government has placed itself as the implementer of central government policy and at the same time worked corporately with the Bantul local government, particularly in the response and recovery stages. PG 4 said that

> *The task of the province is to create a blueprint for action as a follow-up from central government policies. This blueprint mainly served as guidance for the provincial government in handling a disaster and in many cases the action that the provincial government undertook was a cross-border action.*

PG 3 provided an example of this cross-border action:

> *It was when the governor of Yogyakarta found out that only 25 surgeons were available to conduct operations on victims and there were not enough rooms to accommodate the injured patients. He then tried to contact hospitals in other provinces to help conduct surgery and asked nursing students to help the victims in Yogyakarta. Hundreds of survivors were sent to that hospital and all costs incurred fell under the responsibility of the provincial government.*

At the recovery stage, especially in the housing rehabilitation and reconstruction program, the provincial government played an important role by creating discretion to shorten the tender mechanism for selecting consultants. A normal tender mechanism for choosing a consultant would take at least 45 days to complete. However, since it was an emergency and some measures demanded swift action without violating existing regulations, PG 2 said,

> *We chose direct appointment because the damage in the housing and public sector required that rapid actions be taken. However, we were guided by Presidential Decree No.80/2003 on the Implementation Guidelines for the Procurement of Government Goods/Services that allowed the government to resort to direct appointment when handling an emergency such as a natural disaster. With this direct appointment we could accelerate rebuilding housing and public infrastructure 45 days faster than through the normal tender mechanism.*

In this case, we can highlight the discretion and willingness to choose direct appointments and shorten procedures; this allowed the provincial government

to reduce possible delay in the housing rehabilitation and reconstruction program without violating existing regulations. This is necessary in the event of a disaster.

At the provincial level, the institution for managing disaster was *Satkorlak PB* (Provincial Coordinating Board for Disaster Management), which was chaired by the Governor of Yogyakarta. The function of *Satkorlak PB* was basically to provide coordination, direction, instruction and training, as well as to control disaster relief operations. These functional areas included planning, implementation and evaluation. Technical and administrative jobs were also part of its responsibilities. During the response and recovery phases of the 2006 earthquake, the Yogyakarta Governor as head of *Satkorlak PB* and, along with *Satlak PB* (District Implementation Unit for Disaster Management) and Central Java Regional Military command, had responsibility for managing the earthquake aftermath by handling and controlling distribution of humanitarian assistance and emergency relief under the coordination of the central government. In this case, the policy in both phases was set by central government in order to oversee response and recovery actions in Bantul and Yogyakarta (National Technical Team, 2007).

Similar to the role of *Bakornas PB* at the central government level, the performance of *Satkorlak PB* at the provincial government during the 2006 earthquake was relatively well managed, particularly in the response and recovery phase. However, in the mitigation and preparedness phases, *Satkorlak PB* had never undertaken programs related to disaster education and information provision to the community. Therefore this institution needed to change its mandate from response to mitigation because so far this institution had only played a coordination role during response and recovery.

6.2.3. The Role of Local Government

In 2006, disaster risk reduction, the Law on Disaster Management and the National Action Plan had not yet been established. Without experience or a supportive policy for the Bantul local government in the preparation and mitigation stages of disaster response, those killed numbered in the thousands

and local government public services were also disrupted because many government offices were damaged in the quake[12]. The disruption thus affected the local government's ability to respond promptly to the disaster and manage the subsequent emergency relief operations.

The following subsection discusses each stage of disaster management that the Bantul local government has implemented from the mitigation, preparedness, response and recovery stages.

6.2.3.1. Mitigation Stage

As detailed in chapter 7 (section 7.3.1), mitigation activities were rarely conducted before the 2006 earthquake by either the Bantul local government or the community. The following section emphasizes research findings that focus on the mitigation stage after the earthquake struck Bantul.

The experience of facing disaster with so many casualties has been a lesson learnt for the Bantul local government about the necessity of having a mitigation program in future. In line with this experience, Law No.24/2007 has also mandated that local government has the responsibility to provide mitigation programs in order to protect its community from potential hazards. LN 1, who was involved in the process of making the Law, stated that the rationale for making local government the main actor in disaster management was because local government knew the community better than any other government level. Therefore, LN 1 added, having a mitigation program was one way to protect the community. LG 3 said that 'the previous disaster has been a good start for the government to have mitigation policy which particularly focuses on development planning'.

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[12] One month prior to the earthquake, all attention and rescue preparation efforts of the Central Government and Yogyakarta Provincial government were focused on people living near Mount Merapi, one of the world's most active volcanoes, which is located in the north of the province. This mountain was spewing clouds of steam and was ready to explode. All rescue efforts were prepared, including simulations of evacuation routes. Authorities paid no attention tonorhad any anticipation of another natural disaster in another district nearby.

However, it is not easy for local government to disseminate mitigation programs throughout communities. Some communities refused to get involved in the disaster mitigation program, as LG 4 said:

> *In the early stages of the local government's introducing disaster mitigation activities, we were rejected by the communities, who think this program is useless, but we kept informing them that the 57 seconds of the quake paralysed us and many houses were destroyed. Therefore we need to be prepared to face disaster in the coming year. Finally the communities understood and they accepted the government's activities related to disaster mitigation.*

In order to realize the mitigation requirement for local government, Bantul has divided the mitigation program into short- and long-plan actions. For the short plan, local government has established earthquake-resistant house design as one element of a building construction permit requirement. Government buildings should include technical precision in construction and provision of exit doors, emergency doors, emergency tools, emergency staircases, alarms and survival kits (National Technical Team, 2007). Another short-plan mitigation action includes the development of an integrated information network at local government level to detect as early as possible any occurrence of a tsunami. LG 2 explained that:

> *The early warning system development involves the integration of the information network from the Bureau of Meteorology's observation stations and the Ministry of Energy and Mineral Resources. When the Mayor receives information of a possible tsunami, the Mayor activates the alarms, which are already installed along the southern beach. This announcement is also forwarded to the community through Satlak, Satkorlak, the army and the police and is broadcast widely through local television stations.*

Additionally, the long-plan program on mitigation has focused on updating the maps of disaster-prone areas, to use these as a reference by the government in devising regional planning. The master plan will show clearly what disasters might be anticipated in the future. PG 4 added that 'vulnerability maps and the master plan have been developed to show the areas where construction of buildings or houses is not allowed'.

Besides developing disaster-prone area maps, the Bantul local government has created an early warning system to promote safety procedures and to provide information about signs of tsunamis and other disasters. A community leader has acknowledged this:

> *Local government has developed the early warning system at Depok beach and clearly marked the evacuation line if a tsunami occurs. Also, there is housing planning in 17 villages near the beach that are potentially vulnerable to disaster, especially from a tsunami, so in the next five years we expect to have planned housing which is safe from tsunami.* (CL 1)

As a part of the long-plan program of disaster mitigation, the Bantul local government has set up the Local Middle-Term Development Plan that has adopted a disaster awareness strategy, provided notice boards where safety procedures can be read, disseminated disaster information through booklets or brochures, established networks of volunteers at the community level and included disaster education as part of the teaching curriculum in schools. However, some community leaders interviewed commented that on occasion government has not paid attention to the maintenance of early warning systems, so that when tsunamis or earthquakes occur, the system will not function: 'It seems to us the early warning system was only a temporary measure. The youth organisation has also thought about mitigation but they only focused on the evacuation of survivors, they did not teach how to treat injured victims' (CL 5).

From these research findings, it is clear that the Bantul local government made a relatively significant effort in the mitigation stage after the 2006 earthquake. The research reveals that, although some barriers remain, such as the consistency of mitigation activities in the future and limited financial support, the Bantul local government has considered having structural and non-structural mitigation plans by combined efforts that include having earthquake-resistant construction and regulatory measures to decrease or eliminate the adverse impact of disaster on society and environment.

6.2.3.2. Preparedness Stage

As with the mitigation stage, the capability of the Bantul local government in the preparedness stage before 2006 was weak. This is indicated by lack of awareness in local government and the community about disaster risk and limited understanding about the importance of having an early warning system (chapter 7, section 7.3.2). However, the 2006 earthquake 2006 taught Bantul an important lesson about preparedness. Bantul's local government has commenced programs that focus on educating people about disaster awareness. Interviews with LG 5 revealed that disaster awareness is provided by way of the teaching program in every school in Bantul. Most students have learnt how to survive in an earthquake. In addition, the government has also run campaigns about disaster at the village level. LG 7 said that 'almost 60% of the total of 75 villages has been well-informed about the fact that Bantul is a disaster-prone area and this aims to educate people about disaster risk reduction'. Community meetings have also been held frequently as an avenue for government dissemination of information on disaster reduction.

This was also acknowledged by a community leader in this survey:

> *The government as well as community groups in Bantul have a high commitment to disaster risk reduction and disaster awareness. Several weeks ago, we learnt how to make traditional medicine from herbal ingredients in order to anticipate any lack of medicine during a period of disaster. So we can make medicine from our own backyard plants. Also, the notice board that has safety procedures on it is still available because it is made to be permanent. Everybody can read it because it is very useful information* (CL 8).

However, a contrary argument emerged from a community leader, who stated that the role of international NGOs was greater than that of local government (CL 1). CL 2 stated that 'much assistance and support on preparedness mainly came from international NGOs through training in first aid or disaster risk reduction, tools for early warning, and booklets and notice boards'.

Another community leader added that local government on one occasion conducted a tsunami drill on Sanden beach, Bantul, to demonstrate how to

evacuate people from the path of a tsunami (CL 7). Nevertheless, no coordination of other offices such as public works, social welfare, the army, the police or the fire brigade was provided. It focused only on the medical department and a tsunami as a cause of disaster; drills on other disasters such as fire or flood were never undertaken. Many community leaders were therefore pessimistic about any future disaster and people's survival, since the preparedness programs that government or NGOs run are not coordinated.

This research reveals that in the preparedness stage the Bantul local government has taken some actions in advance to develop the capabilities required and to facilitate an effective response in the event an emergency occurs. However, the role of international and national NGOs in this stage has been greater than that of local government. This is because many local governments have not been provided with adequate knowledge about disaster preparedness-related programs.

6.2.3.3. The Response Phase

The following section explores the response phase of the Bantul local government in the 2006 earthquake. The earthquake that struck Bantul early in the morning, followed by rumours of a tsunami from the south sea, worsened the situation in the region as casualties were quickly mounting. There was effectively no preparation for or anticipation of the earthquake. The Bantul local government was unable to do much, and this resulted in paralysis in many parts of the Bantul region. The Bantul Mayor admitted this adverse outcome:

> *We did not anticipate the earthquake would happen in Bantul because all rescue efforts were prepared for anticipating Mount Merapi which was on highest alert. Even worse, the quake struck in the morning during the long weekend when many people were still in their beds, so that they had no time to run outside their house. While monitoring the situation, I made efforts to ensure that doctors and paramedics were giving their best to help the victims. I also contacted all department heads of the Bantul local government to assemble in the hospital and quickly meet the needs of the victims.*

At the same time as the Bantul Mayor tried to provide medical services for survivors, the governor of the Yogyakarta provincial government decided that relief efforts would focus on providing care for the seriously injured and meals and medicines to victims. An emergency command post (*posko*) was set up in front of the Bantul Regency's official residence, although coordination between local government staff remained confused, since some were also victims (National Technical Team, 2007). LG 2 explained that most houses collapsed instantly in the earthquake because the structures were not earthquake-resistant; the earthquake interrupted school activities and public health services, cut electricity and telephones, and also damaged many places of worship and government offices; consequently, the disruptions affected the Bantul local government's ability to respond rapidly to disaster and manage the subsequent emergency relief.

The summary of policy and strategy implemented by the Bantul local government during the response phase is presented in Table 6.1.

Table 6.1 Policy and Strategy in Response Phase

Activity	Response
Phase	Emergency
Time	1 Month
Goal	Life saving
Policy	- Handling the injured - Managing the Implementation Unit Coordinator for Disaster - Formation of a command post - Logistic Distribution - Provision of temporary houses - Building a data centre - Physiology assistance for post-disaster stress management - Shifting Routine Development governments program into an emergency program
Strategy	- Evacuation of survivors and the dead - Emergency Shelter

Source: Yogyakarta Provincial Government, 2008

In managing the response phase, the Bantul Mayor involved donor agencies[13], international and national NGOs under the coordination of the United Nations

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[13]In the emergency and recovery process in Yogyakarta and Central Java, 250,000 emergency shelter kits were distributed and 27,000 tons of food and non-food items were delivered. Promises of compensation were made by both provincial and central government, based on the percentage of loss incurred (International Organization for Migration, 2006).

mainly focused on health, nutrition, shelter, water and sanitation, telecommunications, logistics, education and farming. However, the Bantul local government also established ten temporary hospitals to serve the thousands of injured at no charge (Sairin & Marah, 2008). An interview with the Bantul Prime Secretary revealed that

> *It was the third day after the disaster before all facilities at the district level were coordinated. The government network that was engaged was working effectively in providing maps and conditions in disaster areas. Thus distribution of aid, which was coordinated by Satlak, slowly became faster, particularly to remote districts and villages. We were also supported by the local legislature which amended the regional budget so that allocations previously for development sectors could be reallocated for disaster relief efforts.*

In terms of financial assistance in this phase, the Office of the Coordinating Minister for People's Welfare assigned to the Bantul Mayor issues of living costs and financial support for the victims. At interview, the Bantul Mayor said:

> *We provided financial support of Rp.2 million to every family who had lost a member in the disaster and Rp.500,000 for house renovation. This support was paid after neighbourhood groups and sub-district heads verified claims. The government also distributed 10 kilograms of rice fortnightly per person, a living allowance of Rp.3,000 per day per person, home appliances or kitchen utensils allowance of Rp.100,000 for each family, and a clothing allowance of Rp.100,000 per individual.*

A total of Rp.72,252,360,000 was allocated to 796,766 people from the *Bakornas*, central government, provincial government and local government. Distribution of living costs was applied gradually to the 17 districts and 75 sub-districts. However, the money allocated was not fully distributed, since some people had been registered in two sub-districts, some were dead, and some had relocated to another city (National Technical Team, 2007).

These research findings reveal that the Bantul local government displayed a rapid response immediately after the disaster. This capability is important in the response stage because it aims to save lives and minimize property damage. By providing a range of financial assistance for survivors, the Bantul local

government enhanced the beginning of recovery and at the same time it helped the communities mobilize rapidly to meet emergency demands, even under severe circumstances.

6.2.3.4. The Recovery Phase

After the response stage ended, the government began the recovery phase. The recovery phase in Bantul was divided into short-term and long-term goals. As stated by a member of the Bantul Regional Planning Agency, the short-term recovery phase aimed to stabilize the lives of those affected in order to prepare them for rebuilding their lives. In the short-term phase, the Bantul local government concentrated on actions such as identifying the impact of earthquakes, including continuously improving disaster victim data and other data, informing and persuading people to understand that government assistance was only temporary, so that the people themselves must help to restore their lives through hard work, providing free-of-charge services, such as building permits, land building taxes, ID cards, birth or death certificates and hospital access, making secure agreements between government and cement fertilizer factories to achieve price stability, and advising students to return to school without an obligation to wear school uniform.

LG 3 pointed out that, although activity in Bantul had been restored, farmers had returned to their fields, trading activity in traditional markets had begun functioning again and some craftsmen had returned to exporting, local purchasing power remained very low. The local government therefore gave priority to rehabilitation of public facilities that supported the local economy and encouraged activities that could assist in rebuilding economic wellbeing. The high priority target was rehabilitation of schools and public health facilities, social services facilities, economic support facilities, religious and cultural heritage and government offices. To support farming, LG 2 said, the Bantul local government provided interest-free loans to farmers to buy seed and fertilizer. The loan was to be repaid after the harvest. Total funds allocated for this program were Rp.7.6 billion. In addition, Bantul had an agreement with two of the main fertilizer factories in Indonesia for the purchase of fertilizer on credit,

interest-free, as well as an agreement with the cement factory for purchasing cement at a lower price. The local government also established a community development program, which consisted of a group of poor communities; each group was given initial capital of Rp.10 million for running a small business.

For long-term recovery, emphasis was on the community being reinvented and maintained in its original culture and pre-disaster condition. The long-term period of this recovery phase was to be only two years (Table 6.2). This was set in order to anticipate delay of recovery, as LG 1 clearly stated:

> *To anticipate delay in the recovery phase, the government declared to the community that this phase would cease within two years. We strongly believed that if we declared the phase would cease in three or four years, that would also be what would happen. So why did the government shorten the target to only two years and why has the government made such good progress in this two-year phase? The answer was simple: because the government cared for the community.*

Activities in the long term are rehabilitation of houses and residential areas, rehabilitation of public infrastructure, and revitalization of the economy and cultural recovery. A member of the Regional Planning Agency said that the rehabilitation and reconstruction programs were then implemented in three stages. The first stage was preparation, which relies on consultant procurement, facilitator recruitment and early outreach. The National Technical Team for the Rehabilitation and Reconstruction of Post-Earthquake Areas in Yogyakarta, which was set up to coordinate development process, prepared the Implementation Guidelines for the Non-Housing Rehabilitation and Reconstruction for the Earthquake Victims.

Table 6.2 Policy and Strategy in Recovery Phase

Activity	Recovery	
Phase	Rehabilitation (Short-Term)	Reconstruction (Long-Term)
Time	7 Months	2 Years
Goal	Restoration of minimum public service	Redevelopment of the whole system
Policy	• Improvement of physical facilities • Rehabilitation of basic social services • Improvement of economic facilities • Housing redevelopment • Psychosocial trauma victim recovery	• Integration programs in local development approach
Strategy	• Need and Loss assessment • Determination of priority programs	• Reconstruction of the economic system (production, trade and banking) • Reconstruction of the transportation system • Improvement of telecommunications systems • Empowerment of social and cultural systems • Strengthening the institutional system

Source: Yogyakarta Provincial Government, 2008

The second stage was community organisation to identify victims who were entitled to receive assistance, to set up community groups, and to engage in the participatory planning in which housing rehabilitation proposals were developed:

> *Principally it is the people themselves who should, through this program, decide how to rebuild their houses. The local government generally has only provided assistance for earthquake-resistant houses and has supported meeting basic housing needs.* (LG 1)

The final stage was development of houses by people, based on the priorities they themselves set. The maximum amount of government housing assistance was Rp.20 million per household for victims whose houses had collapsed. In terms of the school development recovery program, the Bantul local government has rebuilt 446 primary schools, 86 elementary schools and 67 high schools. The funds for this school rehabilitation program were allocated from the central government budget, the Ministry of National Education, and grants from donors, institutional and corporate, overseas and domestic (National Technical Team, 2007). For local economy revitalization the

government has concentrated on the livelihood program. The program has been undertaken with a community-empowerment approach that emphasizes the involvement of both the community and community groups, as a community leader stated:

> *The Bantul local government provides funding at a low interest rate that disabled people can access as a group. The interest rate can be shared among group members. This program has focused on the provision of stimulus assistance for people's productive assets that were damaged in the quake and the provision of assistance to the Small Medium Enterprise (SME) sector.* (CL 3)

Recovery starts the moment a disaster happens. This is the activity that returns infrastructural systems to minimum operating standards and guides long-term efforts designed to return life to normal or improved levels after disaster. This study found that the Bantul local government has made efforts to reconstruct what was lost as a result of the earthquake and to reduce the risk of similar disasters in the future. The activities and actions in the recovery stage indicate that the local government has a strong commitment to restore and improve the pre-disaster living conditions that affect the community.

6.3. Government Relations, Community Involvement and Networking

This section focuses on the relations between all levels of government, the conflict of interest which emerged between central and local government, between local government and the community in disaster management activities and conflict of interest related to objections of central, provincial and local government to forming a local body for disaster management, as mandated in Law 24/2007. In addition, community involvement, which includes community participation, cultural behaviour and local wisdom, is discussed in this subsection. Networking between government, community and NGOs is explained in the final subsection.

6.3.1. Central, Provincial and Local Government Relations

Coordination between the central, Yogyakarta provincial and Bantul local governments began the day the earthquake happened. An emergency meeting

was convened and attended by *Bakornas PB* as a representative of central government, the Yogyakarta provincial governor, the Bantul mayor and most Bantul senior officials. Coordination focused on providing care for the injured, meals and medicine. Under *Bakornas PB* coordination, all affected areas in Bantul and other regencies activated their *Satkorlak PB* and *Satlak PB* to report to *Bakornas PB*. In this case, the function of Yogyakarta's *Satkorlak PB* was to provide coordination, direction, instruction and training, as well as control disaster relief operations, including planning, implementation and evaluation of disaster relief in Bantul areas in order to coordinate and control distribution of humanitarian assistance that was undertaken by Bantul's *Satlak PB*.

Thereafter coordination between Yogyakarta provincial government and the Bantul local government ran well and establishment of the task force to rehabilitate disaster-stricken areas followed it. CG 2 said that

> *There was a clear delegation of authority from central to local government in handling post-quake conditions in Yogyakarta and Bantul. The regional government that was handed the responsibility to handle the disaster included the Yogyakarta Governor as head of Satkorlak PB, assisted by the Central Java regional military command. The central government provided additional support, including a policy framework for post-disaster rehabilitation.*

An assessment from an international funding agency pointed out that the Governor of Yogyakarta carefully maintained coordination between central and local government, particularly in the distribution of humanitarian aid from the central government. The Provincial government acted as coordinator and local government was the implementing agency. A senior officer in the Bantul local government also added that, since some of the humanitarian aid from overseas was located in the province, *Satkorlak PB* was active in distributions to the Bantul Regency office (LG2).

PG 4 highlighted that the role of the provincial government was to accommodate the central government's interest at local government level. The Provincial government also helped local government in designing programs for

the recovery stage based on community empowerment, and it allocated some funds to support redevelopment of Bantul. In terms of house rehabilitation, PG 1 said that one issue related to the role of a provincial government:

> *When the Vice President gave a commitment to provide government assistance of Rp.30 million for each destroyed house, and since the national budget was not sufficient to fund this program, the central government revised it to become Rp.15 million for each house. However, this became a sensitive issue between central and local government, so the provincial government was positioned to become an intermediate actor in any conflict that potentially arose after the central government revised its program. The figure of the Sultan[14] that is embedded in the profile of the Yogyakarta Governor has helped local government to resolve conflicts with the community during this moment.*

The central, provincial and local government agencies also played an important role: for instance, the state electric company responded quickly to restore affected power lines in Yogyakarta and Bantul; the Settlement and Regional Infrastructures Agency in the Yogyakarta provincial government mobilized heavy equipment to remove debris; and the Yogyakarta provincial government, the Bantul local government and the legislative bodies at both levels of government amended the regional budget to reallocate funds for disaster relief efforts (PG 1).

However, networking between central, provincial and local government was also influenced by informal relations between the leaders from all levels of government. The Bantul Prime Secretary described how the Governor of Yogyakarta had a longstanding, good relationship with the Bantul Mayor from before the Bantul Mayor took office. Additionally, many people in central government got to know Bantul very well because Bantul was a leader in creating many innovative policies in other regencies and cities in Indonesia. The networking could therefore run smoothly, supported by both structural and

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[14]Sri SultanHamengkubuwana X is the current monarch of the historic Yogyakarta Sultanate in Indonesia and is currently also the elected governor of the province of Yogyakarta Special Region.

informal relations. It was not just the local government that was challenged during earthquake; the size and scope of the earthquake meant that the central and provincial government had to play a large role in response and recovery tasks. One significant aspect of central, provincial and local government involvement was the organisation of programs and activities implemented at central, provincial and local government levels, based on Presidential Regulation No.9/2006 on Coordination Teams for the Rehabilitation and Reconstruction of Post-Earthquake Areas in Yogyakarta Province and Central Java. This regulation divided the role of each level of government. The organisational structure for program implementation (Figure 6.1) is as follows:

Figure 6.1 Organisational Structures for Program Implementation

Note:

———▶ Command   ·············· Coordination   – – – – – Facilitating
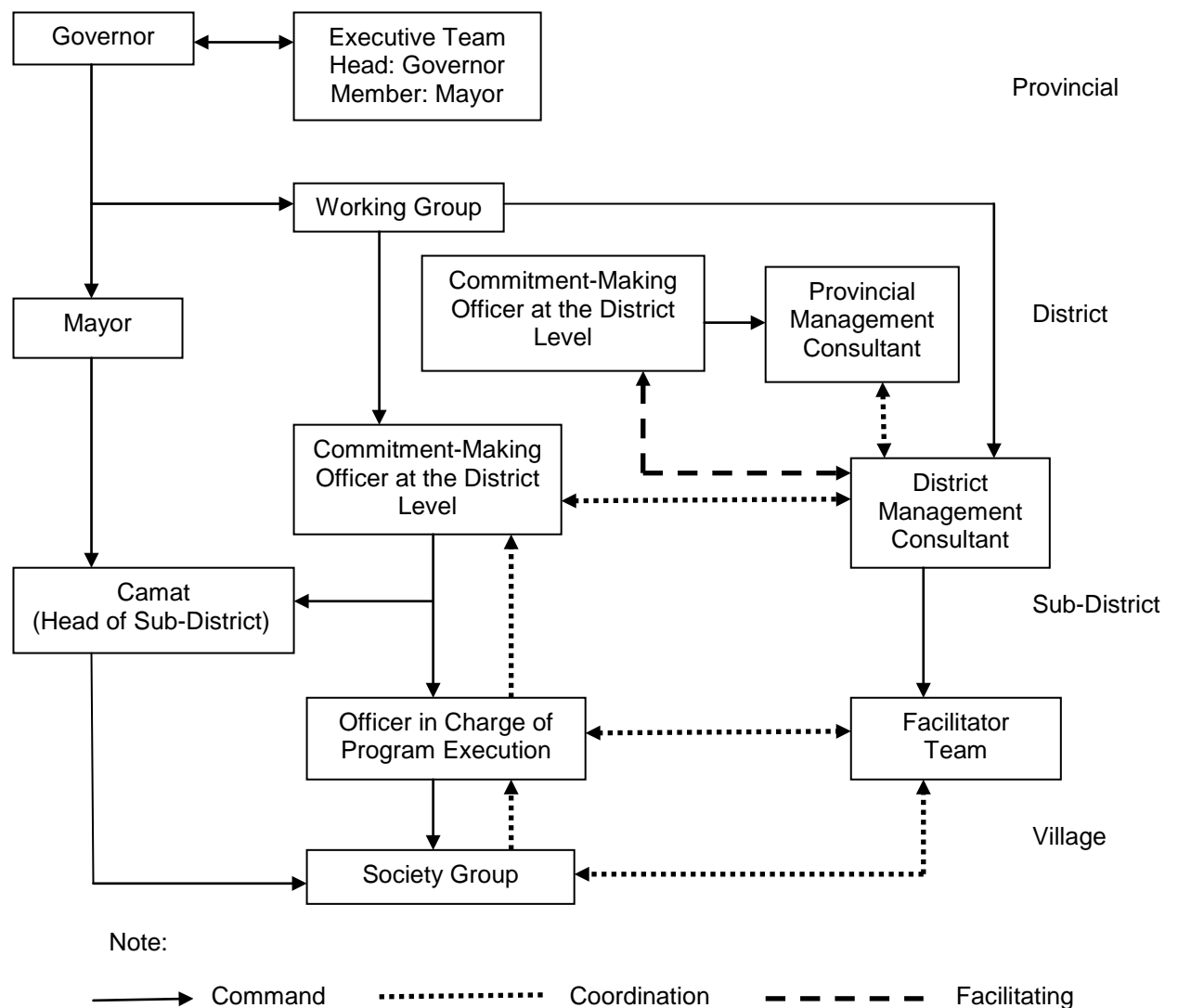
Source: Governor Regulation of Yogyakarta Special Region Number 23/2006

a. Central Government Level

Forming the Steering Committee, which consists of Ministries and the Governors of Yogyakarta and Central Java and National Technical Team for providing the policy and strategy of the rehabilitation and housing reconstruction process and regulating the strategic plans to address obstacles during implementation.

b. Provincial Government Level

Formulating the implementation team led by the Governor of Yogyakarta and with the Bantul Mayor as a member in order to arrange in detail the rapid steps for the post-earthquake rehabilitation and reconstruction in Yogyakarta and Bantul.

c. Local Government Level

The Bantul Mayor, together with committed officials, was responsible for housing rehabilitation and reconstruction programs in terms of technical, administrative and financial aspects.

With regard to the coordination and networking between all facilities at district and sub-district levels and offices and departments within the Bantul Regency, this was effective from the third day after the disaster. This government network was effective in helping to map the conditions in disaster areas. Since many head offices in Bantul understood conditions in Bantul very well, even when assignments from the Bantul Mayor did not match officials' responsibilities within their own bailiwick, the latter could perform them effectively. The reason why this might have happened in Bantul, was, according to LG 2,

Since Mr. Samawi as the Mayor governed Bantul, the heads of offices and boards were given tasks additional to our normal duties. For example, the head of one office has the responsibility for two subdistricts. The head should understand everything occurring in those districts, such as the mortality rate, the nutrition rate or even the most common diseases. Therefore, when we were assigned to buy food supplies and other necessities for victims, we just did it without arguing that the assignment was outside our tasks.

The need for increased capacity and understanding on intergovernmental relations is important on disaster management issues. These research findings

reveal that intergovernmental relations existed between central government, the Yogyakarta provincial government and the Bantul local government. These three levels of governments manage their role, responsibilities and influence carefully. In addition, central and provincial government has decentralised decision-making power to the Bantul local government to fully cater for the needs of local government and its community and this strongly influenced meeting disaster response and recovery targets in Bantul.

6.3.1.1. Conflict of Interest between Central, Provincial and Local Government

Conflict of interest between central, provincial and local government usually appeared in terms of authority, accessibility and financial issues. In an interview, CG 2 explicitly stated that conflict of interest related to authority:

> *It was always a case that, if a disaster happens in a district, no matter how small it is, the Mayor or the Governor contacted central government asking for funds to be allocated for it. Central government has limited funds for supporting every district; they should generate these from their local revenue. Clearly, the law on disaster management has emphasised that local government should be responsible for managing disaster and this includes funding.*

Another case related to the authority issue also emerged in the recovery period in the 2006 Bantul earthquake: the issuing of Presidential Decree No.9/2006 on the Establishment of the Technical Coordination Team on the Rehabilitation and Reconstruction the Post-Earthquake Rehabilitation and Reconstruction Program for Yogyakarta and Central Java. The basic principle of this decree was the delegation of authority from the central government to the provincial government, with the governor becoming the leader and the manager of the rehabilitation and reconstruction program. This Presidential Decree has generated a conflict of interest between provincial and local government because it was contrary to Law No.32/2004 on Regional Administration; that Law clearly determined that local government is the main actor under decentralisation. Fortunately, this issue did not trigger potential disputes between provincial and local government. According to informants from both

levels of government, because the Governor gave local government the opportunity to set up program assistance from the provincial government, and because this aimed to help people rebuild their houses and continue with their lives without having to focus on authority issues.

Conflict of interest has also been related to the issue of accessibility. Although such an issue is not Bantul-specific, an interview with CG 3 found that it could become so in the future:

> *Central government has ensured stocks of food and medicine in every district in Indonesia. We did this because we anticipated local government would need these when disaster occurred. However, it always becomes a problem because local government does not have information about how to access these stocks and, even worse, local government lacks ability to deliver the stocks to the whole community because they do not have a good distribution system during and after disaster. Local government should not rely so much on central government.*

Another conflict of interest in the intergovernmental relations appears in finance. IN 2 said that 'disaster sometimes is treated as a way for local government to generate income from central government. Local government has usually asked for double the estimate of funds needed for handling disaster, rather than the actual amount of funding required'. IN 4 offered the criticism that, although provincial and local government had a sufficient budget for a contingency plan to tackle disaster, rarely was this funding used for mitigation and preparedness programs; most funds indeed have been used for purposes other than mitigation.

The findings of this study highlight that conflict of interest may appear in the intergovernmental relations in managing a disaster. Although disaster management requires intergovernmental networks between central, provincial and local government in order to share responsibilities, information, expertise and communication, such conflicts of interest could render disaster management ineffective.

6.3.1.2. Conflict of Interest between Local Government and Community

Conflict of interest between the Bantul local government and the community most commonly occurred in the housing rehabilitation program. The dynamics of policy formulation and strategy on housing rehabilitation and reconstruction began with a few issues.

Firstly, there was the statement of the Vice President of the Republic of Indonesia, who announced that the central government would help with the rehabilitation and reconstruction of the houses of victims with Rp.30 million for those heavily damaged, Rp.20 million for those less damaged and Rp.10 million for the least damaged. However, this was not easy to determine since the accuracy of the level of damage depended very much on the objectivity and honesty of the officials gathering data and of the people who provided the information.

LG 1 acknowledged this:

> *I'm sure it happens. Since the government was unable to identify the number of destroyed and collapsed houses, I asked university students to help the heads of neighbourhood groups to identify such houses. But they are also human beings who might be wrong. After all the data were gathered and I need to send them to central government, I in fact had doubts about the number of houses reported as mainly heavily destroyed. But, after so much consultation with other heads of agencies and units in Bantul, we decided that if exaggeration in the number of destroyed houses existed and was created by the community, we would accept it as long as no one from local government in the district, subdistrict, village or hamlet had behaved corruptly in dealing with financial assistance for the community.*

However, the decision to categorize any one house as most or least destroyed triggered conflict of interest in the community. The lack of technical and structural skill in the community was the reason why in many cases the community refused to agree to local government decisions to assign houses to the middle or least damaged category. A community leader emphasised this:

> *Even though local government involved experts in assessing the criteria for destroyed houses; it was not easy for someone in the community to accept that their house only received Rp.10 million but a neighbour received the full amount of housing assistance funds from the government. There were also some problems when heads of hamlets mistakenly gave households double funding, although the same house was involved. Feelings of jealousy then stimulated dispute between the community and local government because the community assumes that the government was being unfair to them.* (CL 4)

Mistakes in allocating funds to wrongly categorized households have been acknowledged by the Bantul Mayor, but he said that 'It is only 2% of wrongly targeted funds among almost 200,000 households and this is still tolerable'. However, LN 8 criticized that housing allocation blowouts were a possible result of 'the way government sets the criteria which did not involve the community'. LN 8 added that, even though the criteria were set clearly by the government, since the process excluded community participation there was the potential for distortion. It is understandable that the community claimed that houses were wholly destroyed in order to gain the maximum financial assistance from the government.

Secondly, one problem related to the community's willingness to rebuild their lives and the region. There were many who thought that the disaster was a punishment from God. PG 3 stated that

> *It is important to regenerate the community's spirit so as to start their new life. Ten days after the disaster, the Governor and I were walking around community houses. We were encouraging people to begin rebuilding and put aside mourning for their losses. The most important thing for them to understand was that they were not alone. The government would be responsible for restoring conditions to a level even better than previously.*

Thirdly, conflict of interest appeared in slow aid distribution to the community, particularly for those who lived in remote areas. Both the Yogyakarta provincial government and the Bantul local government admitted this. Interviews with key informants from the Provincial Government and Community Welfare Office of

Yogyakarta and the Primary Secretary of the Bantul local governmentrevealed that aid distribution remained a problem and the ability of the government during the emergency was limited, yet the community demanded to receive aid as soon as possible. By the time the government reached their areas, people had already received aid and the community blamed the government of this slow response. PG 1 said:

> *On one occasion the government wanted to deliver aid to a remote area but it was stolen en route. Then we tried another solution. The community must come to the government office to receive aid, but unfortunately there were people who took advantage of this situation. They arrived every day to fill their trucks with aid donations. We therefore required them to bring a letter from their neighbourhood group head in order to make sure that these people lived in that sub-district or village, but again the community thought that the government was being too bureaucratic.*

Fourth, the dependency of the community on donations also became conflict of interest between the local government and the community. The Governor of Yogyakarta and the Bantul Mayor were aware of lessons learnt from previous disasters in Aceh, where people came to depend heavily on national and international aid and funding agencies. Both leaders therefore encouraged the community to understand that support and assistance would only be of benefit if the community itself played an important role in the recovery phase. This was clearly stated by LG 6:

> *We have to be careful with aid, otherwise we become dependent on it. We always discuss with funding agencies or national and international NGOs that they must provide the support according to community need. We don't want get too many goods or too much financial support if it generates unfairness in the community. We have suffered, but we do not want to have greater suffering through support that triggers conflict.*

Good relations between local government and the community strongly influenced the success of disaster management. The research reveals that issues such as clarity of information, the distribution of humanitarian aid, and the common perception in the community that disasters are unexpected,

unplanned and Acts of God may become potential conflicts of interest in the relationship between local government and the community. Therefore disaster management planning has to include local-level public participation and the community should be encouraged to rebuild their lives and respond to disaster.

6.3.1.3. Conflict of Interest after Law No.24/2007 was Enacted

The enactment of Law No.24/2007 on Disaster Management has left some conflict of interests for central government, Yogyakarta provincial government and the Bantul local government, particularly in the establishment of BNPB and BPBD which are assigned responsibility for managing a disaster. This section further discusses these issues as assessed from interviews with key informants government.

6.3.1.3.1. Central Government Level

Learning from major disasters in Indonesia, and because of the scope and complexity of the task in managing disasters, Law No.24/2007 has replaced *BakornasPB* by BNPB at central government level. According to Law No.24/2007, BNPB is a non-departmental body equal to a ministry; its membership comprises the steering committee and the executive body. The membership of the steering committee and the executive body consists of relevant government officials and professional community members.

As stated by one of the deputies in BNPB, if a disaster happens in one area, BNPB must conduct a loss and damage assessment and each region would be responsible in the recovery activities.

Arguments differ among stakeholders, particularly funding agencies and international NGOs. IN 1, who supports the establishment of BNPB, argued that 'even though *BakornasPB* has a clear structure and system on how to manage disaster, it is not effective because *BakornasPB* is a poorly resourced institution to be able to respond as well, as it does not have a direct-line minister. It is only a matter of coordination'. Therefore the establishment of BNPB has greater potential for managing disaster because it has more authority to arrange coordination among stakeholders at all levels of government.

However, IN 3 criticized the capability of BNPB:

> *The capability of BNPB is still limited due to the abundance of their resources from other departments. Therefore this organization has not had the ability to recruit employees in accordance with the required skills. Since BNPB is still premature, it is still looking for a precise structure to manage disaster effectively.*

At an interview in the office of BNPB, the researcher observed that only a limited number of BNPB personnel knew about disaster management; most came from other departments that did not deal with that area. Moreover, if the equipment for victims' survival is very limited, the process of evacuation in a disaster is slower. As a new body responsible for disaster at the central government level, BNPB needs to be equipped and educated with relevant knowledge to be able to play its principal role.

6.3.1.3.2. Provincial Government Level

The problem for institutions responsible for implementing disaster management at provincial government level is related to Law No.24/2007 Article 18, which says that a regional government must establish the BPBD (the Local Body for Disaster Management) at the provincial and district government level. This becomes a problem when the institution at the provincial level should be led by a government official who is one level below the governor or equal to echelon I B rank and at the district level it should be led by an official one level below the mayor or equal to echelon II A rank[15] (LG 2).

There were many comments on the governance structure of provincial government. PG 1, for instance, argued that the Yogyakarta Provincial Government was not willing to form the BPBD, since the prerequisite is echelon I B rank for the head of the body/agency, whereas echelon I B rank is normally held by the Prime Secretary of the Governor. The informant added that

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[15] According to Government Regulation No.41/2007 on Regional Organisation, the level of echelon in the provincial government is as follows: echelon I B for thePrime Secretary, echelon II A for the assistant to thePrime Secretary and the head of the agency and body; echelon II Bis for the bureau chief; at the district level, echelon II A is set for the Prime Secretary and echelon II B for the Assistant to thePrime Secretary and the head of the agency and body.

therefore the responsibility of the Prime Secretary would be overloaded if such a person were required to be in charge of disaster management.

PG 2 has also emphasised:

> *It is too costly to establish a new body for disaster management. Besides, there would be limitations on those human resources who really have expertise in disaster management. However, we still have a commitment to run the function of the local body for disaster management by embedding it in the Provincial Community Protection Office of Yogyakarta.*

Furthermore, the form of institution suitable for the Yogyakarta province was the secretariat model, which had the duty to provide disaster education by disseminating accurate information about how to handle disasters, while in the event of disaster it would be the Governor's authority to command directly the government body or the office below Governor with the ability to deal with disaster (PG 1).

LN 1 stated that 'the Law on Disaster Management was greatly exaggerated because it determined the level of echelon that must be filled for the local body for disaster management'. Unlike informants from the provincial government, IN 3 stated that it was very important to have a local body for disaster management, since this institution must be ready to face disaster at any time. Mitigation and preparedness needed to be addressed in the absence of disaster by having a contingency plan for disaster management. However, she added that financial constraints remained the reason why a provincial or district government delayed forming this institution. IN 3 also declined to embed the function of this institution in the Provincial Community Protection Office of Yogyakarta because 'this office is only a coordinator, not the implementer of the policy'. This situation has been acknowledged by the Yogyakarta provincial government: many training and education sessions on disaster management had been attended but the result was still unsatisfactory (PG 3).

The research reveals that ambiguity has become a major problem for the Yogyakarta provincial government in forming the Local Body for Disaster Management, even though it is believed that having a clear and established

body responsible for managing a disaster is important, not just for the government but for the community. Nevertheless, it seems that provincial government is yet to accommodate the Law by forming a coordinator office instead of a local institution to fulfil the role of managing disasters in Yogyakarta Province.

6.3.1.3.3. Local Government Level

In the 2006 earthquake, the institution dealing with disaster at the local government level (district/municipal) was *Satlak PB. SatlakPBBantul* was chaired by the Bantul Mayor and was composed of *Satgas* (task forces) of relevant institutions and services, such as health, Search and Rescue (SAR), the army, the police, community youth organisations, the Indonesian Red Cross (PMI) and NGOs. Unfortunately, according to LG 3, *SatlakPB* had no training or experience in disaster simulation and provision of drills for the community. Moreover, *SatlakPB* had not acquired a disaster management system. He added that '*SatlakPB* was capable in handling a small hazard such as a landslide, which affected a small area in Bantul, but it was not ready to manage the emergency condition which distressed a whole area of Bantul'.

After Law No.24/2007 was implemented and mandated that every local government should establish a BPBD, and the requirement for a certain echelon to fill the position of head of this institution, this triggered serious arguments among senior public servants in Bantul who were reluctant to establish a specific institution to manage disasters. They argued that a body or agency was not suitable to manage disasters because it had less authority to compel other bodies or agencies to comply, since the head of these other bodies was of the same echelon as the disaster management body. However, to have the BPBD head with an echelon level equal to that of the Bantul Prime Secretary was also impossible because it was too costly. LG 2 added that:

> *The lesson learnt from previous disasters has taught us that coordination among bodies or agencies in Bantul could only be done because the Mayor and the Prime Secretary have given orders directly to institutions structurally below them. Therefore all the bureaucracy staff obeyed this direction;*

otherwise they would face administrative punishment if they disobeyed. What if the one to give the order has the same authority? I do not think they would follow what the head of BPBD ordered.

LG 3 also supported this:

> *We had better look at the function of the institution rather than its structure. So instead of having a large organisation structure, we prefer to concentrate on the small structures and involve society to manage disaster. For instance, the set up of an early warning system on many beaches in Bantul has involved community participation rather than government officials' participation.*

Regarding the requirement for a certain echelon to fill the position of head of BPBD, LN 1, who was involved in the process of making Law No.24/2007, explained that the argument of the National Legislature on this matter was that the duty of the disaster management body required substantial authority and power, so that a certain echelon level was needed to fill this position. In fact, *SatkorlakPB* and *SatlakPB* were *adhoc* institutions that functioned only in the event of a disaster, whereas BPBD was intended to undertake higher functions which mainly focused on coordination and implementation of disaster management before, during and after disaster. However, in implementation it is acknowledged that a certain echelon is required for the head of BPPD, which means having in effect a duplicated prime secretary position within one local government. Nonetheless, the legislature then created Ministry of Home Affairs Regulation (*Permendagri*) No.46/2008, which stated that the provincial or local government body could establish BPBD and the head of BPBD was *exofficio* the Prime Secretary.

LN 2 criticized the reluctance of the Bantul local government to set up BPBD:

> *It is understandable that local government declines to have BPBD because Government Regulation No.41/2007 has limited the number of government bodies in a district. Besides, the Ministry of Home Affairs was not involved in the making of the Law on Disaster Management, so that all matters related to the setting up of a new body at district level have not been discussed.*

Similarly, CG 3 emphasised that, since not all districts were potentially vulnerable, *Permendagri* No.26/2008 did not make it compulsory for every district to have BPBD. CG 3 stated that 'local government has financial constraints in setting up a new body in a district'. However, this argument was contrary to the view of a national NGO activist, who said that *Permendagri* No.26/2008 weakened Law No.24/2007, since in the Law it is stated that every provincial and local government must have BPBD. Furthermore, another participant from an international NGO said that 'it is important to have BPBD in every district since this body must be responsible for having a contingency plan, particularly before a disaster happens, but at the same time central government should provide detailed financial allocation to help the provincial or district level to set up this body'.

In order to build linkages between what has been mandated by the Law in creating a local body for disaster management and the conditions at local level, the Bantul local government decided to run the functions of this body from the office of the Community Protection Unit:

> *After the 2006 earthquake, we realized that disaster could not be predicted but we must ready to face it. For that reason, we think that we do not have to put this pressure into a new institution. The office of Community Protection Unit is actually a leading institution for handling disasters. We, therefore, must focus on mitigation now, not only for natural disaster but for social disaster as well. Also, for a big disaster, one body or even a local government could not manage it by themselves; there must be involvement from other national or international organisations* (LG 3).

In the office of the Community Protection Unit, the government has created the Centre for Early Warning, which is responsible for delivering information about potential disaster threats to the community. The Centre has maintained contact with the Meteorology and Climatology Bureau in Jakarta to update information on disasters and to conduct simulations of dealing with disaster. LG 5 said that 'Bantul has successfully created a local early warning tool that can detect a tsunami and this tool is well operated by the Centre.'

LG 4 added that the office had run a daily report for observing a disaster even before the earthquake struck Bantul, but since they did not have experience in dealing with disaster, survival efforts remained a problem. After the disaster, the impetus to learn about mitigation rose among local government staff. The Red Cross, Search and Rescue, volunteer disaster corps and staff of the Community Protection Unit, whose focal point was in the Centre for Early Warning, undertook 24-hour supervision. One community leader added that this office had launched a hotline number that could be contacted easily for information about a disaster or any disaster in a particular area in Bantul.

However, LN 4 stated that embedding the functions of BPBD in the office of the Community Protection Unit and the Centre for Early Warning was ineffective because of inadequate human resources that those offices had in terms of knowledge and skill. Additionally, CG 3 pointed out that the need for provincial and local government to have BPBD was important because it would connect information from BNPB to BPBD. BNPB has a technology information centre, so that ideally the information from or to provincial and district levels should be connected to the central government. If there were no local disaster management body, this would interrupt the information flow. Finally, it really depends on the willingness of the governor or mayor to support the establishment of this body as mandated by the Law in order to protect the community.

The findings of this research revealed an ambiguous attitude in local government about forming the Local Body for Disaster Management similar to the provincial government. However, the researcher's observation at the office of the Community Protection Unit has shown that the personnel have more knowledge about disaster management, an early warning system is available at the office to monitor disaster from all sub-districts in Bantul and some equipment for survival efforts was available at the office to make survival implementation easier and faster.

6.4. Community Involvement

The importance of community involvement in any stage of disaster management has underpinned the Bantul local government implementation of programs, particularly in the recovery stage. This section discusses community participation in Bantul's disaster response and recovery management, which was based on cultural behaviour and local wisdom.

6.4.1. Community Participation

Community participation is not a new concept in the Bantul local government. Since 2000, the government has made great efforts to involve the community in Bantul's development. For the Bantul local government, community participation includes the willingness of the public to express and provide input to the government and to get involved in local government programs; local government, in turn, uses all these inputs in considering how to enhance the quality of public services. In one way to enhance involvement with the community, the Bantul Mayor obliged all office heads to respond to invitations from the community and the community could report to the Mayor any officer who did not attend in response to such an invitation. This approach aimed to change the mindset of the bureaucracy: their duty was to serve the people not to be served by them (LG 1). In terms of disaster response and recovery, the interview with the Bantul Mayor revealed that the government acknowledged the power of public participation in the smooth running of the disaster response and recovery program.

Public participation in the response and recovery phases in Bantul not only included local communities but also multiple stakeholders such as national and international NGOs, emergency services, religious groups, corporate bodies, associations, voluntary organisations, social activists, political parties and universities. However, LG 1 added that it is local communities who should participate in and help develop disaster management efforts. This was the key to the success of the disaster recovery program in Bantul.

In the 2006 earthquake, public participation was started by local people who were unaffected or little affected. This group then attempted to rescue those affected by using available resources. Following their efforts, local government, local NGOs and international NGOs set up an information desk at the Mayor's office to organize coordination of health assistance, logistics and equipment needed. The community itself participated in deciding what assistance they most needed, as a community leader (CL 1) said:

> *People here in Bantul know what program best suits local needs. They do their own assessment and try to have a program that relates to the ability of the local community. Many local NGOs which came up with their own initiative failed because the community did not have the ability to undertake the program.*

In terms of the high level of public participation, LN 6 noted that the solidarity of people in Bantul was the main reason for success in the response and recovery program that local government implemented. LN 1 also added that according to the UN, public participation in Bantul was the highest among the regencies and cities in Indonesia. The reason behind government reliance on public participation in the disaster recovery program was that Bantul has good social capital, *gotong royong,* which means cooperation within and between social networks. This social capital, along with cultural influence, has strongly encouraged the community to become involved in disaster recovery programs.

In the recovery stage, this social capital is very important, since the local community knows best the social characteristics and the needs of their surroundings in fully controlling housing development patterns in their own areas. For instance, as LG 3 stated, 'the community prefer to build their houses with their own design and materials. If a contractor builds their houses, the community cannot decide what they want for their houses'. With regard to this situation, the local government has recently emphasised that houses built must meet requirements for earthquake-resistant houses. Solidarity also emerged among disaster victims in their assistance to one another rebuilding their houses. After one house was built, it was then the turn of another person's house (LG 9). The high level of public participation in the recovery phase

minimized potential conflict in the community and it hastened recovery in Bantul.

6.4.2. Cultural Behaviour

The characteristics of people in Yogyakarta and Bantul, who mostly lived in rural areas, included holding in high regard values of cooperation within and between their social networks: this was *gotong royong*. This cultural behaviour, as well as solidarity and tolerance, constituted important social capital in these areas, not only in the house reconstruction program but also in the disaster response phase. This was made clear in an interview with LG 2, who stated that many community groups urged that disaster assistance from national or international organisations should not be a burden on the government of Indonesia; LG 2 added that, 'the Bantul local government was very selective in accepting assistance from NGOs – otherwise all such assistance would only lead to community reliance on it. The government ensured that all assistance was temporary and real efforts should come from the community themselves'.

In terms of the house recovery process, cultural behaviour is also manifested in the way the government identified destroyed houses according to three criteria: less damaged, moderately damaged and totally destroyed. The government used the cultural approach also through having a professional assessor from the local university analyse the destruction of houses. LG 4 said:

> *We understand that it is not easy for the community to understand that their house only suffered minor damaged, so they only deserve Rp.1 million from government financial assistance. Other houses which may look to have suffered minor damage may actually fall under major damaged criteria because of structural failure and have received Rp.15 million from the government. We encouraged the community not to depend on government assistance, not to worsen our condition, even though we suffered, but because we must strengthen our social capital in the community. With any amount of financial assistance from government, the community proved that they can rebuild their houses with dignity – financial assistance is only seen as a stimulus package for rebuilding houses.*

In terms of encouraging the spirit of the Bantul community, LG 2 opined that 'the Bantul people are not some kind of fragile community; rather the Bantul people are strong and always hardworking in being able to achieve their goals'. From that point on, the community commenced the housing recovery program. New housing built was valued at around Rp.35 million according to the Department of Public Works. This was because of the stimulus of Rp.15 million from government financial assistance and the strong social capital of the Bantul community. LG 3 explained the contribution of social capital in Bantul's disaster recovery program:

> To build a house, the community works voluntarily and very often they provide all the necessary materials, such as roof tiles or doors from their houses, so one whose turn it is to rebuild their house does not have to buy new materials. By this means, the time taken in building one house is less than it would be in having a housing constructor build it. Moreover, many houses in Bantul have changed dramatically – they have a better outlook and are earthquake-resistant. So many people view the disaster as a blessing in disguise.

However, there were also instances where communities were refused aid or were dishonest in their claims for government financial assistance. Most such cases, according to a community leader, were related to illegal levies that communities paid to heads of neighbourhood groups or deliberate decisions of communities to include other family members not living in the area. Social sanctions were imposed on such people but the number of cases was very small.

IN 6 argued that cultural behaviour in Bantul was different from any other areas in Indonesia that experienced disaster:

> It was amazing to see how the community adopted a positive attitude in facing this devastating condition. Indeed, they mostly helped rescuers. It was raining after international rescuers erected tents and water was just about to the level of our tents. Then the community helped us build embankments so the water did not come through our tents. They also prepared some traditional foods for us, and when we told the people that they should be the ones that needed

help, the community replied that the rescuers were here to help us, so it would be appropriate if we treated you well, no matter what conditions we face.

Furthermore, PG 3 explained that in Javanese culture it is common to show appreciation to guests who visit our houses, regardless of the severe conditions faced. He added that whenever the governor and the mayor visited the community in their collapsed houses, the community always gave them anything that they had. It shows appreciation and respect for leaders. Strong relations and kinship in the community were also shown from attitudes about not making someone else's situation difficult. PG 1 explained that there were many cases where patients did not want to be removed from the nearest hospital because it would make difficulties for their family in visiting them. These values helped the community to raise their spirits.

6.4.3. Local Wisdom

This subsection focuses on the Local Wisdom-Based Disaster Recovery in Bantul.Respect for local culture and local wisdom played an important role in the process disaster recovery management. Local culture refers to the value of *gotongroyong* or cooperation within and between social networks, while local wisdom is recognized as values and practices that the Bantul local community has adopted. These values emerged as a sense of collectivism, solidarity and tolerance that was embedded in the daily life of the Bantul community.

Understanding the strong local culture that the Bantul community has, the local government then set up rehabilitation and reconstruction programs and involved the community in such programs. This concept gave the community the opportunity to decide on the type of rehabilitation that matched local needs. The involvement of the community appeared at all levels – district, sub-district and village. Within a maximum Rp.15 million from government financial assistance, the community was allowed to plan, decide on and rebuild houses with their own resources after they had set up the Self-Reliant Housing Community Group. The government admitted that Rp.15 million could seem high for the poor but might also appear low for the rich in rebuilding houses. Therefore the local government created a mechanism which was fair for everybody. The

government assistance fund would be given to the community gradually. They came up with an idea of *Bagidil* instead of *Bagita*. *Bagidil* is a fair distribution method in which the government's housing assistance is distributed based on a priority list of eligible recipients; *Bagita* is aid distribution that is distributed evenly among eligible recipients.

This fair distribution method avoided potential conflict of interest in the community. It required the establishment of the Self-Reliant Housing Community Group for the disbursement of government fund assistance. Each group consisted of eight to fifteen families and it needed to open a bank account through which the Direct Housing Assistance would be channelled. In order to use the fund, at least three group members must sign off on transactions (National Technical Team, 2007). By joining this community group, many communities were advantaged in terms of funds disbursement procedures and all the technical details of earthquake-resistant house construction (CL 2).

Local wisdom is seen in the approach of the Self-reliant Housing Community Group decisions in sharing funds. The group members who were much poorer or older than others had first priority in getting government fund assistance, while other group members could wait for the second payment. Even though there were doubts in the community that the second round of government fund assistance would be available soon, the Bantul Mayor convinced them that if the assistance were not available, he would quit as mayor. In fact, many communities trusted their leader and this made it possible to apply the *Bagidil* mechanism. The re-establishment of housing was generally done in a shared and collective way. The Rp.15 million housing rehabilitation assistance was a sufficient allocation for building foundations, structural work and roofing, while other components such as walls, windows and doors, and the labour required, were the responsibility of the community to provide.

Local government also provided technical assistance in obtaining rehabilitation and reconstruction funds. The function of the technical assistance team was to help the community prepare house reconstruction plans, technical details, budget estimates and house reconstruction permits. The technical assistance team consisted of one senior facilitator, one social facilitator and one technical

facilitator to monitor the housing development process; they worked with the Self-Reliant Housing Community Group in order to build 3x6 metre earthquake-resistant houses. In addition to this community group, the Bantul local government also set up a discussion forum where people could provide input to the rehabilitation and reconstruction process; this was the Bantul Revival Forum (LG1).

However, in practice there were also a few cases where government assistance funds were being siphoned off through a village administration levy. This was admitted by LG 2 who stated that, 'although an administration levy was found, many in the community usually gave the levy voluntarily, since they realize that the head of the village has been very helpful. If the head of village proved to behave badly, the community usually solved this through a kinship approach.'

This research reveals that, local wisdom and local culture of the Bantul community which supported fair aid distribution created a strong spirit for the community in rebuilding their lives and houses.

6.5. Networking among Stakeholders

This section deals with networking among stakeholders involved in response and recovery disaster management in Bantul. The stakeholders included donor agencies, NGOs, private sector businesses and universities. All played an important role, as well as creating a significant force in the efforts to deal with the emergency and post-disaster activities in earthquake areas. Further explanation discusses networking in terms of relations between local government to NGOs, communities to NGOs and NGOs with other NGOs.

6.5.1. Local Government and NGOs

Networking between local government and NGOs emerged particularly in the response stage. The Bantul local government admitted that they could not do much in the emergency so the Bantul Mayor asked national and international NGOs to provide assistance directly for disaster survivors. The Prime Secretary of Bantul has said that local government first made contact with UNOCHA (the

United Nations Office for the Coordination of Humanitarian Affairs). As the arm of the UN Secretariat responsible for bringing together humanitarian actors to ensure coherent responses to emergencies, UNOCHA is responsible for mobilising and coordinating effective and principled humanitarian action, in partnership with national and international actors, in order to alleviate human suffering in disasters and emergencies. In regard to the Bantul earthquake, according to the Bantul Prime Secretary, UNOCHA supported the Bantul local government by arranging clusters[16] for many international NGOs and funding agencies, under the United Nations, to provide emergency relief supplies for the community in Bantul. These clusters were intended to ensure better coordination among humanitarian agencies so that emergency relief efforts would not overlap.

IN 1 said that the role of international funding agencies and international NGOs was to provide support to local government and *Bappenas* in assessing damage and the economic costs of planning and financing during the reconstruction period. A well-developed networking structure was in place because the earthquake did not destroy the public service system, although it did affect it for several days. LN 3 stated that the system was still running well and coordination among key actors worked effectively. LN 3 added that national and local NGOs had to register with the *Satkorlak PB* and *Satlak PB* so that they could be involved with the daily, weekly and monthly meetings between NGOs and the bureaucracy. Local government had also welcomed NGO activity in the response and recovery efforts.

CG 3 said that the reason behind NGOs registering with local government was to get information about which organisations were involved in the emergency period, since the government avoided using organisations with different purposes. PG 1 added that 'there were several trucks which came along to the area without bringing relief assistance; indeed, they just loaded their trucks with relief assistance stuff and even distributed political party programmes. By

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[16] UN Humanitarian Aid Clusters: Shelter Cluster, Education Cluster, Sanitation Cluster, Protection Cluster, emergency Response Cluster, Agriculture Cluster, Health Cluster, Food Cluster and Telecommunication Cluster.

centralising support assistance from many organisations in a one-stop service system, local government made sure that all donations would be properly targeted to the community'. LG 2 revealed that there was often a dispute between NGOs in helping the community. NGOs sometimes built a school in a strategic area in order to create a good image for their organisation among stakeholders; they rarely undertook redevelopment of school buildings in remote areas. In this case, the function of government was to try to urge NGOs to focus on these areas. LG 3 emphasised that

> *National, local or international NGOs could help us in many ways during and after 2006 earthquake, but they must follow our regulations. People in Bantul greatly trust the government and we did not expect programs from those organisations that could harm local culture. It is the responsibility of the government to protect its people. The government is the actor which understands better the community's needs. Therefore NGOs should also respect the government and the community.*

Furthermore, the Army played an important role in the distribution of relief assistance to ensure that aid was evenly distributed. Together with Navy and SAR teams, the army set up emergency hospitals for survivors in order to conduct surgery on seriously injured victims (LN 5). Local government gained advantage from the cluster system that international NGOs adopted so that relief assistance would not overlap. Under the cluster system, all agencies or organisations under the United Nations divided their actions related to public health and sanitation, emergency shelter and housing. National or local NGOs maintained networking with other NGOs by using the links they had in order to meet community necessity in an emergency.

Maintaining coordination and networking between NGOs and local government was not an easy task. LG 2 said that

> *Sometimes NGOs came to Bantul with their own programs. We were just afraid that such programs would harm our society. We really do not want the community to be troubled or even depend so much on relief assistance. Local government also has a program for the community and we*

> *expected that NGOs could work cooperatively under our programs.*

LG 3 said that networking between NGOs and local government was not only focused on the response and recovery stage. After the 2006 earthquake, networking was included in the mitigation and preparedness stage. Activities that involve local government and NGOs are tsunami drills, early warning preparation, evacuation routes establishment and disaster awareness training for local government officials.

However, criticism of inadequate coordination among bodies in the Bantul local government has arisen among NGO activists. LN 1 argued that there was a gap in terms of inter-agency networking where each agency had different superior authorities. Every agency was compelled to run its own program instead of pursuing common goals. Although commitment was high in helping the community, there was a lack of coordination between agencies. LN 2 said that, during the emergency period, many NGOs could deliver the assistance for the public directly, but under the house rehabilitation program there was some misunderstanding, particularly in the data on destroyed houses. In many cases, both international and national NGOs should conduct further assessments, since data provided by local government needed to be cross-checked. LN 4 pointed out that data owned by the government, such as the population profile, was most likely out-of-date. This in turn caused delays in the delivery of aid to disaster victims.

IN 6 said that 'the focus of local government in the response and recovery period tended to ignore livelihood programs which were very important for the community. So many international NGOs and funding agencies came to Bantul to fill this gap. Therefore funding and humanitarian aid agencies were not only involved in providing monetary support but also products and services. Humanitarian aid agencies supported the local government not only during the response phase but also in the recovery phase – the livelihood sustainability program. The programmes covered activities such as repairing fish ponds which contained up to 15,000 hatchlings. By repairing these, fish farmers could harvest fish every four months for sale to markets outside the Bantul Regency.

The livelihood program also repaired an irrigation canal that sustained serious damage from the earthquake and supported almost 300 rice farmers and provided temporary income opportunities for local community. Humanitarian aid agencies coordinated with the Indonesian Chamber of Commerce in providing construction training for hundreds of people to acquire skills to rebuild earthquake-resistant house. Humanitarian aid agencies provided fish nets and thousands of bamboo sticks delivered to villages to rebuild fish pens. Organic farming training, ceramics design workshops which introduced new design techniques using rattan and sea grass, introduction of technique of rice intensification, integrated pest management programs, introduction of new techniques for transplanting rice seedlings, and provision of rope weaving tools which are important source of income for hundreds of women in villages are among the livelihood programmes conducted by funding and humanitarian aid agencies.

However, in many cases, these organisations were most likely to run the program without coordination with other organisations. This might be viewed as a failure of government in maintaining the program after the disaster. CG 2 commented on the assumptions of NGOs regarding the lack of coordination by the Bantul local government in the response period:

> *NGOs have always assumed that the government must be slow in responding to disasters, so this has triggered NGO action to overcome emergencies without the need for coordination with government. Even worse, the image that the bureaucracy was corrupt has made them distrust government. But having no coordination with government is just another disaster. This is because many NGOs are deceitful. They accept money from community donations but do not distribute it to victims. Therefore the national government made a regulation that gives provincial or local government the authority to accept or reject NGOs' involvement at every stage of disaster management.*

CG 3 added that one of the duties of BNPB is creating Profile and Directory of Disaster Risk Reduction Organisations in Indonesia that cover government institutions/agencies, international community, civil society organisations, private sectors, the media and academic societies/universities, all of which play an important role in disaster management in Indonesia. Through this Directory,

the actual presence of organisations can be made accountable to the public.

The case studies drew upon emerging experience, capturing practice of the Bantul local government in managing the earthquake's effects in order to fill the capability gap that could not be achieved by local government The findings of this study have highlighted the importance of the partnership between the Bantul local government and NGO or humanitarian aid agencies as a critical ingredient for success for managing a disaster.

6.5.2. The Community and NGOs

Networking between NGOs and the community has emerged since the earthquake devastated Bantul and these efforts have continued after completion of the recovery stage. During the emergency period, medical support was the first effort that NGOs could undertake. IN 3 said that relief support was easily distributed to victims because NGOs had already prepared infrastructure in anticipating a Merapi Mountain incident, since it was at a critical level for impending eruption. Another informant from Search and Rescue said that the SAR committee was assigned ten teams to reach the centre of Bantul, but they could not reach the area because the community en route to help victims in the outskirts of Bantul central stopped the teams. LN 3 further explained that networking with the community was well developed since the community were very useful and respectful towards relief providers who came to help them. The informant told how, when NGO staff came to help people, the community itself were already removing victims from underneath destroyed houses, and the NGO people only had to offer instructions on how to proceed safely. LN 5 emphasised that 'We are not heroes who help the people of Bantul; rather the Bantul people itself is the real hero'.

Since government and the community mainly undertook the house rehabilitation program, networking between NGOs and the community did not have much to add. However, NGOs were concerned especially in mitigation and preparedness. In these stages, international, national and local NGOs

developed many programs to deal with disaster risk reduction. A community leader said that

> *There were many NGOs who assisted the people in 17 villages in some subdistricts in Bantul in conducting assessments of vulnerable areas in villages. The interesting thing was that it was the community themselves who decided about potential risks that might happen in their areas and the way to solve these. NGOs also accompanied and educated the community in forming the Forum on Disaster Risk Reduction (DRR), as well as organising the DRR campaign in primary, secondary and tertiary schools in Bantul. What's more, NGOs transferred their knowledge to the community about waste and drainage management, which would reduce the risk of hazards in future, and we also learned how to make traditional medicines from the leaves that were commonly found in our areas. It was really helpful for the community.* (CL 3)

CL 4 added that NGOs actively conducted disaster preparedness programs, such as creating evacuation signs in every hamlet in Bantul and providing audio speakers as a tool to deliver information clearly for the whole community.

However, many community leaders criticized the efforts of NGOs as being mainly focused on physical activities; rarely did NGOs deal with physiological or mental programs. Leaders argued that many people in Bantul were suffering from trauma after the earthquake, not only because they lost their houses or loved ones but also because they became agitated when a tremor was caused by passing cars (CL 7). One community leader viewed negatively NGOs that refused to deal with mental illness because 'this kind of program is not prestigious and eye-catching for the image of NGOs' (CL 4).

The resulting findings of this research showed that the community and NGOs could work together in the post-disaster recovery program in order to build valuable networks to improve disaster management at the local government level.

6.5.3. International, National and Local NGOs

In responding to the 2006 earthquake in Bantul, international NGOs had well-prepared coordination, particularly for those agencies or organisations under the UN cluster system. Regarding the cluster system, IN 3 stated that, learning from experience in managing disaster after the Asian tsunami in 2004, the UN had developed a clustering system which aimed to avoid overlap in relief efforts by organisations or agencies under the UN's auspices. Although this cluster system is only active during an emergency, during times of non-disaster these agencies develop contingency plans for disaster risk reduction programs.

Furthermore, IN 7 said, coordination was maintained in order to divide the roles and tasks that every agency could adopt. Spot checks and in-depth assessments after the earthquake struck were a result of coordination among many agencies, so that each agency could cover the program on shelter, public care, water and sanitation, food and nutrition and livelihood clusters. IN 5 added that coordination among organisations or agencies under the UN also produced a map of required aid for every sub-district so that the delivery of aid would not be misplaced.

However, coordination among national and local NGOs was not as well-established as among international NGOs. LN 2 admitted this:

> *It was a time of chaos when we did not have good idea which area was worst affected by the quake. Unfortunately, the impact was overwhelming. Speaking frankly, we just sent anything that our organisation had, without planning or coordination with other NGOs. Even worse, the telecommunications system was off for several days and we did not have a radio network to connect with other NGOs. So when all NGOs met in some subdistricts, coordination occurred then. It was very spontaneous.*

Conversely, this study reveals that, in terms of mobilizing relief, national and local NGOs were more active in sending tents, foods and medicine to refugee locations compared to local government bodies. This assistance provided by NGOs was faster in reaching victims than government assistance, although

distribution of aid by NGOs was also uneven because NGOs did not have a network that could reach most of the remote areas.

Along with many other actors, international, national and local NGOs, the Bantul local government can help meet its common goal which is saving lives and protecting the livelihoods of the vulnerable. The findings of this study reveal that, although many barriers remain on how networks should be well coordinated in the future, it describes how building capacity and partnerships between local government and other humanitarian aid agencies can lead to improved disaster management – at least in Bantul's case.

6.6. Conclusion

This chapter has presented the findings of the qualitative data and secondary data gathered through in-depth interviews with relevant key informants in order to answer two of the research questions of this study. Those research questions are how relations between the central, the Yogyakarta provincial government and the Bantul local government affect the management of a disaster event in Indonesia and how the Bantul local government and social networks interact in the different stages of disaster management.

The findings of the interviews highlight how the central government of Indonesia, the Yogyakarta provincial government and the Bantul local local government played an important role in post-disaster response and recovery programs in Bantul. The different levels of access to power, knowledge, expertise and experience of these three levels of government determined how they each coped with and recovered from a disaster. Furthermore, the Bantul local government acknowledged the enormous effort and investment by central and provincial government and national and international NGOs in the field of disaster management. In close partnership with other level governments and many other international and national non-governmental actors, the Bantul local government responded to this increasing challenge by completing response and recovery efforts with preparedness and prevention measures.

The findings of this research also revealed that the community's active involvement in disaster management means that they are closely involved in

effective post-disaster management. Communities are placed at the forefront in recovery disaster management and they have demonstrated great ability in mobilizing people to recover from the adverse affects of the earthquake. Local culture and local wisdom of the Bantul community have proven essential in disaster recovery from the 2006 Bantul earthquake. However, as illustrated throughout the case presented in this study, the findings explore a range of different conflicts of interests faced by central, provincial, local government and the community, particularly in the stage of disaster recovery. It also identifies some conflicts of interest that each level of government face associated with the enactment of Law No.24/2007 on Disaster Management.

The next chapter discusses the descriptive data analysis through the quantitative data gathered from a community leader survey in order to support the findings on the qualitative data and to answer the research questions.

Chapter 7. Descriptive Data Analysis

7.1. Introduction

This chapter presents the analysis of the quantitative data gathered through the community leaders' survey. The data discussed here were collected from three districts, Jetis, Bambanglipuro and Pleret. In terms of the number of human fatalities and damage, impacts were greatest in these areas. The questionnaire was sent to 82 community leaders who experienced the effects of the earthquake directly in 12 villages in the three selected districts. The criteria for 'community leader' in this survey are, as explained in chapter 3, those who became community leaders or who hold leadership positions in the designated area, have a good knowledge of the 2006 earthquake and who actively participated in the phases of response and recovery.

The aim of this chapter is to conduct triangulation by using quantitative data and qualitative data to investigate the research questions. By combining qualitative and quantitative data, the research findings will be more useful because the in-depth interviews and survey results provide rich data. The survey resulted in 75 valid responses, constituting a 91.5% response rate.

This chapter consists of five major sections.

The first section discusses the personal profiles of respondents in the survey. The second deals with the experience of respondents in each phase of disaster management (that is, the mitigation, preparedness, response and recovery phases). This section presents the respondents' experience before and after the earthquake struck, particularly in the mitigation and preparedness phases. The findings present the response to the research question on the extent to which capabilities existed in Bantul before, during and after the 2006 earthquake. The third section explores the respondents' opinion about local government capability and requirements to manage a natural disaster. These research findings support the answer to the research questions on what disaster management capabilities are required for Bantul's local government and what gaps exist. The fourth section focuses on the respondents' view of the network

process that occurred during and after the disaster. This result provides the answer on how the Bantul local government and social networks interacted in managing the disaster. The last section summarises the chapter.

7.2. Demographic Description

This section describes the socio-economic of Bambanglipuro, Jetis and Pleret and also presents the respondents' profiles in the three surveyed districts. It seeks to gain a complete picture of the areas researched.

7.2.1. Socio-Economic Background

With regard to the socio-economic characteristics of the Bambanglipuro, Jetis and Pleret districts, variations emerge, as the data in Table 7.1 show.

Table 7.1. The Socio-Economic Background of Selected Districts 2003-2006

	Bambanglipuro	Jetis	Pleret
Education			
Number of Schools			
State	20	27	21
Private	12	6	6
Total	**32**	**33**	**27**
Number of Pupils			
State	3549	6122	5607
Private	1588	647	592
Total	**5137**	**6769**	**6199**
Number of Teachers			
State	427	601	460
Private	220	74	74
Total	**647**	**675**	**534**
Health			
Number of Health Facilities and Personnel			
Hospitals	1	1	1
Public Health Centres	4	5	5
Doctors	5	5	2
Dentists	1	3	1
Nurses	6	9	7
Midwives	7	9	8
Social			
Area of the Region (Km^2)	22.70	24.47	22.97
Families	11,084	14,907	12,437
Population	43,445	50,358	34,112
Population Density per Km^2	1,914	2,058	1,485
Family Size	3.92	3.38	2.74

Source: Bantul in Figures 2008

In education, schools in Bambanglipuro numbered 32, there were 33 in Jetis but only 27 in Pleret. However, the total number of students in Bambanglipuro was

less than in the other two districts. There were only around 5000 pupils in Bambanglipuro, attending 32 schools, while more than 6000 students enrolled in the Jetis and Pleret districts. Even though the number of students in Bambanglipuro was not as high as in Pleret, the number of teachers was greater: the difference was more than 100 teachers in both districts (647 teachers in Bambanglipuro and 534 teachers in Pleret).

In health, the three districts have only one hospital each and four or five public health centres. Only two doctors were found in Pleret while other districts have five. Jetis has the most dentists, nurses and midwives. Overall, Jetis has relatively good health infrastructure, ahead of Bambanglipuro and Pleret. This was in the context that Jetis has an area of 24.47 km^2, and the number of families was almost 15,000 in the years 2003-2006, and Jetis has the highest population density with two people per km^2, while Bambanglipuro and Pleret have only one person per km^2. The smallest family size was in Pleret, at 2.74 people per family.

7.2.2. Respondents' Profiles

Between February and May 2009 a questionnaire was administered to 82 community leaders in Bambanglipuro, Jetis and Pleret. Respondents were chosen purposively from every village in each district based on the organisation that they were involved with and their roles in the community. Twenty-six questionnaires were distributed in Jetis, covering the villages of Patalan, Canden, Sumber Agung and Trimulyo. Thirty questionnaires were distributed in the villages of Sidomulyo, Mulyodadi and Sumber Mulyo in Bambanglipuro district, and 26 questionnaires were distributed in Wonokromo, Pleret, Segoroyoso, Bawuran, and Wonolelo villages in the Pleret district. The overall response rate of this survey was categorised as high at 91.5%. The researcher maintained initial contact with the respondents prior to sending out the questionnaire, provided a clear and simple questionnaire design that used plain language; she collected the responses personally. The questionnaire contained items on respondent characteristics such as gender, age, level of education, occupation and length of time living in the area. Details of the characteristics are presented in Table 7.2.

Table 7.2. Profile of Community Leaders Surveyed

Respondent Characteristics	District Response (Percentage)		
	Bambanglipuro	Jetis	Pleret
Gender			
• Male	84	80	76
• Female	16	20	24
Age			
• 20-29 years	0	12	12
• 30-39 years	20	20	16
• 40-49 years	40	24	40
• Above 50 years	40	44	32
Level of Education			
• Junior High School	0	12	16
• Senior High School	24	56	44
• College degree	12	12	0
• Undergraduate	56	20	36
• Postgraduate	8	0	4
Main Occupation			
• Agriculture	1.3	4	8
• Business	1.3	2.7	6.7
• Government Servant	13.3	8	30.7
• Private Sector Employer	2.7	5.3	12
• Others	13.3	13.3	36.7
Length of Residence in Area			
• Less than 10 years	4	4	0
• More than 10 years	96	96	100

Source: Primary Data, 2009

From the gender perspective, the highest response rate received from Bambanglipuro (84%) was from males above 40 years of age. Females from Pleret accounted for 24% of responses. In Jetis, 44% of those aged over 50 years responded, which was the highest in this survey. However, overall both men and women in the category of 40 years and above were the majority of respondents and this was a similar pattern in the three districts. Conversely, in terms of age groups, respondents aged below 29 were relatively low and indeed there was no response in Bambanglipuro for this age category.

There is variation with regard to the education level of the respondents. In Bambanglipuro, more than 50% of respondents had obtained an undergraduate education while in Jetis and Pleret most had graduated from senior high school. Even though figures were less than 10%, there were people with postgraduate qualifications in both Bambanglipuro and Pleret.

In general, the main occupation of respondents was government officers; only a small percentage worked in the agriculture sector. As regards the length of respondents' residence in their districts for more than 10 years, of respondents in Pleret 100% had resided in the area for more than a decade, so that they could demonstrate capability of understanding and interpreting development in their area, particularly when related to disaster activities.

7.3. Local Government Managing Disaster from Community Leaders' Perspective

This section deals with the responses from the survey for answering the research question on what capabilities existed in Bantul's local government for managing a disaster. Respondents were asked to rate Bantul local government performance before, during and after earthquake happened. Responses to each question were assessed using a Likert scale to evaluate the performance of Bantul local government at the mitigation, preparedness, response and recovery stages. As a collective term, disaster management involves all aspects of planning, coordinating and mobilizing resources in both pre-disaster and post-disaster activities (Kelly, 1995; Shaluf, 2008)..

The following discussion explores each stage of disaster management that Bantul's local government has undertaken before and after the 2006 earthquake.

7.3.1. The Mitigation Stage

King (2007) defines mitigation as the effort taken in advance to reduce loss of life and property by lessening the impact of disaster on society and environment. This is achieved through risk analysis, which provides a foundation for local government in implementing policy that is aimed at reducing risk. In any attempt to control nature and to reduce the risk, it is the role of local government to identify vulnerable people and areas within districts and at the same time to ensure that all members of the community are aware of the potential effects of natural disaster.

In this survey, for the mitigation phase it asks whether any local government or community leader sought to identify disaster-prone areas in Bantul before 2006 and after the earthquake struck. There is also a question asking about the availability of disaster awareness put forward by local government within two different time frames. The findings of the survey classify the respondents' perception into three categories: low, medium and extensive[17]. This is to highlight the issue found in this research.
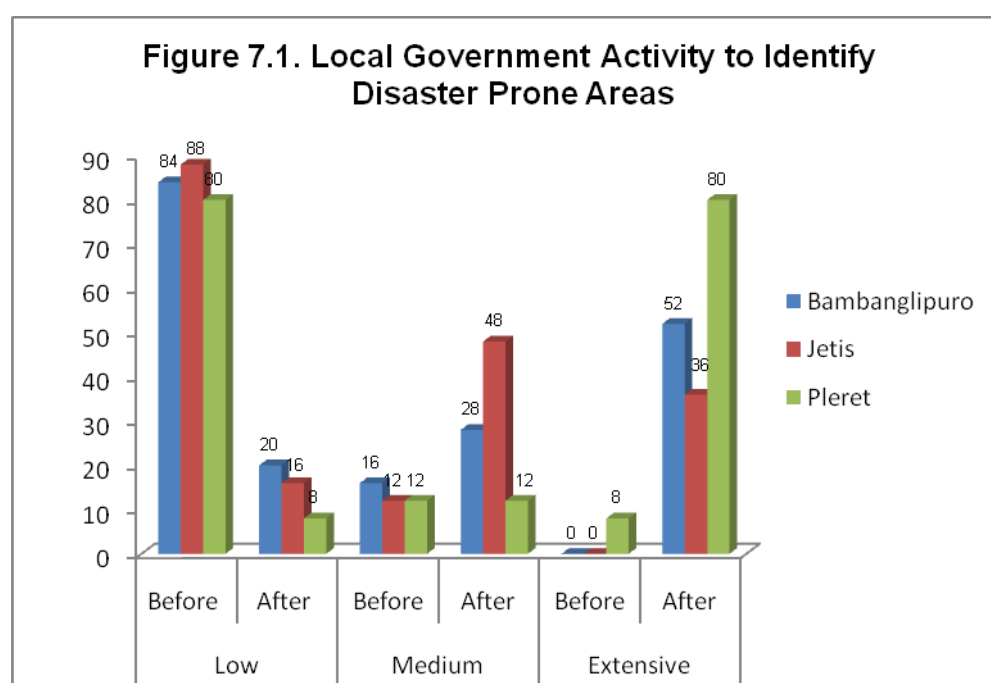
Source: Survey Data, 2009

Figure 7.1 shows that there were very low numbers of activities conducted by local government to identify disaster-prone areas in Bambanglipuro, Jetis and Pleret. Most respondents in the three districts indeed claimed that almost no action was taken to detect risk areas. However, after the 2006 earthquake actions were extensively taken by local government to identify vulnerable areas. In Pleret, 80% of the community leaders stated that action was frequently organized by local government after the 2006 earthquake.

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[17]'Low' is the addition of percentages in the category of 'none' and 'little', 'medium' is the total percentage in the 'medium' category,'extensive' is the total percentage in the 'extensive' and 'very extensive' categories (see Appendix).

A Kruskal-Wallis Test[18] revealed a statistically significant difference in terms of local government activity to identify disaster-prone areas after the 2006 earthquake across the three district groups (Bambanglipuro, n = 25; Jetis, n = 25; Pleret, n = 25), χ^2 (2, n = 75) = 7.81, p = 0.020. Jetis recorded a lower median score (Md = 3.00) than the other two district groups, which both recorded median values of 4.00. The mean rank of the three districts (Bambanglipuro = 37.36; Jetis = 30.34; Pleret = 46.30) has also shown that, according to the perception of respondents, there is a difference in the level of local government activity to identify-disaster prone areas after 2006 earthquake.

Pleret district has the highest rank because a program on a community settlement plan has been run in this district in order to identify vulnerable areas. Local government, with the support of funding agency such as Java Reconstruction Fund (JRF), helped communities in Pleret in identifying potential disasters that could affect their villages, reviewing old village development plans made before the earthquake, and prioritizing community needs in building safer communities.

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[18] This test evaluates the significance of the difference between three or more independent groups on the basis of mean ranks The Kruskal-Wallis test, if statistically significant, simply displays the groups which differ in terms of average ranks as an indication that, among the set of groups being compared, there is at least one significant difference.

Figure 7.2. Community Group Activity to Identify Disaster Prone Areas
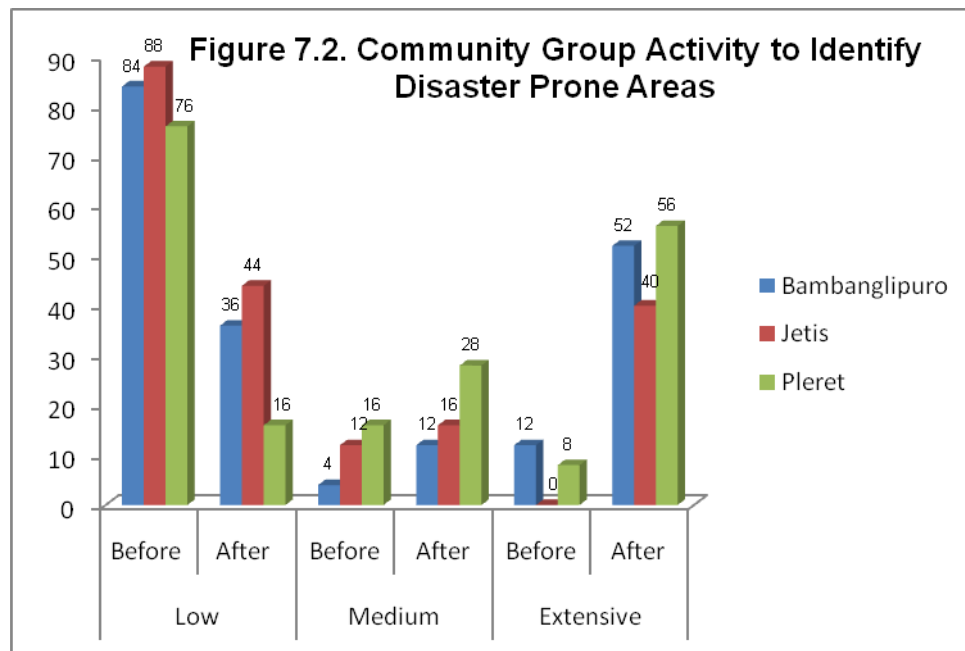
Source: Survey Data, 2009

The picture of local government action in identifying vulnerable areas before and after the earthquake shows the same pattern as the community group's actions. Before the earthquake hit Bantul in 2006, there was limited action undertaken to identify vulnerable areas (Figure 7.2). The dominant pattern in the three districts observed was that very low action was undertaken, with responses of 84% in Bambanglipuro, 88% in Jetis and 76% in Pleret, which indicates very low mitigation attempts taken in advance to limit the severe impact of natural disaster. However, efforts for mitigation did commence extensively after 2006 earthquake. More than 50% of respondents in Bambanglipuro and Pleret reported that the community often ran activities to observe disaster-prone areas in Bantul, although the number of respondents in Jetis with that view was only 40%.

Figure 7.3. Disaster Awareness Availability Conducted by Local Government
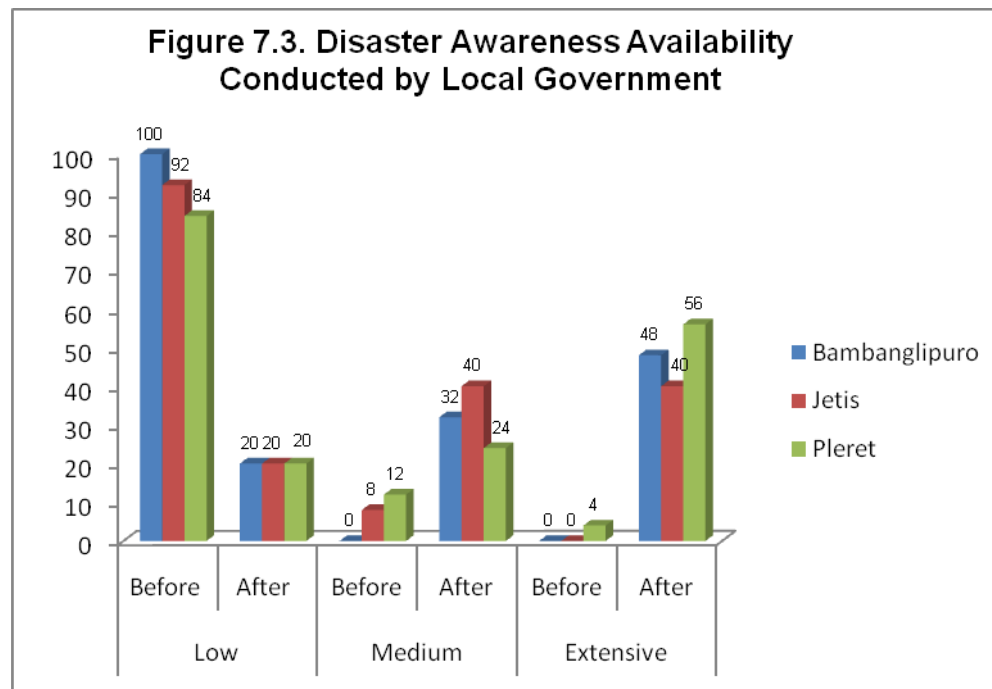
Source: Survey Data, 2009

Mitigation activity involves a reduction in the likelihood of disaster impact without requiring the use of engineered structures. This includes the availability of community awareness and education programs. The findings show that there was low disaster awareness in observed districts before 2006. Figure 7.3 shows 100% of respondents in Bambanglipuro, 92% in Jetis and 84% in Pleret in support of this view. Disaster awareness availability undertaken by local government commenced after the disaster in 2006. Less than half of respondents (32% in Bambanglipuro, 40% in Jetis and 24% in Pleret) stated that medium activities have been conducted, but more than 40% of the respondents acknowledged that the activity with regard to disaster awareness was implemented more extensively by local government, particularly in Pleret, where 56% reported this.

7.3.2. The Preparedness Stage

In the disaster management cycle, preparedness is the stage after mitigation. This is the stage where all the plans and efforts are tested, exercised, equipped, evaluated and communicated to the community in order to ensure effective coordination during an emergency situation. Preparedness is one of the key foundations in disaster management because it emphasises instituting

programs and actions to cope with potential disruption of physical and social systems that is caused by natural disaster (Godschalk, 1991). Preparedness can also be defined as a state of readiness to respond to any disaster to facilitate an effective response during emergency. The questionnaire has a section with a question to assess the perception of respondents of the preparedness capability of Bantul's local government, categorized as 'low', 'medium' and 'high'[19].

Table 7.3 Bantul's Local Government Preparedness Capability Before 2006 Earthquake

Indicator	Bambanglipuro	Jetis	Pleret
	% Rated Low	% Rated Low	% Rated Low
Local Government Awareness of Disaster Risk	72 [N=25]	80 [N=25]	64 [N=25]
Community Awareness of Disaster Risk	88 [N=25]	96 [N=25]	76 [N=25]
Availability of Early Warning System	96 [N=25]	100 [N=25]	96 [N=25]
Local Government of Understanding Early Warning System	75 [N=24]	92 [N=25]	91.7 [N=24]
Community Understanding of Early Warning System	92 [N=25]	88 [N=25]	84 [N=25]

Source: Survey Data, 2009

Table 7.3 clearly shows Bantul's preparedness capability before the 2006 earthquake. As can be seen from the table, 72% of respondents in Bambanglipuro, 80% in Jetis and 64% in Pleret stated that the level of readiness was quite low before 2006. The level of community awareness of disaster risk was mostly low in respondents' perceptions. On average, 86% of respondents in Bambanglipuro, Jetis and Pleret conveyed the view that the level of community readiness for disaster was low. Most respondents rated as low the availability of early warning systems in Bantul. Jetis in fact accounts for 100% of total respondents who stated that it was low.

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[19]'Low' is the addition of percentages in the categories of 'none' and 'low', 'medium' is the total percentage in the 'medium'category, 'high'is the total percentage in the 'high'and 'very high'categories (see Appendix).

Preparedness activity requires the knowledge to understand the early warning system which should be used in times of a disaster. This educational activity must be promoted through training and demonstrated to individuals, groups and organisations, so that all levels of the community understand what they should do during and after disaster. However, survey findings reveal that before the earthquake struck Bantul in 2006, on average more than 85% in the three districts agreed that the understanding of local government about the early warning system was low. This number is similar to community understanding of the early warning system. In detail, Table 6.3 shows that more than 80% of respondents in Jetis and Pleret stated this, while 92% did so in Bambanglipuro.

Predictably, after the earthquake 2006, Bantul's preparedness capability has increased significantly, as presented in Table 7.4.

Table 7.4 Bantul's Local Government Preparedness Capability After 2006 Earthquake

Indicator	Bambanglipuro % Rated High	Jetis % Rated High	Pleret % Rated High
Local Government Awareness of Disaster Risk	80 [N=25]	64 [N=25]	84 [N=25]
Community Awareness of Disaster Risk	76 [N=25]	76 [N=25]	88 [N=25]
Availability of Early Warning System	24 [N=25]	12 [N=25]	24 [N=25]
Local Government Understanding of Early Warning System	54.2 [N=24]	52 [N=25]	50 [N=24]
Community Understanding of Early Warning System	64 [N=25]	58.3 [N=24]	64 [N=25]

Source: Survey Data, 2009

Around 80% of respondents in two districts, Bambanglipuro and Pleret, though only 64% in Jetis, reported a high level of Bantul local government awareness of disaster risk. It appears that after disaster struck Bantul in 2006, local government may have been concerned by the high number of causalities, which finally became the trigger for greater awareness being required for vulnerable areas in Bantul.

The shift in the awareness level of the community after the 2006 earthquake shows a similar pattern to that of local government awareness. After the disaster, the percentage of this awareness level was obviously much higher. Bambanglipuro and Jetis present at 76%, while 88% of respondents in Pleret stated that the awareness level of the community was high for facing disaster.

However, the availability of an early warning system remained low after the 2006 earthquake. On average, 80% of respondents reported that the availability of an early warning system in Bantul was limited. The understanding of local government about early warning systems has not improved, since half of respondents on average rated this as high while the other half rated it as low.

A different pattern is shown in Table 7.4 which describes how the community in Bantul understands the early warning system. Overall, most respondents acknowledged that there were a high number of respondents who claimed that the community had a better understanding about the early warning system after experiencing the earthquake. Severe experience of natural disaster seems to increase the willingness of the community to understand better the early warning system. The increases in the understanding level for the community after the disaster were much higher than before the disaster. The percentage of respondents who agreed with this statement was 64% in Bambanglipuro and Pleret and 58.3% in Jetis.

7.3.3. The Response Stage

Response is an action taken immediately during and just after a disaster occurs in order to save lives, minimize property damages and enhance the beginning of the recovery phase (Shaluf, 2007). In this phase, institutions are essential to provide resources and to ensure that coordination and information between multi-stakeholders and logistical expertise are handled well so that these lead to preservation of life and support the basic survival needs of those affected.

Table 7.5 Bantul's Local Government Response Capability

Indicator	Bambanglipuro % Rated Good [N=25]	Jetis % Rated Good [N=25]	Pleret % Rated Good [N=25]
The availability of local government resources	52	40	64
The local government response to the earthquake	60	72	76
The flow of information from local government to the community	72	68	84
The clarity of information gathered from local government staff	64	60	80
The local government staff response to earthquake	68	72	76
Delivery of emergency aid to the community	68	64	68

Source: Survey Data, 2009

This research has found some important results. Table 7.5 illustrates data on the availability of local government resources during the response phase. The response has merged the answer of respondents' perceptions into 'worst', 'medium' and 'good'[20]. Overall, respondents stated that the availability of resources was good. More specifically, the percentage of responses was 52% in Bambanglipuro, 40% in Jetis and 64% in Pleret. In fact, there was a considerable response in Jetis district, where 36% said that the availability of local government was medium and 24% reported it as 'worst'. However, the difference between the three districts in this variable is not statistically significant.

The availability of local government providing resources in the response phase indicates an overall pattern that varies between medium and good. In fact, in terms of capability, the majority of respondents state that local government has managed the response phase very well. This respondent perception accounted for 76% in Pleret, 72% in Jetis and 60% in Bambanglipuro. However, the

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[20]'Worst'is the addition of percentages in the categories of 'worst'and 'bad', 'medium' is the total percentage in the 'neither / nor' category,'good'is the total percentage in the 'good'and 'best'categories (see Appendix).

percentage of respondents stating that the capability of local government was worst was approximately 16% in Jetis but only 8% in Pleret.

During an emergency situation, the need for information in the community is vital. Information about danger should be disseminated, not withheld, because of the need to avoid people panicking. In reality, this research found that on average the experience of almost three-quarters of respondents was that information flow from local government to the community after the earthquake was relatively good. The data show that 72% of respondents in Bambanglipuro, 68% in Jetis, and 84% in Pleret provided this evaluation. However, a small percentage of respondents have a contrary view, with 4% in Pleret and 8% in Bambanglipuro.

Next to the flow of information required during the response phase, the most important thing is the clarity of information gathered from local government staff. It is expected the information will flow to the community quickly, clearly and correctly. In terms of this information clarity, 64% of respondents in Bambanglipuro, 60% in Jetis and 80% in Pleret agreed that local government staff provided clear information related to the earthquake, such as information on how to access aid from local government staff.

Overall, as presented in Table 7.5, more than 68% of respondents stated that local government staff response to the earthquake was good. However, 20% of respondents in Jetis stated that the response was worst and both Bambanglipuro and Pleret districts gave as 'medium' the level of response given by Bantul local government in the emergency (see Appendix). The difference between the three districts observed in this variable is not statistically significant.

During an emergency, delivery of aid is crucial for disaster victims. Since response activity occurs during a high-stress period within a highly time-constrained environment and with limited information, local government needs to plan and provide efficient delivery of aid to vulnerable people. The activity aims to provide emergency food, shelter, clothing and medical assistance to individuals and families as a result of a disaster. In regard to this condition,

research has found that more than 60% of community leaders in Bambanglipuro, Jetis and Pleret agreed that the level of emergency aid delivery to the community was good. Even in Pleret district only 8% of the respondents stated it as 'worst'.

7.3.4. The Recovery Stage

Recovery is the activity that returns infrastructural systems to minimum operating standards and guides long-term efforts designed to return life to normal or improved levels after disaster. Recovery begins the moment a disaster happens (Sullivan, 2003). Disaster recovery is the function by which countries, communities, families and individuals repair, reconstruct or regain what has been lost as a result of a disaster, and reduce the risk of similar disasters in the future (Coppola, 2007).

The aim of the recovery phase is to restore the affected area to its previous state. It is concerned with issues and decisions that must be made after immediate needs have been met. Recovery activities cover decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the affected community. At the same time these activities are encouraging and facilitating required adjustments to reduce disaster risk. This stage can be implemented by undertaking activities such as damage assessment, debris removal and the creation of disaster assistance centres, rebuilding destroyed property, re-employment and repair of essential infrastructure.

In terms of the recovery stage, the research found that the Bantul local government managed this stage effectively Table 7.6[21] shows that 88% of respondents of Jetis and Pleret stated that the Bantul local government was effective in assessing damage and loss of houses, while respondents in Bambanglipuro recorded an even higher percentage for this indicator at 92%. A

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[21]The data presented in the table 7.6 have been taken from the questionnaire by categorising the respondents' perceptions into 'ineffective', 'moderate' and 'effective'. The 'ineffective' category is the addition of percentages in the category of 'very ineffective'and 'ineffective', 'moderate'is the total percentage in the 'moderate' category,'effective'is the total percentage in the 'effective'and 'very effective'categories (see Appendix).

similar pattern is also noted on the question of how local government rebuilt the community's housing. The proportion of respondents varied between 88 and 100%. Interestingly, all respondents in Pleret said that the process of rebuilding the community's housing stock ran effectively. This accorded with the fact that the process of money distribution to the community for rebuilding housing was also effective. The figure was 96% for both Bambanglipuro and Jetis districts and 100% in Pleret. The association between the three districts observed in this variable is not statistically significant.

Table 7.6. Effectiveness of Local Government in the Recovery Phase

Indicators	Bambanglipuro % Rated Effective	Jetis % Rated Effective	Pleret % Rated Effective
Assess damage to and loss of houses	92 [N=25]	88 [N=25]	88 [N=25]
Rebuild community's housing	96 [N=25]	88 [N=25]	100 [N=25]
Rebuild social infrastructure	88 [N=25]	76 [N=25]	88 (N=25)
Distribute money to community for rebuilding housing	96 [N=25]	96 [N=25]	100 [N=25]
Reimage Bantul as a safe place to live	92 [N=25]	80 (N=24)	92 (N=25)
Create jobs for victims who lose their job	72 (N=24)	56 [N=25]	80 [N=25]
Maintaining conflict that occurred after disaster	84 (N=23)	92 [N=25]	92 [N=25]

Source: Survey Data, 2009

Of the 75 community leaders surveyed in Bantul, an average of 84% stated that the Bantul local government rebuilt social infrastructure effectively. Moreover, the commitment of local government to reimage Bantul as a safe place to live after the disaster has also been high. The respondents who acknowledged this accounted for 80% of respondents in Jetis and more than 90% in Bambanglipuro and Pleret. The effort to reimage Bantul has included the effectiveness of minimising potential conflict over issues such as the mechanism of aid delivery that, according to some, was biased. The data show that 84% of respondents in Bambanglipuro and 92% in Jetis and Pleret supported this effort. However, the ability of local government in creating jobs for disaster survivors was quite ineffective, particularly in Jetis where only 52% of respondents stated that local government had proved effective in this, whereas for other districts there was a contrasting result: 72% of respondents in

Bambanglipuro and 80% in Pleret considered that the Bantul local government was relatively effective in creating jobs for people who had lost their jobs as a result of the disaster. The difference between the three districts for these variables was not statistically significant.

7.3.5. The Capability Requirement

As a discipline related to dealing with and avoiding risks, disaster management requires some preparation activity before, during and after a disaster occurs. In general, disaster management activity is a continuous process by which all individuals, groups, and communities are involved in an effort to avoid the impact of disasters. Therefore effective disaster management relies on the integration of emergency plans at all levels of government and also non-government organization involvement.

This study has ten indicators to examine the capability requirement for local government to strengthen disaster management policy. The indicators for this variable include perception of national coordination, greater availability of data, better telecommunications, more accurate early warning systems, enhanced public education to understand disaster, better disaster education dissemination, enhanced public awareness, effective aid delivery to the victims, and improved networking with national and international NGOs.

Table 7.7. Capability Requirement for Local Government to Strengthen Disaster Management

Indicators	Bambanglipuro % Rated High	Jetis % Rated High	Pleret % Rated High
National coordination	72 [N=25]	80 [N=25]	64 [N=25]
Greater availability of data	68 [N=25]	84 [N=24]	56 [N=25]
Better telecommunications	68 [N=25]	64 [N=25]	60 [N=25]
Effective distribution of aid	68 [N=25]	68 [N=25]	40 [N=25]
Improve networking with national NGOs	68 [N=25]	76 [N=25]	60 [N=25]
Improve networking with international NGOs	60 [N=25]	80 [N=25]	60 [N=25]

Source: Survey Data, 2009

The results in Table 7.7[22] show that on average more than 70% of respondents were agreed that national coordination needs to be strengthened. This percentage is obviously much higher in Jetis and Bambanglipuro, at 80% and 72% respectively, than in Pleret, at 64%. Another indicator which relates to this requirement is the greater availability of data, as can be seen from the finding that 84% of respondents in Jetis stated that it was very important. On the other hand, this figure was quite low in Pleret where only 56% of respondents were of this view. Telecommunications is a crucial need before, during and after disaster; on average 64% of respondents in the three districts said that better telecommunications were required for local government in managing disaster.

Table 7.7 has also showed that the effectiveness of aid delivery is one of the main requirements for success in implementing disaster management policy in Bantul. Bambanglipuro and Jetis had the highest percentage, with over 65% or 17 respondents in each district; in Pleret only 40% or 10 respondents supported this argument. This research has also found that the need to improve networking with both national and international NGO was also important: The figures in Table 6.6 show that on average 68% of respondents agreed that networking with national NGOs should be improved and almost 70% on average supported the importance of networking with international NGOs.

Table 7.8. Kruskal-Wallis Test for Capability Requirement Indicators

Indicators	Bambanglipuro (%)	Jetis (%)	Pleret (%)	χ^2	df	p
More accurate early warning system	60 (N=24)	96 (N=25)	68 (N=25)	14.40	2	**0.001***
Better dissemination	88 (N=25)	88 (N=25)	64 (N=25)	9.22	2	**0.010***
Involve public in disaster risk campaign	76 (N=25)	80 (N=25)	56 (N=25)	7.19	2	**0.027***
Enhance public education to understand disaster	84 (N=25)	88 (N=25)	60 (N=25)	6.40	2	**0.041***

Note: * means that the variable is statistically different between the three districts according to the Kruskal-Wallis Test.

Source: Survey Data, 2009

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[22] The data presented in Table 7.7are taken from the sum of the percentages in the 'medium', 'high' and 'very high' categories of Part 3 of the questionnaire related to the capability requirement of local government (see Appendix).

The respondents' perception in the three districts also concurred in the view that an accurate early warning system was needed to improve the capability of the Bantul local government to strengthen the policy of disaster management: 96% of respondents in Jetis (Table 7.8) and around 60% in Bambanglipuro and Pleret. A Kruskal-Wallis Test revealed a statistically significant difference in terms of the need for a more accurate early warning system across the three districts (Bambanglipuro, $n = 24$; Jetis, $n = 25$; Pleret, $n = 25$): χ^2 (2, $n = 74$) = 14.40, $p = 0.001$. Jetis recorded a higher median score ($Md = 4.00$) than the other two district groups, which both recorded median values of 3.00. This figure means that in terms of the need of availability of a more accurate early warning system, Jetis considered it more important for local government to have this than did community leaders in Bambanglipuro and Pleret. This was because Jetis has more experience than the other two districts in running the early warning system more often with the support of many international NGOs, which provided tools to inform the society about disasters.

In terms of local government requiring better dissemination of disaster education to the community, the majority of respondents state that this factor is pivotal for local government. A larger percentage of respondents affirmed this in Bambanglipuro and Jetis, at 88%, but there was a slight difference in Pleret, where approximately 68% supported the need for local government to improve dissemination on disaster education in the future. A Kruskal-Wallis Test revealed a statistically significant difference in terms of better dissemination on disaster education across three districts (Bambanglipuro, $n = 25$; Jetis, $n = 25$; Pleret, $n = 25$): χ^2 (2, $n = 75$) = 9.22, $p = 0.010$. Jetis recorded a higher median score ($Md = 4.00$) than the other two district groups, which both recorded median values of 3.00. Jetis has created better dissemination on disaster education to the community by training people on how to carry the injured correctly, for instance, because if the injured are not carried correctly, their suffering is worse. In addition, every hamlet in Jetis is equipped with sufficient medicine and first aid, as well as hand barrows, in order to save the injured. In Bambanglipuro and Pleret not every hamlet has been provided with such first aid and tools.

Moreover, dissemination on disaster education in Jetis has mostly been run by bureaucracy staff, relevant agencies or even the police. This is because Jetis faces landslides and floods caused by sand miners. So the government has paid more attention in this area than in the other two. In Bambanglipuro, for instance, even community and youth organisations have never conducted any disaster information dissemination to the community.

The 2006 earthquake caused the community to realise the importance of education in understanding what actions the community should take before, during and after disaster. This survey revealed that public education should be enhanced by local government as one of the capability requirements in managing disaster. The figures are as follows: 76% in Bambanglipuro, 80% in Jetis and 56% in Pleret. A Kruskal-Wallis Test showed a statistically significant difference in terms of public education enhancement across three districts (Bambanglipuro, $n = 25$; Jetis, $n = 25$; Pleret, $n = 25$): $\chi^2 (2, n = 75) = 7.19$, $p = 0.027$. Jetis recorded a higher median score ($Md = 4.00$) than the other two district groups; Bambanglipuro recorded a median value of 3.00 and Pleret recorded 2.00. After the disaster, community leaders in Jetis have been actively involved and have contacted NGOs to run livelihood programs for the community. Such programs on saving children from trauma, making organic fertilizer and producing herbal medicine are frequently conducted in Jetis. Bambanglipuro has also experienced a tsunami drill but only on one occasion and not in a continuing program.

The community has also agreed that the education campaign on disaster activities should involve community participation. This research found that more than 80% of respondents in Bambanglipuro and Jetis stated that this variable was important to the capability requirement for local government in managing disaster, although respondents in Pleret appeared less inclined to agree, at only 60%. A Kruskal-Wallis Test revealed a statistically significant difference in terms of the involvement of the public in disaster risk campaigns across three selected district groups (Bambanglipuro, $n = 25$; Jetis, $n = 25$; Pleret, $n = 25$): $\chi^2 (2, n = 75) = 6.40$, $p = 0.041$. Jetis recorded a higher median score ($Md = 4.00$) than the other two district groups, which both recorded median values of 3.00. Since

Jetis is threatened by landslides and floods caused by the activity of sand miners, community participation in disaster activities is higher than in the other two districts. The community is willing to protect their environment from degradation by forming a gate to stop sand miners entering the area. They also participate in local government activity in providing evacuation tracks and evacuation signs in every hamlet, while in Pleret, for instance, the community has less participation and in Bambanglipuro no guidance has been produced on providing information how people should save their lives in case of a disaster.

In summary, the variables that show significant differences between the three Bantul districts in regard to the capability requirement for local government in managing disaster, based on the Kruskal-Wallis Test, were: providing an early warning system, creating better dissemination of information for the community, involving the public in disaster risk campaigns and enhancing public education. Other variables were not statistically different.

7.3.6. Networking

A network response to disaster plays an important role in managing disaster in order to support exchange relations between organisations, individuals and groups. This network may be just a simple inter-organisation arrangement between agencies or a complex combination of organisations, groups and individuals from a variety of sectors (Hall & O'Toole, 2004). The network is built in order to share resources and it is a way to measure collaborative capacity (Milward & Provan, 1998; Weber, et al., 2005).

This research has considered how networking occurred during and after the 2006 earthquake and included questions on the level of communication flow from local government to the community about disaster information and aid delivery, how the local government staff countered adverse effects in the response and recovery stages, and how coordination was established between local government and national and international NGOs, volunteers and

community groups. Respondents' perceptions have been divided into 'slow', 'moderate' and 'fast' categories[23].
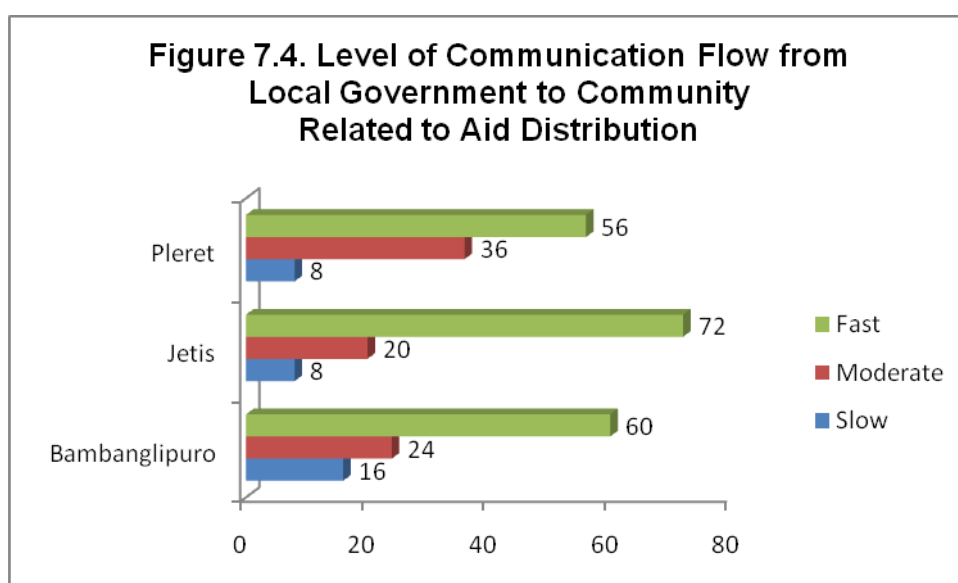
Source: Survey Data, 2009

Figure 7.4 shows the level of communication flow from local government to the community as related to aid delivery. Most agreed that the level of communication flowed swiftly. The figures in the three districts were over 50%, supporting this statement; respondents in Bambanglipuro who assessed that the communication flow was very slow accounted for less than 20% and this was much lower still in the other two districts.

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[23]'Slow'is the addition of percentages in the categories of 'very slow'and 'slow', 'moderate'is the total percentage in the 'moderate' category and'fast'is the total percentage in the 'fast'and 'very fast'categories (see Appendix.).

Figure 7.5. Level of Communication Flows Related to Disaster Information
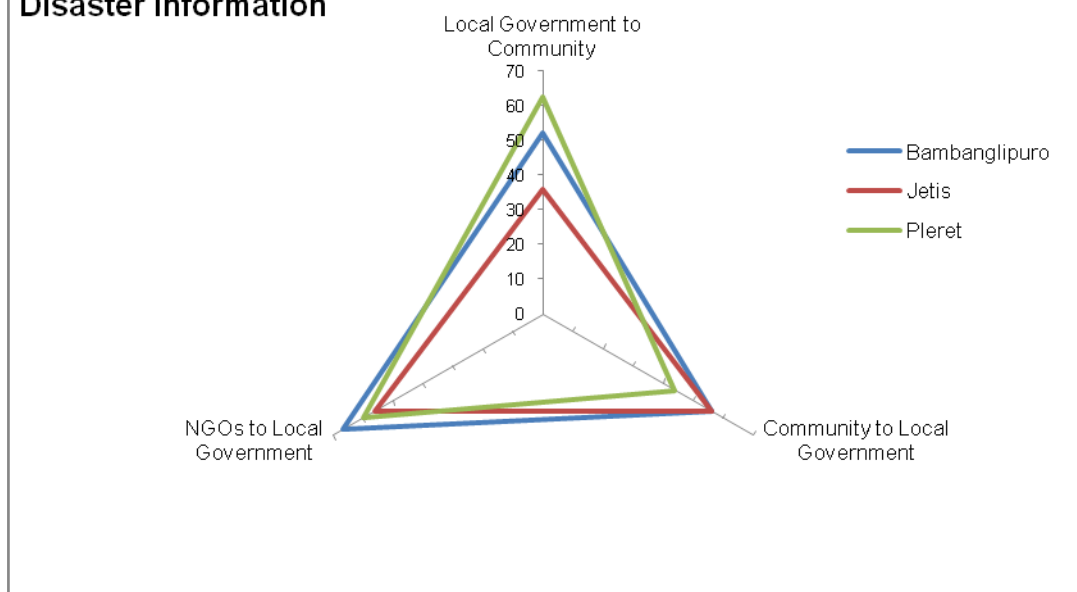
This research has covered the question of the level of communication flow with regard to disaster information, from local government to the community, from the community to local government and from NGOs to local government. It is revealed that the level of such communication flows was around 50% on average (Figure 7.5). Respondents in Jetis have the lowest percentage in terms of the level of communication flows from local government to community; Bambanglipuro district has the highest percentage in assessing the flow of communication between NGOs to local government. In addition to this, 62.5% of respondents in Pleret had a positive perception on the level of communication flow from local government to the community in relation to disaster information.

Table 7.9 Coordination among Local Government Staff

Item	Bambanglipuro	Jetis	Pleret
	% Rated Fast	% Rated Fast	% Rated Fast
Recovery Phase	52 [N=25]	50 [N=24]	54.2 [N=24]
Response Phase	52 [N=25]	72 [N=25]	73.9 [N=25]

The high level of communication flow was potentially supported by good coordination among local government staff in Bantul, as presented in Table 7.9. In the response phase, 54.2% of respondents in Pleret and 52% in Bambanglipuro stated that there was fast coordination among bureaucrats in this phase; Jetis has a lower percentage at 50%. Just as in the response phase, in the recovery phase the percentages of respondents with a favourable view were even higher: more than 70% in Jetis and Pleret stated that coordination among local government staff was good; in Bambanglipuro the percentage was 52%. Overall, respondents in Bambanglipuro, Jetis and Pleret considered that the level of communication and coordination was relatively smoothly in local government in Bantul.
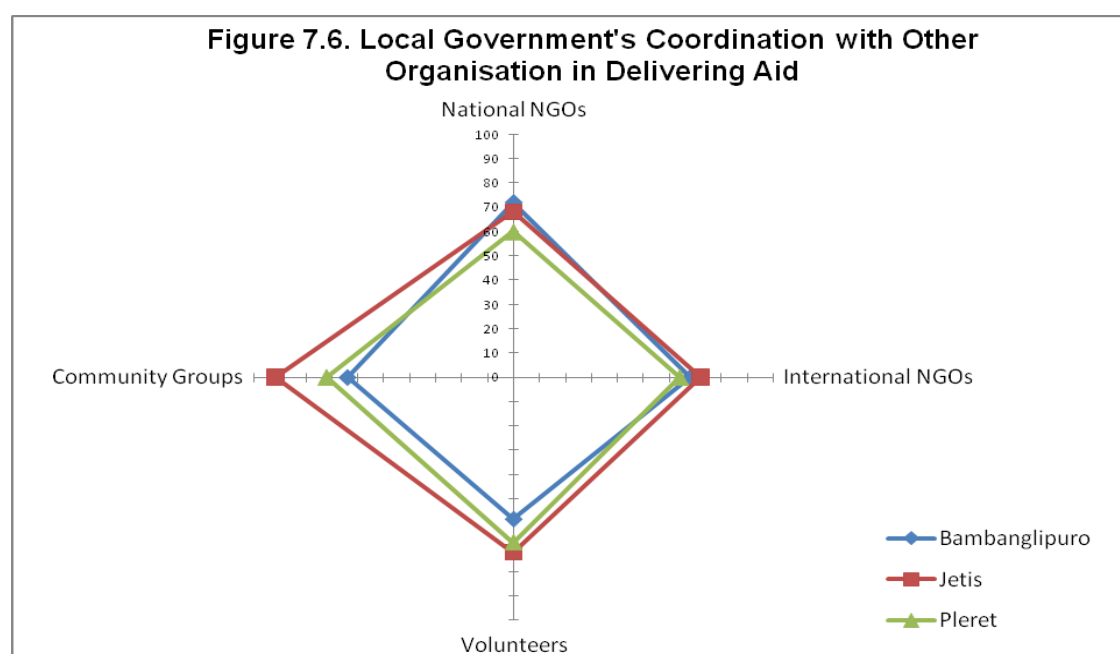
Source: Survey Data, 2009

Furthermore, in organising aid delivery, local government was coordinated with national NGOs, international NGOs, volunteers and community groups. Figure 7.6 shows that such coordination to run program and activities in Bantul was relatively fast according to almost 70% of respondents. The figures show a similar pattern to those for the coordination that occurred with national NGOs, international NGOs and volunteers; the average was almost 70% for the three districts. However, the average figure on networking between local government institutions and community groups in Bantul was slightly higher at 75.9%; in

Jetis more than 90% of respondents perceived that the coordination between community groups and local government institutions was managed fast and well.

7.4. Conclusion

This chapter has analysed the quantitative data based on findings from the community leaders survey which was conducted in the districts which suffered the most from the impact of the 2006 earthquake in Bantul: Bambanglipuro, Jetis and Pleret districts. The findings of these quantitative data are important in providing the evidence for answering the research questions on the capabilities that existed in Bantul's local government before, during and after the disaster occurred, the capability requirements for local government in managing disaster and the social network interaction between local government and other institutions from a variety of sectors.

Only some variables for the three districts were found to show significant differences. These included the efforts of local government to identify vulnerable areas after disaster, the need for an early warning system, improvement on information dissemination efforts, enhancement of public education for the community and coordination between local government and community groups.

In summary, the experience of facing an earthquake in 2006 has changed the local government to become more aware of the kinds of disaster that might come in the future. Before the 2006 earthquake struck Bantul, there was very limited effort by local government to educate the community about the impact and how to face disaster. However, after the earthquake, efforts have been gradually increased in terms of disseminating information and educating the community. Furthermore, according to local leaders, the need for having a more accurate early warning system was the most important requirement that local government should meet.

The next chapter is the discussion chapter, in which a critical analysis of the conceptual model in terms of its demonstrable applicability to the research

findings from the qualitative and quantitative data has been applied. The discussion is analysed through the theory used in the explanation in chapter 2 and framed by the context of Indonesia's disaster management system in chapter 4, in order to answer the research questions of this study presented in chapter 1.

Chapter 8. Discussion of Findings

8.1. Introduction

This chapter draws out the findings made in the qualitative data explained in Chapters 5 and 6 and the quantitative data presented in Chapter 7 in order to answer the study's five research questions. The aim of this chapter is to highlight the contribution of this research to the knowledge base, which was further discussed in the literature review in chapter 2.

This discussion chapter consists of six sections.

The first section is the introduction.

The second section examines the capability of the Bantul local government in earthquake disaster management. The major issues of capabilities discussed in this section include institutions, human resources, policy for effective implementation, and financial, technical and leadership factors. This section also examines whether the practice of the Bantul local government capability has been framed by resource capability and institutional theories. It identifies the capability requirement for local government to manage disaster. The purpose is to examine the gap between the capabilities required and those that exist at the local government level. The discussion in this section is related to the first research questions:

A. *What capabilities exist in Bantul's local government for managing a disaster?*

B. *What disaster management capabilities does the Bantul local government require?*

C. *What gaps are there between the capabilities required and those in fact existing for managing disaster?*

The third section assesses the major constraints affecting the Bantul local government in dealing with the situation before, during and after the 2006

earthquake. This addresses the fourth research question. The constraints are categorised as organisation, budget, attitudes and local expertise/volunteers. This section aims to answer the research question, *What were the problems faced by Bantul's local government in dealing with the situation before, during and after a disaster event?*

The fourth section deals with the role and relationship of central government, the Yogyakarta provincial government and the Bantul local government, and how these affect the management of disaster events in Indonesia at the local level. The explanation in this section also describes the practice of decentralisation since the implementation of New Public Management that has brought significant new resources and power to local government, as well as new pressures, concerns, responsibilities and expectations for local government, particularly in terms of disaster management. The discussion addresses the second research question on *how the relations between central government, Yogyakarta provincial government and the Bantul local government affect the management of disaster events in Indonesia at the local level.*

The fifth section discusses the interaction between the Bantul local government and social networks in the mitigation, preparedness, response and recovery stages. The networks include inter-organisational, citizen-to-organisation and organisation-to-citizen interaction. In this section, the interaction is assessed as to whether the networking approach has performed in terms of collaborative capacity between community, local government and other organisations. The discussion is related to the research question as to *how the Bantul local government and social networks interact in the different stages of disaster management.*

The last section is the conclusion of this Chapter.

8.2. Local Government Capability

Disaster management requires not only standard planning practices but also the capability to manage it because the key characteristics of disaster, as Moynihan(2008, p. 99) has said, are uncertainty and change. The concept of capability reflects the resources and assets that institutions or people possess to resist, cope with and recover from the disaster shock they experience (Davis, Haghebeart, & Peppiatt, 2004). Capability also encompasses the ability to use and access needed resources above and beyond actual resource availability (Kuban & MacKenzie-Carey, 2001). Capability is often rooted in resources which are endogenous to the community and which rely on traditional knowledge, indigenous skills and technologies and solidarity networks (Gaillard, 2010, p. 220). The ways in which capabilities are mobilised in times of crisis reflect coping strategies. Coping strategies refer to the manner in which people and institutions use existing resources to achieve various beneficial ends during unusual, abnormal and adverse conditions of a disaster process (United Nations International Strategy for Disaster Reduction, 2002).

The assessment of Bantul local government capability in managing a disaster shows how this institution has shifted its normal activities towards the ability to change and quickly develop in an environment of uncertainty. The term 'capability' in this study means the ability of the Bantul local government to organise assets, competence and knowledge to protect the community from a disaster's potential effects and how it has been transformed into local government ability in institutional and human resources policy for effective implementation and providing financial, technical and leadership capabilities which are specifically relevant to the situational contingencies of a given community disaster.

Table 8.1 presents a summary of Bantul's capability in managing disaster based on the qualitative findings detailed in Chapter 5, section 5.4.

Table 8.1 Bantul's Capability in Managing the 2006 Earthquake

Capability	Findings
Institutional Factors	▪ Lack of standard operating procedure in confronting disaster ▪ No training and education were available ▪ Adopted disaster mitigation effort in the Middle-Term Development Plan
Human Resources	▪ Limitation on task delegation and division of labour ▪ Having additional tasks to understand local need better
Policy for Effective Implementation	▪ No national and local policy arrangement and institutions applied ▪ No vulnerable-area map and early warning system available ▪ No mitigation program for bureaucracy staff and community
Financial	▪ Limited amount of money allocated for disaster management activities ▪ Ability to switch the allocated budget for response and recovery stages ▪ Having financial support from national, provincial and international donors
Technical	▪ Pay more attention to children's and women's needs ▪ Manage logistic management adequately
Leadership	▪ The Bantul Mayor demonstrated responsive leadership ▪ Collective leadership with multiple stakeholders ran smoothly

Institutional Capability

Institutional capability of local government relates to the clear structure, role, responsibilities and relationship of local government with all other levels of government in order to manage a disaster. To be fully functional, institutions must be dynamic entities that have the resilience, durability and flexibility to adapt and modify in an emergency situation (Gopalakrishnan & Okada, 2007). This research found that a lack of standard operating procedures, bureaucracy structures and roles to manage emergency conditions for all agencies, bodies and departments in the Bantul local government were responsible for the high death toll or extensive damage that occurred. The poor quality of houses in Bantul also worsened the outcome. *SatlakPB* (District Implementation Unit for Disaster Management), which should have been in the vanguard of a disaster

relief operation, remained in limbo for some time after the quake, because this unit was untrained and inexperienced in such circumstances. It is also found that the lack of anticipatory training for disaster relief efforts and the narrow individual networks of the officers in command rendered coordination weak. Therefore,although *Satlak PB* has a clear structure, role and responsibilities to manage disaster, as well as to maintain the relationship with *Satkorlak PB* (Provincial Coordinating Board for Disaster Management) and *Bakornas PB* (National Coordinating Body for Disaster Management), this was only an institutional formality, because there was no standard operating procedure or guidance in confronting disaster. The training and education of those institutions had never occurred, so this made the disaster all the more devastating.

The case of Bantul's earthquake showed that damage information was unavailable from local government officers and even the provincial and national government had no knowledge of the possibility that an earthquake might occur in that area, and no local government personnel were assigned to provide information to the community regarding lack of awareness about the tsunami that followed the quake. On the positive side, there were instances where reliable information was delivered promptly as a result of support and coordination from NGOs. Institutional mechanisms from the Bantul local government that could quickly and effectively channel the efforts of international and national NGOs and technical expertise from local universities to affected areas are another important dimension. It was also found that local government had the authority to make immediate decisions based on information available without having to get permission from higher level institutions (the provincial government or the central government). Thus this autonomy in decision-making is important for emergency responses.

The experience of the 2006 earthquake has led to organizational and institutional changes in the Bantul local government. For instance, the Bantul local government has made efforts to develop a clear structure, role and responsibilities, appointing Bantul's Community Protection Unit as a lead institution to handle disaster. Disaster, therefore, has not only been deemed to include natural disaster but also man-made disaster. The Community Protection

Unit of Bantul has also mapped the yearly cycle of natural disaster in Bantul, such as floods, landslides, drought, tornadoes and coastal erosion. Furthermore, the willingness to adopt disaster mitigation efforts in the Bantul Middle-Term Development Plan indicates a major effort worth citing in this context as evidence of local government becoming more responsible for protecting the whole community. This change signifies an alteration in the direction of local government with regard to social, economic, political and environmental conditions that deviates from pre-disaster condition and is substantial for the impact on people's lives.

This quake has also provided 'a window of opportunity' (Kingdon, 1995). This means that the Bantul local government has found disaster as an opportunity to change. The local government views it as an opportunity to protect its community and to become more involved in the issue of disaster management. As a response to the impact of the earthquake, the Bantul local government and the community are currently more aware of any potential of disaster risk in their area (Table 7.4). In addition to this, the establishment of the Community Protection Unit as a lead institution in managing disaster, as explained in section 5.2.1, indicates the response of local government to Law No. 24/2007 on Disaster Management to form a local body for such management. Such changes indicate a critical juncture, which Olson and Gawronski (2003) define as changes that set the institution onto a new path for action and policy. However, although this policy is positive, particularly with regard to the importance of having a local body for disaster management, as mandated in Law No. 24/2007 on Disaster Management, which specializes in managing disaster instead of assigning this role to a unit, it could perhaps become a future problem in terms of ensuring appropriate divisions of responsibility, fiscal and political, among the various bodies or departments in the Bantul local government. In essence, this unit only accepts very minor responsibility for applying programs and activities at different stages of disaster management and yet it appears that all these roles and responsibilities are unsuited to operational capacity at a unit level. The need to have a local body for disaster management is important, indeed crucial, although there remain obstacles such

as issues of structure and finance, which can be seen clearly as an instance of impaired institutional capability in the Bantul local government.

Human Resources

Disaster may often be considered a part of an unimportant discourse until a disaster occurs. This perception is found obviously in many local governments, and this is a common attitudinal problem in the bureaucracy (Wolensky & Wolensky, 1990); consequently it has implications for the capability of human resources in responding to a disaster. Under normal conditions, bureaucracy personnel can perform their regular tasks appropriately, but when a disaster happens, daily and routine tasks cannot be extrapolated as a response to a disaster (Cigler, 1987). Thus the human resource capability which is suitable for managing a disaster becomes visible when local government has sufficient personnel, proper tasks, delegation and division of labour within the organisation.

The human resource capability of the Bantul local government is seen from the perspective of having sufficient personnel, proper task delegation and division of labour. In terms of having sufficient personnel, the Bantul local government in fact has more than 12,000 personnel to provide service for 17 sub-districts, 75 villages and 933 hamlets (Statistics Centre Bureau, 2008). Proper task delegation and division of labour have also been managed well for running routine daily activity. Since a disaster is a sudden event which totally differs from daily activity, proper task delegation and labour division in the Bantul local government did not run smoothly.During the quake, local government personnel faced overload and at the same time almost all communities were too disorganized to cope with a disaster. The effective capability of local government personnel plays an important role under such emergency conditions. The case of Bantul revealed that decentralized government brought together a proliferation of semi-autonomous boards and authorities to work under emergency coordination conditions with authorities from central and provincial governments, NGOs and community groups. A highly decentralized disaster response involved a diversity of local government personnel and

organisations which allowed the local government to adapt rapidly to changing disaster and a changing environment, even though the command and control approach from the Bantul Mayor himself became the significant factor in mobilising all local government personnel in the emergency and crisis events. In addition to this, the most important element for Bantul personnel was the acknowledgement that they knew their local needs best, since many departments, units and agencies in Bantul have additional obligations to manage selected sub-districts.

Policy foreffective implementation-related capability

A policy for effective implementation-related capability is embodied in the policies, rules and regulations that have been enacted by local government for overseeing and providing guidelines for different stages of disaster management.

The findings of this research have clearly shown that there was no legislation enacted at all levels of government in 2006. Since no legislation was available at the time, there was no mandate for local government to enforce the adoption of disaster coordination mechanisms, educating the community and bureaucracy staff in disaster awareness, the identification of vulnerable areas and the maximising of early warning systems at the local level. These mandates and other types of legal and regulatory requirements theoretically could speed up disaster reduction efforts, as is evidenced by the formal disaster plans that have become universal at the local level in many disaster-vulnerable countries (Gopalakrishnan & Okada, 2007). However, Bantul's experience showed that policies enacted[24] on ad hoc basis, as the occasion demanded, could nonetheless also accomplish the local government's goal to accelerate the response and recovery programmes.

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[24]Overall the policies enacted in response to the 2006 earthquake in Bantul were:
1) The Presidential Decree No. 9/2006 on The Formation of Coordinating Team for Rehabilitation and Reconstruction;
2) Governor Epistles on Disaster Management Team, Disbursement Procedure, Emergency Financial Procedure and Operating Instruction on the Rehabilitation and Reconstruction Periods; and
3) Mayor Epistle on the Technical Instruction on the Rehabilitation and Reconstruction Periods.

Financial Capability

Given the fact that the economic cost associated with natural disaster worldwide has been increasing significantly since the 1950s (Coppola, 2007; Guha-Sapir, et al., 2004), having sufficient financial resources to support activities at all stages of disaster management is crucial for enhancing the financial capability of local government. The earthquake that occurred in a densely populated area where around 880,000 poor people lived has left behind a problem for the Bantul local government because most of the community do not have the necessary financial and supplementary resources to build – that is, to rebuild – earthquake-resistant houses in the aftermath. Hence, financial assistance from local government becomes critical in helping the community before, during and after disaster. However, this research has revealed that budgetary constraint was the main factor behind the Bantul local government's impaired efforts in conducting disaster management programs. To fill the gap, financial support from central and provincial government, as well as financial sources from overseas grants (Table 5.1), has been used to finance response and recovery programmes, as both these stages demand considerable financial resources.

Local government effort has focused on redressing the lack of finance by reallocating the local budget to emergency and recovery purposes. Section 6.3.3.3 has detailed several financial assistance measures for the community in the emergency period. This ability of local government to switch the budget was not easy; it is typically a serious problem for local government in developing countries because of rigid bureaucratic procedures (Labadie, 1984b). Altering the budget required the agreement in particular of the local legislature, which can require considerable time. However, the local legislature and the local government in Bantul paid special attention to the lack of financial resources. Hence, in order to solve the problem, both institutions reached consensus on reallocating the budget to prioritise programs in the emergency and recovery periods. This process can be seen as a consensus-building approach at the local level in solving the lack of financial capability.

Technical Capability

The development and use of a strategic approach in the response and recovery stages reflect the local government's ability to act in relation to its technical capability, resources, organisational flexibility and adaptiveness (Rubin & Barbee, 1985). Technical capability refers to the ability of the Bantul local government in effective logistic management systems, adequate technology information systems and communication networks between organisations, communities and media representatives. The Bantul local government displayed remarkable ability and willingness to act and to utilize fully all technical capabilities and local resources following the quake. The capacity to act in the response and recovery stages demonstrated the level of technical and administrative capabilities of the local government and its available resources. The Bantul local government deployed its technical capability in expediting community recovery by maximizing community values.

Effective recovery resulted from local government personnel's awareness, knowledge of community and willingness to uphold community values. Upholding community values in the emergency period was observed to be difficult, since the community was split into two factions, each of which clung to different arguments about the direction of the community's post-recovery future. One faction preferred a 'fair' distribution of financial assistance while the other wanted 'even' aid distribution. Eventually the first faction prevailed, which affected the speed of recovery. This research has also revealed that local government personnel appeared to understand community values and found a means of developing community organisation so as to advocate these and to develop procedures for protecting them. This strategic, technical capability had the effect of accelerating aid distribution and making the then Bantul local government more responsive to its citizens' needs.

Leadership Capability

In addition to the capabilities discussed previously which are based on institutional, human resources, policy for effective implementation, and financial and technical capacities, leadership capability has also been observed in this in-depth research. Natural disasters require extraordinary leadership capability

because in many cases such extreme events will overwhelm local capabilities. Thus leaders at the local level must adapt and rebuild emergency systems and aim to minimize adverse effects of disaster in the shortest possible time. Their actions and competence in dealing with these especially difficult conditions may emerge as a key indicator of the achievement capacity of leadership.

In terms of leadership capability, a disaster requires the leader to be responsible and to make decisions quickly. Leadership is crucial in times of extremity such as disaster (Kapucu, 2009). Such situations can produce multiple outcomes, which will show the capability of the leader. The research findings reveal that the Bantul Mayor organized the staff very quickly, just after the earthquake, and decentralized decision making to the middle echelons of the bureaucracy so as to provide relief aid as fast as possible in order to avoid community protests to government. The Bantul Mayor continued to exercise his formal authority, duties and responsibilities even though it was in a period of emergency and there was a lack of adequate information as well as limited resources on which he could rely. However, organising all the Bantul local government staff at that time was not an easy task, since many of them faced conflicting demands between their work roles and their family roles when they themselves had become disaster victims. This situation is typically found in those areas that experience a disaster (Quarantelli, 1988), and fortunately, as was also the case in Bantul, it did not lead to failure on the part of local government personnel in carrying out their occupational responsibilities. That is to say, it was not a major problem, particularly in the higher echelons of organizations whose positions carried with them the greatest authority. The Bantul Mayor successfully met the crucial need for public leadership by encouraging his staff with appropriate delegation of responsibility and ensuring that resources were shared and used effectively (Kapucu, 2009).

Besides demonstrating the quality of responsive leadership, a leader is also required to take risks in any decision he makes. In this case, the Bantul Mayor showed courage in taking great risk when he announced the length of recovery period in Bantul as only two years and then encountered numerous objections and great scepticism from the community and NGOs. Eventually this decision

benefitted the whole community whose houses and facilities were rebuilt to a higher standard than before the earthquake. The Bantul Mayor showed leadership qualities in combining initiative and responsiveness in interactions with the bureaucracy responsible particularly for handling emergency and post-disaster activities, as well as dealing competently with other problems. Collaborative leadership revealed in the Bantul case indicates decisiveness action as the critical competency in managing disaster. Kapucu and Van Wart (2008) define decisiveness competency as the ability to act relatively quickly depending on circumstances without excessively damaging decision quality and ability to remain calm in a crisis.

8.2.1. Critical Action: Capability Requirement in the Disaster Management Cycle

This section discusses the capability requirement of the Bantul local government in each stage, as summarized in Table 8.2. Studies on disaster have demonstrated that capability in managing disaster can be differentiated into four stages. The first stage is mitigation, which requires evaluation, monitoring, and dissemination. The second is preparedness, which includes planning, exercise, training and logistics management expertise. The next stage is response, which requires capability on needs assessment coordination, information exchange and logistics management. The final stage is recovery, which includes damage assessment, debris removal and disaster assistance skill capabilities (Indian Institute of Disaster Management, 2007; Shaluf, 2008).

Table 8.2. Summary of the Capability Requirement According to State and Non-State Informants

State	Non-State
Mitigation ▪ Focusing on people's needs ▪ Establishing particular institutions for managing disaster ▪ Having a sufficient budget to support disaster programs	**Mitigation** ▪ Highlighting the community's voice ▪ Having strong political commitment ▪ Providing disaster-related information for the community ▪ Ensuring consistency and sustainability of any government disaster program ▪ Having adequate financial resources
Preparedness ▪ Having knowledge of potential risk ▪ Providing adequate early warning systems and community disaster awareness ▪ Providing disaster awareness programs in the school curriculum ▪ Having regular disaster drills ▪ Having a sufficient budget to support disaster programs	**Preparedness** ▪ Having skilful resources ▪ Having preparedness capacity to make the community aware of risk ▪ Providing early warning systems ▪ Providing better disaster information dissemination to the community ▪ Involving the public in disaster risk campaigns ▪ Enhancing public education in understanding disaster ▪ Adequate financial resources
Response ▪ Maintaining good networking between all levels of government ▪ Having a sufficient budget to support disaster programs	**Response** ▪ Providing an accurate database ▪ Improving communication skills ▪ Managing coordination effectively ▪ Providing standard operating procedures for facing disaster ▪ Having better national coordination ▪ Enhancing effective distribution of aid ▪ Improving networking with national and international NGOs ▪ Having adequate financial resources
Recovery ▪ Maintaining good networking between all levels of government ▪ Having sufficient budget to support disaster programs	**Recovery** ▪ Enhancing communication skills ▪ Managing coordination effectively ▪ Providing standard operating procedures for facing disaster ▪ Improving networking with national and international NGOs ▪ Having adequate financial resources

The capability requirement of the Bantul local government in each stage is summarized in Table 8.2, presented from state and non-state actors' points of view. State informants represent the key informants from central government, Yogyakarta Provincial government and the Bantul local government, while non-state informants are community leaders who hold positions in the area affected by the earthquake and have a good knowledge of the 2006 event, the Volunteer Disaster Corps, and national and international NGO which actively participated in response and recovery. Table 2 reveals that the way non-state informants addressed disaster management requirements demonstrates a participatory approach and the more realistic requirements needed, because the informants are disaster victims and disaster participatory organizations that were involved and close to victims. The research discovered that the expectations of state and non-state respondents required that local government must be able to master the complex tasks that related to the characteristics of a problem situation and of decision making in conditions of uncertainty (Dosi, et al., 2003). The capability requirement in managing a disaster is basically associated with the knowledge and skills that are relevant to organisational development (Teece, et al., 1990). This knowledge and these skills are then embedded in technical systems and are guided by managerial systems.

Given these circumstances, this research, as presented in Table 8.2, found that the capability required in the mitigation stage highlights the importance of the community's voice, the availability of particular institutions in managing disaster, dissemination of information to the community and ensuring consistency and sustainability of government disaster program, and political commitment. This, translated into government regulation and policy, constituted an important requirement in this stage. Such efforts that have been conducted by local government were reviewed in respect of their technical features, such as the location of a disaster and the analysis of the physical, social, economic and environmental dimensions. These activities are directed towards reduction in risk when an emergency happens, lessening the damaging effects, detection of environmental change, calculation of the distribution of risk and identification of vulnerable areas, and suggestions as to the best alternatives for population withdrawal from risk areas (Indian Institute of Disaster Management, 2007).

Mitigation activities occur in all phases of disaster management. In this phase, it is necessary for the public to get information about the disaster, so that they can then plan for themselves, make informed choices and act to reduce their vulnerability (International Federation of Red Cross and Red Crescent Societies, 1995). However, it appears that this requirement has not fully met by local government because of the lack of expertise among local government personnel in this regard.

Following mitigation is preparedness, which informants in this study indicated was a capability that required knowledge of potential risk in their area, an adequate early warning system and community disaster awareness, a disaster awareness-based school curriculum, regular drills, practices and exercises in any kind of disaster, skill resources, and preparedness capabilities.

In the response and recovery stages, both state and non-state respondents' views appeared to overlap, because they assumed that having good networking between all levels of government, good skills in communication and coordination, as well as availability of a current and accurate database, were critical requirements for local government in being able to manage a disaster. However, all informants argued that the availability of sufficient financial resources was required at each disaster management stage.

This research revealed that the capability of local government in conducting activities related to preparedness for disaster management was relatively high, particularly after the 2006 earthquake (Table 7.4), compared to conditions before the earthquake occurred (Table 7.3). This effort can be observed in the increased awareness of potential disaster risk and vulnerability among communities through effective communication channels for providing an early warning system. However, state and non-state respondents highlight the requirement for the Bantul local government to have disaster management planning, and to conduct disaster exercises and training, which are seen as shortfalls in capability requirement factors in the preparedness stage. Consequently, the key to any successful preparedness program is to lay a foundation, which means establishing regulations that confer on a program

power and authority. Regulation is necessary to determine responsibility for the task of preparedness. After the 2006 earthquake, the Bantul local government did not declare any specific regulation regarding local disaster management, although in its Middle-Term Development Plan, the government has started to adopt disaster management factors. This plan shows a commitment from the governing body to its constituents that preparedness for a disaster is a top priority.

The response phase was a very testing time for leaders. The correctness of decisions made under emergency constraints influenced the fate of many victims. At this critical time, the leadership required the ability to decide correctly, quickly and with the lowest likely risk. Response processes begin as soon as a disaster occurs and this period of time is clearly understood to involve the most complex actions compared to the mitigation, preparedness and recovery phases (Coppola, 2007). This is because recovery is conducted during periods of very high stress and under constraints of time and limited information. Responses include diverse actions such as the limited capacity of injured people, loss of life, and damage to property and the environment, together with the need to develop coordination and support efforts (Shaluf, 2008). This research revealed that although the capability of local government was relatively good (Table 7.5), needs assessment coordination, information exchange and logistical expertise were still impaired. It means that the capability requirement in this stage needs to be met to anticipate future disaster. Since the Bantul local government had no experience in facing a disaster, the process that should be followed in response capability requirements, such as having emergency and relief services that meet community expectations by carrying out timely and responsive relief activities, was not in fact followed. Consequently, delay in the response stage still occurred, although the support of non-state institutions has been shown to expedite this process.

The last stage of disaster management is recovery. Recovery is the activity of returning and restoring infrastructure systems to pre-disaster living conditions in the affected community. Decisions and actions which cover planning, coordination and funding therefore need to be taken in guiding short- and long-

term efforts to reduce the risk of similar disasters in the future (Coppola, 2007). The actions that relate to disaster recovery are the most diverse of all the phases in disaster management. There are a number of actions that are usually undertaken during recovery, such as provision of temporary housing or long-term shelter, assessment of damage and need, demolition of damaged structures, clearance, removal and disposal of debris, rehabilitation of infrastructure, inspection and repair of damaged structures, new construction, social rehabilitation programs, creation of employment opportunities, reimbursement for property losses, rehabilitation of the injured and reassessment of disaster risk. The aim of these activities is to restore community life to pre-disaster conditions (Shaluf, 2008). This phase therefore normally requires much more by way of resources than do other phases.

Recovery is also important because it involves individuals, organizations and groups from the whole affected community in the attempt to restore normal life. This situation is observable in this case because damage assessment and debris removal capability for Bantul were entirely the result of the involvement of many stakeholders. The research revealed that, in order to enhance the capability requirement, local government is expected to enhance its communication and coordination capacity and at the same time provide a standard operating procedure that can be followed even if there is a change in the position – the person himself – of the Bantul Mayor (in this instance). As shown in earlier discussion, it is clearly understood that the role of collective leadership, exemplified by the Bantul Mayor, was crucial. This could become a barrier to progress if the Mayor ceased to hold office and the new Mayor was then unable to give effective instruction to Bantul personnel. Capability on damage assessment and debris removal should be thus be prepared for and managed to ensure the success of disaster management in Bantul.

8.2.2. Bridging the Gaps: Integrating Capability Requirement and the Facts

As an overwhelming situation, a disaster may involve testing local government's capacity to deal with human losses, and financial loss or damage to social

structure. In this context, disaster can be seen as 'social vulnerability' (Gilbert, 1995) or 'lack of capacity'. The concept of capability reflects the institution's capacity to deploy its resources to achieve its goal (Amit & Schoemaker, 1993). Capability requirements for managing a disaster can be identified from each stage of disaster management. In mitigation, for instance, capabilities needed are evaluation, monitoring, and dissemination. These requirements aim to reduce the damaging effects of unavoidable emergency and to suggest the best alternative for community withdrawal from risk areas. In preparedness, planning, exercise and training are the capability required in order to increase awareness of potential disaster risk and vulnerability among communities through effective communication channels for providing an early warning system. Needs assessment coordination, information exchange and logistical expertise are needed in the response stage. Damage assessment expertise, debris removal expertise and disaster assistance skills are required in recovery capability management (Indian Institute of Disaster Management, 2007; Moe & Pathranarakul, 2006; Shaluf, 2008).

Significant progress has been made by the Bantul local government in terms of local capability to deal with and recover from the 2006 earthquake. The government has successfully managed resources in implementing response and recovery strategies. Since the primary purpose of capability is to enhance the productivity of an institution's financial, physical, individual and organizational capital attributes that local government possesses (Hill & Jones, 1992; Hitt, et al., 1997), the Bantul local government has learnt from the experience and evolved from their routine roles and tasks into more strategic roles by means of which the leader can alter the resources base, integrate these in order to generate value-creating strategies (Eisenhardt & Martin, 2000), so as to provide a better service in the emergency and recovery periods, and encouraging the community to be optimistic about facing the future.

However, lack of capability required in managing a disaster has remained a major problem for the Bantul local government in solving this complex task, as described in Table 8.3. The research discovered that the expectations of state and non-state respondents required that local government must be able to

master the complex tasks that related to the characteristics of a problem situation and of decision making in conditions of uncertainty (Dosi, et al., 2003). The capability requirement in managing a disaster is basically associated with the knowledge and skills that are relevant to organisational development (Teece, et al., 1990). The knowledge and skills are then embedded in technical systems and are guided by managerial systems. It is understood that the Bantul local government had limited knowledge and skills to manage the quake, since they had never experienced such an emergency situation. Positively, the managerial system guided by the leaders at the top level of the government supported local government personnel to develop the technical system to handle the situation during and after the quake, as Eisenhardt and Martin (2000) have shown to be the better way for the leader to allocate resources. The most important finding was that the organisational capability in Bantul has been conceived as collective and socially embedded as a result of social interaction between the government and the community and representing a collectively shared way of problem solving.

Table 8.3. Capability Requirement: Facts and Gaps

Stage	Capability Requirement	Existing Facts (Research Findings)	Gaps
Mitigation	Evaluation Monitoring Dissemination	The role of particular institutions for responsible disaster mitigation activities is very limited. Therefore evaluation, monitoring and dissemination related to disaster are very rarely conducted, although after the 2006 earthquake, the Bantul local government appointed a Civil Protection Unit to manage disaster and to conduct information-related disaster dissemination to the community.	No mechanism to ensure the sustainability of disaster-related programs as part of evaluation and monitoring requirements for managing a disaster. Limited local financial resources to support mitigation activities. Poor information dissemination to the community.
Preparedness	Planning Exercise Training	Before the 2006 earthquake, no planning, exercises or training were conducted. However, after the earthquake, Bantul developed a Middle-Term Development Plan to accommodate disaster issues in local government programs. Moreover, an early warning system, training and exercises have been conducted with the support of international NGOs.	Lack of disaster mitigation and preparedness infrastructure. Maintenance of early warning equipment has remained a major problem due to limited government budget. Training has been provided only to the staff of particular offices responsible for disasters and some districts have not been involved in conducting disaster preparedness activities.
Response	Needs assessment coordination Information exchange Logistical expertise	Coordination functions with other institutions and information exchange have been provided and run mostly by the local leader. Although no logistical expertise was available, the heads of departments have mastered the condition of Bantul and this therefore helped the effective delivery of humanitarian aid to victims.	Limited initiatives from the bottom up.
Recovery	Damage assessment	Damage assessment and debris removal expertise rely on other institutions	Limited staff capable on damage assessment and debris removal.

expertise	(universities, NGOs).	Disaster assistance activities for the community mostly conducted by NGOs.
Debris removal expertise	Disaster assistance skill has been gained through attending workshops or seminars related to disaster management.	
Disaster assistance skill		

During and after the quake, the dynamic and evolving conditions, uncertainty and situational constraints characterised the disaster response and recovery environment and developed the management capabilities required for the Bantul local government to deal with the earthquake. This research concluded that some impairment in the capability requirement for managing a disaster could be substituted with what Leonard-Barton (Leonard-Barton, 1992) called managerial systems and the community's values and norms. Therefore, through such capabilities, local government began the process of coping with the critical success factors for disaster management.

8.3. Major Constraints for Local Government on Disaster Management

Local government constraints in managing a disaster have been discussed by disaster experts since the 1980s (Hoetmer, 1983; Perry & Mushkatel, 1984; Wolensky & Wolensky, 1990; Wyner & Mann, 1983). The constraints covered organisational problems, lack of financial resources, experiencing behaviour and perception that viewed disasters as Acts of God, and the role of local expertise and volunteers who could worsen the situation because of their limited knowledge and skills. This section deals with the four constraints that were faced by the Bantul local government when dealing with the 2006 earthquake.

8.3.1. Organisation

During and after a disaster, an institution calls upon a larger group to augment emergency activities management. The local government level in many cases cannot afford to have qualified emergency staff and must use officials who are already serving in other capacities, such as fire fighters, the police, the army,

public works or search and rescue (SAR) teams (Scheider, 1992). The local government personnel are designed to work under normal conditions where communication and coordination networks with other horizontal and vertical institutions can be easily maintained.

Regardless of the specific make-up of their personnel, local government must able to coordinate governmental efforts within its respective jurisdiction and must compete with all other line institutions in areas of limited time and budget. However, this is not an easy task for local government, to coordinate all resources effectively when operating from line institutions that are themselves a source of resources. Thus the most frequent problems that arise at this stage are communication and coordination with and between other horizontal and vertical institutions (Labadie, 1984b).

In Bantul's case, although a division of labour where each level of government has specific roles and responsibility clearly exists within the disaster response system, the overall framework works through a top-down mechanism. The Bantul Mayor met the first requirement of mobilization by initiating governmental activity and providing a critical and ongoing link between other institutions (NGOs, private business and universities) and governmental resources to resolve organisational barriers in which local government lacked coordination with both horizontal and vertical institutions, assessing risks to organisations, establishing roles across departments and other organisations, especially on the flow of information, and developing policies and procedures in the emergency.

At the same time, to tackle the problem with coordination and communication to other line institutions, central and provincial governments acted as the primary intermediaries between local government and other institutions, as well as providing technical and financial assistance. This division of labour between each level of government is intended to provide the most efficient utilization of local resources in order for the entire disaster management system to work effectively.

The lack of programs related to disaster mitigation and preparedness, as well as the limitation of community knowledge related disaster management, existed in Bantul before the 2006 earthquake. It is clearly stated by Aguirre (Aguirre, 1994) that rarely does local government make an effort to educate the community about disaster that potentially endangers lives if the government has never previously experienced such a disaster. This was the reason why disaster awareness was absent from local decision-making processes and also explains what Petak (1985) says about why disaster management has usually been disregarded in public administration practice.

8.3.2. Budget

A disaster can result in severe economic consequences for an affected area. Local government has the first responsibility for handling the actual activities of emergency management in a disaster because a timely response and recovery will positively influence economic growth in disaster-affected areas. Costly liability demands the government finance disaster activities, although local government still retains the option (with other institutions) of providing assistance in an emergency. This clearly emerged in the Bantul case, where local government had to face distinct and serious problems in responding to the 2006 earthquake. Low incomes for most of the community, combined with the very limited private insurance that the community has, placed the burden of aiding the response and recovery processes of disaster victims primarily in the hands of the local government. The Bantul local government itself admitted that the government was ill-prepared to assume the financial costs of response and recovery. Hence the gap in financial resources was solved mostly through the support of central and provincial governments, together with financial sources from overseas grants (Table 5.1).

The decentralized funding allocated from central and provincial governments has meant that many incremental changes have been made in Bantul. There have been many successful comprehensive efforts of the Bantul local government, for example, in speeding up the disbursement process and the development of public facilities by providing financial assistance for disabled

people, housing facilities for the disabled and rehabilitation of non-government orphanages. The reality of local government budget deficits clearly affirmed that decentralisation will continue and will be used to shift some of the funding burden back to central and provincial government (Goodisman, 1983).

In relation to how the Bantul local government could anticipate the availability of funds for disaster-related activities, particularly during the response and recovery period, the government applied the financing instrument mechanism (Kunreuther & Linnerooth-Bayer, 2003). This type of mechanism is intended to fund the costs of response and recovery periods, which are the arrangements whereby the local government mobilizes its own financing sources by securing financial assistance domestically and internationally, as well as by diverting funds from the public budget. As a traditional mechanism, the problem that arises for local government is that this mechanism has placed local government in a difficult situation because of not being prepared for a disaster's financial outlays. Thus, in the absence of a disaster reserve in the Bantul case, funds were initially diverted from other budgeted expenses that providentially did not result in the freezing of Bantul's public projects. This adopted mechanism also explained why the Bantul local government failed to provide funds to be allocated in the disaster mitigation and preparedness activities – because the mechanism is not focused on pre-disaster arrangements.

8.3.3. Attitude

During and after a disaster, it is natural that citizens turn to government for assistance. However, a disaster often generates problems that are difficult to anticipate and handle by the local government because it places an extraordinary burden on the bureaucracy staff, particularly in the case of the local government mindset toward a disaster. This study reveals that apathy is the greatest problem associated with mitigation and preparedness activities in Bantul. Apathy or lack of concern and interest in disaster issues was present in Bantul disaster management for a variety of reasons. The common perception that a disaster is an unexpected event, an Act of God, and unwillingness to undertake new tasks but rather to prefer to keep doing regular tasks are the

most pressing reasons found in this study. The low commitment of local government personnel to see disaster planning as a product rather than a process has typified the behaviour of many local governments.

Indeed, Wyner and Mann (1983) criticized conduct of disaster management by local government as characterized by low visibility and low priority. The unwillingness to create a new program for disaster management has resulted in the Bantul personnel's tendency to isolate disaster mitigation and preparedness activities from the day-to-day government planning processes, although experiencing an earthquake has shifted their paradigm towards paying more attention to disaster mitigation and preparedness activities.

In Bantul's case, a gap existed between the bureaucratic norms that dominated the government's day-to-day activities and the emergent attitude that guided social interactions during the quake. Fortunately, the gap is a small one, as is seen from the fact that relief efforts proceeded smoothly and government emergency operations were perceived to be successful. Thus the gap is the primary determinant of public perception about the success of governmental relief effort, as Schneider (1992) states: the key to a successful local government response depends upon the extent to which post-disaster human attitudes correspond to prior government expectations and planning.

A poor or disinterested attitude towards disaster management mitigation and preparedness was not only shown by local government personnel; the local legislative body also did not encourage it in local policy. Although the legislative body plays a powerful role in the bureaucracy, the reasons for its approach relate both to unwillingness and to inability to plan (Godschalk, 1988). In this case, the local legislative body demonstrated the unimpressive character and quality of legislature members toward the disaster issue. Inability to plan and unwillingness to adopt disaster management mitigation and preparedness activities in local policy, as well as the inability of local government to cope with task overload tasks, has not found a substitute in an improvised emergency government institution, citizens' association or authorities devolved from central and provincial governments. Decentralized government in Indonesia has

brought autonomy of authority to the Bantul local government to be able to work on emergency coordination and, at the same time, it is recognized that local people know local needs best. Thus the negative attitude toward disaster that was found among local government personnel and legislative agencies did not cause such major problems in the response and recovery stages, although it became a lesson for the Bantul local government to adopt mitigation and preparedness activities in their policies and to use these as an impetus for changing attitudes toward disaster.

8.3.4. Local Expertise and Volunteers

Disaster is often an unpredictable event; it is difficult to know precisely when and where it will occur and what problems it may generate. Human behaviour during a disaster may appear to be chaotic and local government is similarly paralysed. Understanding that the Bantul local government was unprepared and ill-equipped to provide direct assistance to the community, local government therefore called on local expertise and volunteers to alleviate conditions and to maintain social order within disaster-stricken areas. Such conditions may create a truly non-institutionalized situation, because traditional norms and values in the community sometimes do not match the values of volunteers (Scheider, 1992).

The study revealed that, although local experts and volunteers contributed significant rescue and relief efforts, since they were mostly untrained volunteers and had no intensive knowledge about disaster, they became a problem when their support for disaster victims worsened conditions for people who had mostly suffered fractures. This was simply because the volunteers did not know what procedure to follow to ensure people's safety. Thus local voluntary forces need to be recognised, organised and increased in effectiveness in order to avoid misguided disaster responses and to fall into line with local government disaster management activities.

Local experts and volunteers who immediately come forward from nearby areas as sympathisers and helpers may not have information about any one specific

geographic area and about the community who live there, and this can lead to an apparent lack of concern in providing relief operations that best suit to local needs; this in turn causes indifference in the community. The lack of knowledge of local experts and volunteers about local culture also became a problem when they encouraged the people not to support their local government's decision on the financial assistance mechanism to be applied in the area. The culture of Bantul, which had reflected a tolerant community, was influenced by a limited number of volunteers and local experts who were willing to disrupt the existing patterns of behaviour and community understanding.

This study also reveals that the most widely disseminated comments about adequacy of relief efforts arose from volunteers who worked within the limited affected area of Bantul and who in effect seemed to blame the local government for not handling responses to the earthquake quickly and effectively, especially in remote areas. The shortcomings attributed to local government by such volunteers showed that their perceptions tended to be simplistic, incomplete and inaccurate, because many of them came from outside the Bantul area and had never previously dealt with the local government. Such an image was further conveyed by the mass media, who stated that conditions were the result of the inevitable failure of government relief efforts. Indeed, the information was misleading or it was simply incorrect, because local government did in fact step in, provided relief and terminated its efforts within its expected time frames.

8.4. Relationship between Central, Provincial and Local Government

A disaster is unlikely to change the normal pattern of government behaviour. Determining who has the organizational authority to undertake new, disaster-related tasks is another major problem. When there are new disaster-related tasks to be performed, questions almost inevitably arise about which organization has the authority to undertake them. In this case, the central government has a role to play in all aspects of disaster management and in assisting all levels of government to prevent, mitigate, respond to and recover from disasters. In addition, the central government also has an important role to play in coordinating disaster-related activities. At the same time, the provincial

government must be able to act as an intermediary between central and local government in order to avoid conflicts of interest that can render disaster management ineffective.

The relationship between central, provincial and local government is an essential issue for disaster management. It requires the central and provincial governments to decentralise decision-making power to local government (ADPC, 2003; Blaikie, et al., 1994). This means that, although disaster management strategies are developed at the central and provincial levels, local government has an equal capacity to contribute to design and policy implementation at the local level. This study reveals that, because of limitations in local capacity, financial resources and technical capacity were provided by the provincial and central governments. However, the Bantul local government was able to manage the quake during the first days in such a way as to determine the success of a disaster management policy. The research has also revealed that the Bantul local government overcame the challenge that existed in organisations' structural and cultural differences between central and provincial government and determined its strengths and weakness for encouraging cooperative effort to increase prospect for success (O'Toole, 2003).

Many studies of disaster management in developing countries show that, even though local government bureaucrats pay attention to conditions and have the right intentions, they often find themselves dealing with issues of national ideologies and development agendas (Waugh, 1990). Hence weaknesses in central, provincial and local government relationships can be detrimental during a disaster. However, this was not found in this study. The provincial government carefully maintained coordination between central and local government and accommodated the central government's interest at the local government level, particularly where this related to the sensitive issue of cutbacks in government assistance to the community. This condition is in accordance with what Smith (2003, p. 619) says, that a network form of the relationship between central, provincial and local government emphasizes power sharing between levels of government with no centre of accumulated authority and it is characterized by

mutual interdependence on others' resources, not by competition for scarce resources.

Many disaster analysts have found that the relations between central, provincial and local government in disaster management efforts can prove to be difficult for a number of reasons, such as lack of strong political and personal commitment, the technical complexity of historical resistance to regulation and planning and the questionable capacities of central, provincial and local government officials in designing and implementing effective disaster management systems (Cigler, 1988; May & Williams, 1986; Petak, 1985). The findings of this study show clearly that a high level of commitment and open collaboration from all levels of government, non-governmental organisations and civil society occurred during and after the earthquake. The technical complexity of the regulatory framework did not become a major problem in the relationship between all levels of governments because the organisation of programs and activities for rehabilitation and reconstruction followed only one regulation, which was the Presidential Regulation. This regulation was clear and not confusing for local government implementing it. The networking between central, provincial and local government was influenced very much by historical and informal relations, which ensured that the network ran smoothly. However, although the capacities of all levels of government remained questionable, the organisational structures for program implementation as described in Figure 6.1 made clear the role for each government level action during and after a disaster. The findings of this study conclude that the relations between the central, provincial and local governments contributed to the success of disaster response and recovery management in Bantul.

All in all, intergovernmental relations are complex interactions among the multiple levels of government that require a coordinated effort and creativity to successfully address the needs of national and local issues. Large, complex and seemingly unsolvable problems such as disaster are best approached from a cooperative effort combining intergovernmental resources (Kapucu, et al., 2010).

8.4.1. Disaster Management Reforms at the Local Level

Today a paradigm shift in disaster management, from response and recovery to mitigation, has emerged in many research findings across the world (Pearce, 2003b). The new paradigm of Indonesia's disaster management paradigm has been started in 1966 by the development of disaster management institutions as explained in Chapter 4, section 4.3.1. In addition to such organisational change, national policy arrangements have also been made in order to solve the complexity of disaster and emergency situation demands in Indonesia. Further detail about these national policy arrangements has been provided in section 4.3.2.

Understanding that disaster is typically a local event, in which local government acts as the government institution closest to and responsible for protecting the people, the emphasis of Law No. 24/2007 on Disaster Management shifts the focus from hazard to vulnerability, from a reactive approach to a proactive approach, from a single agency as the responsible agent for all action to a partnership arrangement, from response management to mitigation management and from planning *for* communities to planning *with* communities. All of these paradigm shifts have occurred because local government is seen as an important influence in changing the paradigm of disaster risk management, and, more importantly, because there is a recognition that a decentralized government is more efficient in mitigating disaster risk than a centralized government. Thus the Law on Disaster Management strongly advocated strengthening disaster management reforms at the local government level.

However, the case of Bantul revealed also that disaster management reform at the local level must face many constraints, as explored in section 8.3. Low priority of and low visibility in government goals in dealing with irregular tasks, financial issues and a lack of expertise were common problems in Bantul before, during and after the earthquake, and they initially impeded disaster management reform. Some efforts have been made by the Bantul local government with regard to this reform, such as having Bantul's Middle-Term Development Plan adopt vulnerability indicators, which can be categorised as a

proactive approach. Although the indicators have not been fully implemented at the sub-district and local community levels, this action obviously shows the commitment of local government to accommodating a proactive approach in its local policy that is rarely found in other local governments in Indonesia. On the other hand, the development of a partnership agency as a responsible agent for disaster management could not be implemented, due to the sectoral 'egos' of each department in Bantul. Thus the Bantul local government still has the Civil Protection Unit as a single agent responsible for disaster management. This certainly contradicts the mandate of the Law on Disaster Management that obliges local government to have a Local Body for Disaster Management.

This study has also found that the Bantul local government has paid more attention to response disaster management than to mitigation. Although some programs have been developed to educate people in the mitigation and preparedness stages, the continuity of the programs and activities remain in question. This is understandable, because to maintain such programs sufficient funds must be available, whereas in the case of Bantul, where 80% of local revenue is allocated to staff salaries, it is proving to be rather difficult to maintain long-term disaster mitigation and preparedness activities. However, planning with communities has been started because the Bantul community, which has had experience with disaster, has a greater sense of the need for protecting life than a community with no such prior experience. Thus, with or without local government intervention, most of the community in Bantul has become more aware about vulnerability conditions that can potentially threaten lives. In short, it can be said that disaster management reform in the Bantul local government remains at the half-way point. Much effort to tackle the constraints needs to be made to achieve what has been mandated in the Law.

8.4.2. Decentralisation and the Implementation of Disaster Management

Bantul is one of 491 regencies/cities designated in the decentralisation era in Indonesia[25]. According to Law 32/2004, regional administration[26]refers to the

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[25] A decentralisation policy was first implemented in Indonesia in 2001 (Law 22/1999). However, since this Law has been subject to varying interpretations by both central and local government

running of government affairs by the regional government and the Regional House of Representatives, in accordance with the principles of autonomy and assistance within the principles of a broad autonomy system and the principles of the Unitary State of the Republic of Indonesia, as contained in the 1945 Constitution. Within this new policy, full autonomy is conferred on local government, which comprises regencies/cities, while the province is given limited autonomy. With regard to the full autonomy of local governments, this means that they have their own discretion to create and implement local policies so long as they do not violate national law and breach the public interest.

The implementation of decentralisation created for the Bantul local government, and for other local governments in Indonesia, new responsibilities and expectations from the whole community. At the same time, decentralisation brought significant new resources and power to local decision makers, but also new pressures and concerns. With regard to disaster management, Law No. 24/2007 stressed the important role of local government in the decentralisation era in protecting the community from disaster impacts and in guaranteeing the continuance of the rights of affected communities. The pressures and concerns are also emphases for the Bantul local government, which must reduce disaster risk and stipulate disaster management policies that are aligned with local development policies. However, this study reveals that, although decentralisation has brought new resources and power to the Bantul local government, there was a lack of programs related to disaster mitigation and preparedness, as well as limitations on community participation in local government policy-related disaster management before the 2006 earthquake. This was the reason why disaster awareness was absent from local decision-making processes.. The reason why such activities of disaster management are

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(for example, the Law granted the central government the power to regulate the follow-up to the decentralisation policy), without clear guidance it may give rise to policy making that is contrary to local autonomy. Hence a new and progressive decentralisation policy was introduced by Law 32/2004. This Law redirects local autonomy towards enhanced public service and the development of creativity of local government and ensures there is also an equal relationship between central and local governments in regard to authority and finance so as to ensure the growth of nationalism, democracy and social welfare.

[26]Within the regencies/cities, there are districts, which are smaller administrative government units; each district is further divided into villages.

not frequently conducted as a part of the daily activities of local government is that, because disaster is infrequent, it is not something that local government has to face every day. In the discussion of local government barriers in an earlier section, such an approach has been explained as a major constraint on local government disaster management effort and effectiveness.

In the sense that decentralisation is bringing government closer to the people and may also lead to more responsive and responsible government, it nonetheless cannot result in better disaster management if the 'political market' does not work efficiently (Ahmed & Iqbal, 2009). The case of Bantul illustrates how local politicians did not respond to local demands for effective disaster risk reduction policies before and after 2006 earthquake. Local politicians mostly accumulated their political capital by participating in relief and rescue efforts. This may indicate that decentralisation will not automatically lead to better public service delivery in Bantul, although after the 2006 earthquake local government did make a considerable effort by incorporating it into Bantul's Middle-Term Development Plan.

Since disaster is a local phenomenon, the use of local information, knowledge and resources is critical. This study has found that during response and recovery in the post-emergency phases in Bantul implementation and coordination were made more effective by appropriately adopting local knowledge, resources and culture. Further, the proximity between public officials and the local people in Bantul has not been shown to have weakened local government's regulatory and monitoring capacity, nor was there unprofessionalism, unethical relationships or corruption that are commonly found in many studies related to disaster management in developing countries (Prud'homme, 1994; Tanzi, 1995). The tendency for elite capture and confiscation of disaster aid is higher during and after a disaster period when local government receives aid and relief; this is very commonly found in developing countries (Bardhan & Mookherjee, 2000) but was also not found in Bantul. Disaster aid, whether financial or material, was not seen as the main contribution in the emergency and recovery stages. The Bantul local government mostly called on local values and resources to maximise effort at

both these stages. Also, the press, the media generally and civil society played a critical role in providing information during the disaster and it is obvious that their roles were not vulnerable to political and elite capture at the local level. In short, greater information, accountability and targeting efficiency led to efficient disaster risk management by the decentralised government in Bantul.

8.5. Local Government and Social Networks

The use of integrated and interdependent collaborations as a form of inter-governmental and inter-organisational relations allows public and private organisations to work together and create a solution to a problem larger than any one organisation can handle (Conlan, 1998; Ferejohn & Weingast, 1997; Tierney, Lindell, & Perry, 2001). Therefore understanding how the social networks and local government interact in the disaster discourse is very important for overcoming the increase in non-routine problems and the growing need for non-hierarchical solutions (Kettl, 2005). Central issues for an institution's networks in a disaster are communication and coordination (National Disaster Management Agency, 2008). Communication is a process through which local government sends a message to another part of the organisation (intra-organisational communication) or to another organisation in the network (inter-organisational communication). In this study, networks are defined by the enduring exchange relations formed between local government, individuals, community groups and other organisations. The network analysis of this study focuses on the structure of the relationship between all of these groups and institutions and the implications for their behaviour and performance. This is also a way to measure their collaborative capability (Milward & Provan, 1998). Once an effective disaster management network is established across all sectors, the response and recovery tasks will be much more efficient and effective because it can increase the amount of resources needed to deal with multiple problems relating to emergency management (Kapucu, 2009).

To act effectively in a time of disaster, networks require sharing and using of information effectively, which means collecting, collating, analysing, and then

deploying it promptly and in a useful form (Weber, et al., 2005). This sub-section deals with how the Bantul local government interacts with social networks in dealing with a disaster. Discussion is divided into three parts: inter-organisation, citizen-to-organisation and organisation-to-citizen.

8.5.1. Inter-Organisational

Inter-organisational networks have become a prominent aspect for any government in managing a disaster, because they address the lack of local government capability through negotiated efforts or partnership with other government levels, universities, social institutions and non-profit sector organisations (Kapucu, 2007). Inter-organisational networks in managing a disaster usually occur in terms of the communication process, information flow, the exercise of authority and decision making and the development of coordination and loosening the command structure among many institutions.

During a disaster, when communications are inadequate, personnel and resources are inefficiently used and activities are duplicated. Inter-organisational interactions occur not only among the top officials of organisations. In the case of Bantul, bureaucracy coordination between the local government and other government organisations began with the formation of the task force to rehabilitate disaster-stricken areas. This aimed to maximize use of limited personnel and resources to avoid duplicating activities and delay in providing emergency assistance to the community. The senior leaders (the Mayor and the Prime Secretary) arranged to interact with other organisations to fill the capability gap that local government faced. Both leaders had a challenge to create an effective communication network for emergency conditions, even though this might have conflicted with organisational structures developed during more routine periods.

A simplified bureaucratic system that could function during times of devastation provided better information for other institutions. This function was well understood by the Mayor: creating complex information systems would make bureaucratic communication dysfunctional, particularly during the emergency.

Fortunately, the local personnel, although having never undertaken similar tasks, had knowledge similar to their leader's and were therefore able to assemble as a team and develop formalised networks to guarantee that information sharing during the crisis occurred properly.

The effective flow of information across organisational boundaries was critical for the Bantul local government capability in remaining effective in a dynamic disaster environment. The research reveals that all stakeholders were in contact with each other and therefore the information flowed properly, since it was important to envision a successful crisis and disaster management. Information about the current status of communication capacity and of the actions of participating organisations allowed the Bantul local government to make informed decisions about how to proceed in concert with others in the networks to achieve the overall goals of protecting the community and of restoring its functionality.

Dynamic networks are underpinned by reciprocity and mutual trust which allow members to share information, risks and opportunities with greater ease (Moynihan, 2008). Organisational communication and decision making during disasters have some distinguishing characteristics and require special attention. The rate of decision making increases, particularly at the lower levels of organisations. The case of Bantul shows that there was a clear delegation of authority from central and provincial government to decentralize decision making at the local level without encountering structural barriers. This occurred because the higher levels of government acknowledged that the quake had created a high level of uncertainty and there was a need for timely and accurate information sharing which must be run by local government. The crisis situations in Bantul produced conditions of greater uncertainty, greater diversity, and decreased formalisation and decreased centralisation. Increased complexity of organisations and the non-routine nature of crisis tasks moved all organisations toward coordination, as Dynes (1994) has said – a more effective direction might be to plan to facilitate coordination by feedback in organisations in times of crisis.

The problem of communication generally involves *what* is communicated rather than *how* communication occurs (Quarantelli, 1988). Although the telecommunication system became temporarily inoperative during the quake and for few days after it, fortunately the radio networks in Yogyakarta and Bantul continued to operate and could be used as a substitute means of communication. However, because the Bantul local government personnel were still in a difficult situation, communication to the community was mainly replaced by information delivered by radio. At a critical time, the Bantul local government failed to give sufficiently specific messages, such as the non-possibility of a tsunami attack that might threaten the whole community in Bantul and clarity as to the principles of disaster management in the community. This is understandable, because local government officials considered that coordination on informing the community about the status of the quake or the possibility of a tsunami were matters for central decision making by a particular agency. During the emergency stage such a role was confusing and difficult when it came to ensuring coordination between organisations.

8.5.2. Citizen-to-Organisation

In the complex and chaotic environment of a disaster, local government frequently develops inter-organisational networks in order to work together to pursue shared goals and resolve common concerns. Local government realised that the response and recovery tasks lay beyond its capabilities as individual organisation and required a collective action among public, private, and non-profit actors (Johns, O'Reilly, & Inwood, 2006; Waugh, 2004). However, since inter-organisational networks are based on recognition of key interdependencies across sectors and organisations, these networks also require effective mobilization and utilization of multiple available community resources (Kapucu, 2007).

This study revealed the rise of social capital in terms of citizen-to-organisation networking. Social capital in the case of Bantul's recovery emerged in the form of *gotong royong*. The contribution of social capital in Bantul's disaster recovery program can be illustrated from the fact that the community worked voluntarily

in building houses. They started first with the houses of the neediest families. Limited assistance and difficult living conditions, such as temporary accommodation in tents, triggered the community to rebuild their houses with any materials available. In many cases, the community used their own roof tiles or doors found in the debris in order to avoid buying new materials. By this means, the cost and the time taken in building one house was less than it would have been in having a housing contractor build it. Local community leaders motivated people through promoting the view that the earthquake could destroy their houses but not their spirit or belongings. It was not only a matter of material and voluntary labour; even more important were the women who provided free food for those working on rebuilding their houses. In this case, *gotong royong* connects through networks in the community in order to share common values with other members of the networks. This is understandable, since a natural disaster such as an earthquake creates an atmosphere in which a community feels a shared risk and willingly coordinates shared responsibilities (Kapucu, et al., 2010). At the same time, communities responding to disaster are also seen as coping collectively with shared pain, loss and disruption, and as temporarily suspending ongoing conflicts and disagreements in the interests of meeting urgent needs and beginning the recovery process (Comfort, 2002; Comfort & Kapucu, 2006).

The social capital which exists in Bantul's daily life has become what Field (2008) says are intangible resources in a community in sharing value and trust. More, Putnam (1993) added that such trust, norms and networks can further improve the efficiency of society by facilitating coordinated actions. The formation of the Self-Reliant Housing Community Group and the Bantul Revival Forum as discussion forums in which people could provide their inputs for recovery management have also become social capital in the way that the community develops their networks on a base of trust and local norms. Social capital is a resource that is derived from the relationships between individuals, organisations and communities (Bolino, Turnley, & Bloodgood, 2002), embedded in a social structure, is mobilised in purposive actions (Lin, 2001, p. 29) and is derived from the network of relationships possessed by an individual or social unit (Nahapiet & Ghoshal, 1998).

Communities that have strong working relationships on a daily basis generally function better in emergency situations because of increased trust between them (Kapucu, 2006). This condition related to the finding of this research that strong working relationships in the community supported the success of recovery management in Bantul. In the event of a disaster, the existence of social capital is very important and valuable because it helps solve problems of coordination and facilitates information flow between and among individuals (Lin, 2001), which usually becomes an obstacle for local government in managing a disaster. Furthermore, Putnam (1993) emphasises that a community with high levels of social capital is typically characterized by high levels of public participation among its citizens. This supports the fact that Bantul has high levels of public participation which indeed had begun before the 2006 earthquake. High participation of the community is likely to contribute to the creation of social capital and, at the same time, an institution that is composed of good organizational citizens is likely to accumulate higher levels of social capital (Bolino, et al., 2002).

Efforts in the response and recovery periods in Bantul were mainly supported by strong working relationships with the community, local government and other institutions such as NGOs and universities. This relationship did not emerge instantly during or after the quake. Hence building trust between government, public, private and non-profit organisations had taken place prior to the emergency, thus ensuring that information sharing, willingness to collaborate and shared values already existed in the network. This fact supports the definition of a disaster that Kates et al. (2006) explain, a disaster reveals the extreme differences in the way in which societies, communities and individuals manage their lives, support each other and cope with and respond to adversity.

A paradigm shift in disaster management from response and recovery to mitigation involves a feasible role for public participation. This research has determined that the situation in Bantul before the 2006 earthquake was very poor in terms of local government and community awareness of disaster (Figure 7.3). The lack of a strategic framework, appropriate coordination, disaster preparedness, mitigation infrastructure and poor information dissemination

aggravated problems. At the community level, the potential impact of an earthquake on households varied. The vulnerability of a household is caused by its unsafe conditions and the limited capacities it has in coping with the consequences of a disaster. Most victims of the Bantul quake lived in the lowest quality housing, in the worst locations, and had the fewest opportunities to recover from disaster. The community at this level in many instances had limited access to risk-sharing mechanisms such as insurance (Samal, Meher, Panigrahi, & Mohanty, 2005). However, these very poor conditions have slightly improved since the quake.

The Bantul local government has begun to provide a disaster mitigation policy and to create activities that relate to disaster awareness. In spite of this, as Godschalk, Kaiser and Berke(1998) stress, even though local government plays an important role in mitigation policies, the local community has most influence on efforts associated with mitigation policies. The community has also grown more aware about disaster. The findings of this study reveal such a growing awareness about disaster among the local community after the 2006 earthquake. There have been some attempts from the community and local government in recent years to identify vulnerable areas (Figure 7.1 and 7.2) and this shows clearly the relationship between community acceptance of mitigation in disaster management and the experience of an actual disaster; as Drabek (1986) has stated, the greater the exposure to disaster, the greater the interest in disaster management. Disaster creates an atmosphere wherein community and local government experience the shared risk and willingly coordinate their shared responsibilities (Kapucu, et al., 2010).

Various studies have stressed that participation and ownership by the local people can be significant achievements (Okazaki & Shaw, 2003). This research shows that the importance of public participation is increasingly becoming an accepted part of disaster management processes in Bantul. What the Bantul local government has done by placing the local community at the forefront of the recovery process has contributed to greater success of rehabilitation and reconstruction. Furthermore, this approach has also minimised the potential conflict and risk that may arise between the community and the government.

The integration and mobilisation that has been managed effectively between all stakeholders has also supported the effectiveness of disaster management processes in Bantul. This integration and public participation have continued after the recovery stages concluded. In evidence from the community about their experience in the disaster, it became apparent that the community now has a greater preparedness and is reasonably well-informed about disaster management actions (Figure 7.2 and Table 7.3).

The community has taken modest steps to protect areas against subsequent disaster. Relief, reconstruction and rehabilitation were carried out after disaster struck. Increased coordination, capacity building in the local community, long-term planning, and a greater understanding of recovery and rehabilitation issues can potentially improve post-disaster responses at the community level. Sharma et.al (2003)also argues that empowering individuals within natural disaster threatened communities is critical to successful mitigation.

8.5.3. Organisation-to-Citizen

Disaster is a fundamentally local event that requires management and response by the government to the community. After such a major disaster, the Bantul local government officials were involved in complex intergovernmental processes and in key public policy choices that affected the future of the community. The capabilities required here were to accelerate community recovery and maximize community values. In this stage, there was a greater need for local mobilisation and organisation, increased coordination and capacity building in the local community, and decisions on long-term planning. A greater understanding of the recovery and rehabilitation issues can potentially improve post-disaster action at the community level. In this case, empowering individuals within natural disaster threatened communities is critical to successful mitigation.

The research reveals that limited knowledge of local government, no preparation and no anticipation of the earthquake resulted in paralysis of government mobilisation and organisation. Coordination between local

government and the citizen was at an impasse for the first few days after the quake, because the environment after the quake was characterised by uncertainty and rapid change, which presented different constraints and opportunities for the Bantul local government than do stagnant and stable environments. The quake also challenged the local government in terms of having lack of capabilities in routine communication systems, as Rice (1990) has pointed out: 'when multiple actors in dispersed locations must have immediate access to each other, as during a crisis, they must overcome these traditional communication constraints'.

The quality of governmental relations with citizens is a major influence on the efficiency of local recovery. These relations in post-disaster settings often are characterized by limited coordination, uncertainty, problem complexity and conflict among key actors (Rubin & Barbee, 1985). However, the research found an interesting aspect in the case of Bantul. Flexibility, adaptiveness and creative leadership emerged as key characteristics of the Bantul local government team-oriented recovery efforts. The strategic choices made by the Bantul Mayor greatly enhanced coordination among government officials and appeared to have substantially shortened Bantul's recovery period. The availability to act in the response and recovery stages showed the level of technical and administrative capabilities of the Bantul local government and its available resources. At the same time, communities responding to disaster are seen as coping collectively to share pain and loss (Comfort, 2002; Comfort & Kapucu, 2006).

Furthermore, the networks between the Bantul local government and its citizen were much influenced by local cultural behaviour. As Borodzicz (2005) states, a disaster actually can be defined as a cultural construction of reality. Turner and Pedgeon(1997) have also highlighted the role of local culture norms in dealing with a disaster. Thus a disaster will not only cause destruction and serious loss of life but will also indelibly challenge the specific socio-technical systems affected and may even lead to inquiries at the highest levels social and cultural behaviour.

Successful implementation of disaster management requires a high degree of adaptability to local conditions. The success or failure of disaster management depends on the involvement of culture, traditions and customs. In other words, it is pivotal to take into account the cultural context of the affected localities and regions. Gopalakrishnan and Okada (2007) also state that the customs, traditions, local practices and ethnic composition of an area should all be factored in when devising an appropriate user-friendly package for effective and easy implementation

This is clearly illustrated in the Bantul case, where local government apparently understood community values and found the means of developing organisational capacity to advocate them and procedures for protecting them by incorporating elements of social capital into the disaster recovery programmes. This social capital is *gotong royong*, which is understood as cooperation within and between social networks. Effective recovery resulted from the Bantul local government officials' awareness and knowledge of community-based reasons for acting. The quality and speed of recovery showed that the government has been upholding community values (Rubin & Barbee, 1985). Local government, which is knowledgeable about disaster assistance programs and major community and economic development programs, has better strategic options and is more able to develop disaster recovery programmes successfully. The strategic choice to incorporate local social capital and cultural behaviour, in aspects such as solidarity and tolerance, effected acceleration of the distribution of assistance and made local government appear to be more responsive to its citizens' need. At the same time, the effects also increased local influence over recovery and made it more consistent with community values. Such actions led to a speedier recovery because they promoted an organisation-to-citizen network.

8.6. Theoretical Implications

This study's analysis uses resource-based theory, institutional theory and networking theory because of their widespread application and because the heterogeneous nature of the issues for analysis using these theories make

them useful as a strategic approach in management discourse (Acedo, et al., 2006). Table 8.4 shows the link between the theories used in this research and the findings.

Table 8.4. Link between Resource-Based Theory, Institutional Theory, Network Theory and Research Findings

Important Aspects		Findings
Resource-Based Theory	Resources must be valuable	▪ The Bantul Mayor demonstrated responsive leadership ▪ Collective leadership with multiple stakeholders ran smoothly
	Resources must be rare	▪ Ability to switch the allocated budget for response and recovery stages ▪ Having financial support from national, provincial and international donors ▪ Pay more attention to children's and women's needs ▪ Manage logistic management adequately
	Resources has to be imperfectly imitable	Having additional tasks to understand local need better
	Develop the organization's resources as organizational process	▪ Adopted disaster mitigation effort in the Middle-Term Development Plan ▪ Able to mobilize resources with other government institutions and NGO smoothly to fill the gap of local government
Institutional Theory	Shaped by local culture	Social networks between local government and citizens have been influenced by local culture in dealing with disaster
	Concerned with social aspects, norms, beliefs and cultural influences	Local government benefited from social capital and norms of its citizens such as *gotong royong* and local wisdom
Network Theory	Ability to generate valid information	Effective communication in the Bantul local government is described as a collaborative working relationship between multiple stakeholders.
	Based on shared values, trust and solidarity	All levels of government, NGO, private and the community shared the same commitment to recover from a severe condition.
	Characterized by the exchange of information, staff, cash and goods	Disaster logistic management has difficulty because of lack of expertise, technology, transportation system and infrastructure.
	Coordinating stakeholders from different level institutions.	Although no plans were available for coordination among key stakeholders at all level of institutions, but central government has decentralized the authority for local government to make decision.

From a theoretical point of view, resource-based theory suggests that, in order to sustain competitive advantage, the resources of the institution must firstly be valuable in developing opportunities and resolving threats; the resources must be rare, imperfectly imitable and have the ability to develop the institution's resources as organisational process. Resource-based theory helps the researcher in answering the research question in this study on how the capability of the Bantul local government that existed helped in managing a disaster. The findings of this study have shown favourable results in terms of institutions, human resources, policy for effective implementation, financial and technical resources and leadership.Such a competitive advantage has almost been fully achieved in the Bantul local government because, despite the limitations on resources that the government faced, it still enabled the local government to implement strategies that enhanced institutional performance, especially in the disaster response and recovery stages.

This study shifts the emphasis to the resources that an organisation possesses as the possible basis for a strategy. The essence of understanding capability is not the resources that an organisation owns but its capacity to use, develop and combine them. What led to the Bantul local government's significant achievement in managing the 2006 earthquake was the way in which collaborative local leaders combined limited resources and deployed them to establish positions that benefited the community. Collaborative leadership at the local government level demonstrated the ability to develop the institution's resources and managerial talent by combining physical, financial, human and organisational capital resources in order to gain the competitive advantage that is conducive to the success of disaster management.They involved what Salaman and Asch (2003) say are bundles of skills, consisting not only of simple skills that are relatively easily obtained but combinations of such skills. These bundles of skills also point to the relationship between skills and holders of skills, such as patterns of cooperation and mutual support. In the Bantul case, the patterns of cooperation and mutual support between local leaders and the community can be seen from the unique conditions in which local leaders (head of a board or agencies) have an additional task besides their main roles to excepedite the economy and social conditions of some sub-districts in Bantul.

It indicates that they have high commitment to their organisation and willingness to go beyond their formal job requirement only when they have supportive and inspirational leaders (Bolino, et al., 2002), and this is what the theory highlights, that human resources as resources are imperfectly imitable.

The capability of the Bantul local government is not fixed but evolves in response to the changing strategic intent of organisation. Relevant capabilities in managing a disaster have grown slowly in the Bantul local government, particularly after the 2006 earthquake, and the results can be seen in local government increased awareness of disaster-related matters. The change in how local policy accommodates the need for disaster awareness program and activities for the community is evidence that the local government has shifted the paradigm from the response into disaster mitigation and preparedness. This is one way in which resource-based theory contributes to the understanding of how organisational performance can be improved by building and deploying resources. The key lies in management's ability to consolidate networking between all levels of governments and other stakeholders, technical skills and resources that enable local government body to adapt quickly to changing environments. In this case, local government admitted its shortfalls and limitations in managing a disaster by having a well-established network with higher government institutions levels, NGOs and the community.

The case study of Bantul reveals that social capital in Bantul can be viewed from its local culture, local value and local wisdom, which played an important role particularly in disaster response and recovery management. It is consistent with the notion that Nahapiet and Ghoshal(1998) argue that organisations characterized by high levels of social capital are likely to be more successful than other organisations with relatively low levels of social capital. In other words, because social capital is valuable, not easily formed and difficult to imitate, it therefore supported the government in gaining competitive advantage (Bolino, et al., 2002). This argument is consistent with resource-based theory insofar as the theory highlights the competitive advantage of an organisation as based in its unique constellation of resources that are physical, human and organisational.

However, numerous aspects of an organisation, such as formal reporting structures and management control systems which could influence the ability to exploit the competitive resources and capabilities of local government, were not fully observed in Bantul's case. This organisational process was very much supported by both central and provincial government levels and inter-government organisations. There are still gaps in which the theory is used to analyse the issue of disaster management. Since disaster management is seen as a complex event that requires fast and accurate action, particularly during times of crisis, having valuable, rare, inimitable and non-substitutable resources is not enough. The study found that the support of external agencies and the influence of local culture, as well as social capital that the community had, also underpinned and contributed greatly to the success of the response and recovery stages of disaster management in Bantul. The gap here can be found in that, in order to gain competitive advantage, the collective leadership in the institution cannot control the resources or predict its future value. Such activities that Bantul's leaders have taken in earlier times, which then supported the capability of local government resources, cannot be easily applied to other local governments because of the influence of local culture and social capital, although the magnitude of a disaster also contributed the capability of the leader in allocating resources. Therefore, even though resource-based theory is an aspiring theory which explains why one institution can gain competitive advantage while others fail, this theory is not intended to provide a managerial prescription to handle a crisis and complex events such as natural disasters.

At the same time, it is difficult to generate useful insights about degrees of resource uniqueness. In Bantul's case, both the skills and resources which can be derived from internal or external institutions, and the way institutions use them, can be different or changed in the future, leading to the appointment of a new leader. The point here is that, to create sustained competitive advantage, the institution needs both resources and managerial capabilities to recognize and exploit the productive opportunities implicit in them (Kraaijenbrink, Spender, & Groen, 2010).

To conclude, resource-based theory has supported this study in answering the research questions on what capabilities exist in the Bantul local government in managing a disaster and what capabilities are required to anticipate barriers that may be faced by local government in regard to disaster management.

This study has also used institutional theory to answer the research questions on how social networks operated in the 2006 Bantul earthquake. This theory is relatively new in its application in the disaster management discourse, since many of its applications have been in the study of organizational analysis of multinational corporations (Heugens & Lander, 2009; Kostova, et al., 2008) or foreign direct investment (Bockem & Tuschke, 2010). Institutional theory focuses on the culture, environment, traditions and institution history, which can impact on the success of an organisation (Baumol, et al., 2009) and become legitimized within an institution and society (Eisenhardt, 1988). The social networks between the Bantul local government and its citizens have been strongly influenced by cultural behaviour and these networks highlighted the role of local culture norms in dealing with a disaster. Hence institutional theory is concerned with cultural influences that promote legitimacy of an institution (Fang, 2010; Scott, 2007).

The findings of this research show that organisation, budget, attitude and local expertise and volunteer pressure are obstacles for local government in implementing fully disaster management activities, although they did not impede the Bantul government in innovating and responding to change. However, the government benefited from societal values and norms such as *gotong royong* and local wisdom during the recovery phase in order to fill the gap in government resources and skills that fell in a range outside disaster management systems. Thus this combination became the bridge for understanding differences and interests among stakeholders in an institution. This is because disaster management is considered as the involvement of many stakeholders, experts and skills so as to integrate effective programs and activities. This highlights what Meyer and Scott (1983) argue that an organisation will form a proper and advantageous institution for survival in an environment of uncertainty. The local wisdom and social capital found in this

research indicated that institutional arrangements which are shaped by local culture are crucial in institutional theory (Kostova, et al., 2008).

However, this theory has not mentioned whether the people functioning within an institution behave as they do because of normative standards or because of their desire to maximize individual utilities. In the case of Bantul, the local government staff could maximize their role for the community because of local leaders' influence. Such standards of behaviour are acquired through involvement of the leaders rather than institutions. The question being asked here is simply if existing types of structure make any difference to the types of decisions taken by the institution if leaders changes. Experience in this case could prove a barrier for the next leader in Bantul, particularly in managing a disaster in the future. This is because such behaviour is not shaped by the need of the institution in serving better the public but by the leaders' influence. Such an issue is not well explained in institutional theory and this is a gap that emerges from applying the theory to disaster management issues, particularly in a rural-type local government such as Bantul.

All in all, this theory supports the research question on this study on how social networks, local government and intergovernmental relations interact, and at the same time it also provides answers to the problems faced by Bantul.

The network theory focuses on the structure of the relationships between organizations, individuals and groups, the implications for behaviour and performance, and the way to measure collaborative capacity. This approach is aimed at answering the research question on how social networks and intergovernmental relations occurred and how they affected the management of disaster in Bantul. In the case of Bantul, this relationship evolved gradually in order to govern a shared resource to manage a disaster. The networks, as shown in this study, demonstrated several desirable characteristics for accomplishing complex tasks that enabled local government leaders to accomplish collectively something that could not be accomplished individually. Moreover, this was an alternative to the limitations of hierarchical and fragmented administrative systems in public policy development and delivery in

Bantul. The current era of public administration requires public administrators to solve problems within cultural, structural and political boundaries of using networks of key stakeholders to create supportive disaster management governance structure(Kapucu, et al., 2010).

The Bantul local government has shown its capability to collaborate with other institutions, including having appropriate resources (institutional, human resource, policy, financial, technical and leadership) to contribute to a collective effort. Not only was the Bantul local government able to support its commitment to the inter-organisational and intergovernmental networks but also to communicate effectively. Bardach (1998) stresses that successful networking capacity is a function of the skill and purposiveness of the institution interacting with the quality of available resources. The use of collaborative effort such as networks is complex and difficult to manage because it must face organisational restraints and is limited by its commitment to that effort (Weber, Lovrich, & Gaffney, 2007). However, the collaborative capacity that resulted in Bantul's network has improved policy performance and the maintenance of public accountability, which is one of the main objectives of New Public Management (NPM). The implementation of NPM through decentralisation has improved the efficiency and effectiveness of local government in delivery of services to the community. This research has also found a high level of public participation in disaster management activities, which is in line with the NPM approach as legitimate concerns of management in the public sector.

8.7. Conclusion

This chapter has analysed the findings presented in the previous three chapters, based on qualitative and quantitative data addressing the research questions. The important contribution of the knowledge of application of resource-based theory, institutional theory, the networking theory and NPM paradigm in the context of disaster management in developing countries was also discussed.

This research has used the 2006 Bantul earthquake to illustrate the capability of

the Bantul local government in managing a disaster. Using this single case study, the researcher has argued that the Bantul local government capability shows favourable results in terms of institutions, human resources, policy for effective implementation, financial and technical resources and for leadership. The expectations of the community represented in the capability requirement for local government in mitigation, preparedness, response and recovery in disaster management have resulted in increased concern for disaster awareness. The capability of the Bantul local government in implementing response and recovery strategies has been a significant achievement. At the same time, the Bantul local government has learnt from and evolved their routine roles and tasks so as to be able to undertake emergency roles in which leaders adjust resource-based theory and integrate resources in order to generate value-creating strategies for local government.

The achievement of the Bantul local government in managing disaster cannot be detached from the major constraints that must be faced. Organisation, budget, attitude, local expertise and volunteers are the most common problems found in this study in each stage of disaster management. Although managing a disaster was not an easy task for the Bantul local government, regardless of these obstacles the local government was able to coordinate government efforts within its respective jurisdictions and compete with all other line institutions under conditions of limited time and budget. Leadership support, a strong commitment and willingness to rebuild the city were major factors in the success of response and recovery disaster management in Bantul. In addition, good networking between all levels of governments, civil society and non-governmental organisations ensured that programmes ran smoothly. Decentralisation that draws local government closer to its public has proven to be efficient and effective in delivering humanitarian aid to victims, demonstrating better quality of public service. Although not much could be expected of the role of the legislature, it has not worsened the condition of public service in Bantul following the 2006 earthquake.

Public participation, ownership by the local people and local communities that have strong working relationships on a daily basis are significant achievements

for Bantul in emergency situations and have become an accepted part of the disaster management process. The networks that were established between the Bantul local government and its citizens have been much influenced by the cultural behaviour of Bantul and have highlighted the role of local culture norms in dealing with a disaster. Hence, even though a disaster will cause destruction and serious loss of life, it will also be a challenge and a test for local social and cultural behaviour. A better understanding and a critical appreciation of change resulting from the earthquake that have been achieved by the Bantul local government, the community, NGOs and many organisations involved, particularly since the response stage. The results have benefited support for local government in developing further the conceptual and policy framework. It is aimed to improve the understanding and behavioural change of the community in becoming more aware about potential hazards that threaten lives.

The next chapter will discuss possible initiatives for improvement for local government in managing a disaster in the future.

Chapter 9 Conclusion

9.1. Introduction

This chapter summarizes the research. It has five sections. It outlines the research approach that is the background of this study, the methodology adopted and the theories framed in order to answer the research questions. It briefly outlines the study findings and the answers to the six research questions. Finally, it reviews the study's methodology, implications, limitations, contribution and future research and reports the most significant findings.

9.2. Research Approach

Numbers of natural disasters tend to be on the increase in many parts of the world. This has meant a rise in the numbers of those affected by disaster. Responses to disaster require specific capabilities because extreme events overwhelm local capacity. Government at all levels must therefore adopt a disaster management system that minimizes disaster effects through responses and competence in dealing with an especially difficult set of overlapping tasks. All disasters begin locally, but local areas in many cases may lack adequate response resources and be weak in networking with other organisations.

Discussion about the important role of local government began in the disaster literature around 1980, but very few comprehensive studies have investigated the internal resources required for local government capabilities in managing a disaster. This study therefore addresses this gap. The researcher has thus accommodated discussion of disaster management in mainstream of public administration.

The Bantul local government was chosen as a single case study because of its experience in managing pre-and post-conditions in a natural disaster that struck Bantul in 2006. The aims of this research are thus to assess the capability of the Bantul local government and identify capability requirements in managing a disaster, to identify the nature of relations between all levels of government and social networks and to understand the problems that local government faces at

each stage of disaster management. In order to get a comprehensive overview of local government capability, in-depth interviews were undertaken at national, provincial and local level and supported with a community leader survey. From this information base, the researcher was able to analyze the capability of the Bantul local government in the frame of resource-based theory, institution theory and the network theory.

9.3. Research Findings and Research Questions

This section summarizes the findings of the qualitative and quantitative data detailed in chapters 5, 6 and 7 in order to answer the research questions.

9.3.1. Local Government Capability

In the event of a disaster, local government must face very uncertain conditions. Disaster results in increased complexity of institutions in managing non-routine tasks totally at odds with normal daily activities. Without experience in managing a disaster, the Bantul local government had to be able to organise its assets, competence and knowledge to protect the community from the adverse effects of the earthquake.

The findings of this study are that the Bantul local government staff experienced difficulties in managing the crisis. Lack of education, knowledge and experience in managing people while distributing humanitarian aid were the main factors underlying the low capability level of local government. Worse still, no national and local policy arrangements and institutions were available in 2006 to guide local government in deciding what should be done to manage a disaster. Before the 2006 earthquake, there were hardly found any programs related to mitigation and preparedness at the Bantul local government level. After 2006 such programs did commence, by assessing vulnerable areas in Bantul, creating emergency operation plans, developing a warning system and training local government staff and the community to become more aware about disaster.

The crucial finding about Bantul local government capability in managing a disaster is that it relied on the collaborative roles of leaders in organising human resources and assets. This collaborative leadership showed the ability to act quickly without excessively damaging decision quality and remained calm in a crisis.

9.3.2. Disaster Management Requirement

The research describes the disaster management requirements for the Bantul local government from the perspective of state and non-state informants in the mitigation, preparedness, response and recovery stages. At the mitigation stage, from the state informants' point of view, it emphasizes the importance of formation of a specific institution with responsibility for managing disasters; non-state informants expect the local government to ensure that all disaster management programs are sustainable. At the preparedness stage, both informant groups stress the need for early warning systems and frequent practice or drills to anticipate any future disaster. At the response stage, although both groups' opinions point to the same issues in the need for good coordination and networking with other institutions, non-state informants focus more on the importance of local government having an accurate, accessible community data base. Lastly, at the recovery stage the requirement for local government in managing disaster is similar to the response patterns of both groups at the response stage.

9.3.3. Gap between Capability Required and the Capabilities Exist

The gap between what the disaster-related literatures suggest on the capability requirement for local government to deal with a disaster and what actually existed in Bantul's case was relatively wide. The Bantul local government has some achievements that meet Bantul people's expectations regarding disaster management. Although the consistency and sustainability of the programs have still be questioned for various reasons, such as a new local leader or availability of funds, fortunately some impairment of capability requirements which are likely to be the most difficult to remedy can be substituted for by a strong local leader's managerial systems and the community's values and norms.

To conclude, bridging the gap will require huge efforts from all those involved and will certainly require much more than the metaphorical use of concepts such as vulnerability, capability and resilience. It will entail a strong commitment of government to implementing better policies. A huge effort is thus needed to open dialogue and to build trust amongst the large array of people and organisations who should be involved in the implementation of both top-down and bottom-up actions of disaster management. These stakeholders include local communities, local government, provincial government, central government, international and national NGOs, academia and private institutions.

9.3.4. Government Relationships

The relationship between the central government, the Yogyakarta provincial government and the Bantul local government is an essential issue for disaster management, particularly at the response and recovery stages. This study reveals that, although the Bantul local government was able to manage the quake during the first days to some extent, because of limitations in local capacity financial resources and technical capacity were provided by the provincial and central governments. The findings of the study found that, although disaster management strategies were developed at the central and provincial levels, these top levels of government have decentralised decision-making power to the local government level. The Bantul local government has an equal capacity to contribute to policy design and implementation that suits conditions at the local level.

9.3.5. Network Interaction

This study reveals that networking between the Bantul local government and other organisations aimed to maximize use of limited personnel and resources and avoid duplicating activities and delay in providing emergency assistance to the community. The local leaders arranged interaction with other organisations to fill the capability gaps that local government faced, even though this might have triggered potential conflict with organisational structures developed during more routine periods.

With regard to the network interaction between local government and its citizens, the research finds that efforts in the response and recovery periods in Bantul were mainly supported by strong working relationships with the community, local government and institutions such as NGOs and universities. Even though local government played an important role in managing disaster, the local community was the greater influence during the response and recovery periods. The short period of recovery in Bantul reveals that local-level bottom up policy offers successful disaster mitigation implementation.

9.3.6. Local Government Problems

The Bantul local government problem in managing 2006 earthquake has been explained in associated with organisation, attitude, budget, local expertise and volunteers.

First is the problem of organisation. In the event of a disaster, local government must be able to coordinate government efforts within its own jurisdiction and must compete with all other line institutions in spheres of limited time and budget. Institutionally, the finding is that no initiative came from the bureaucracy staff; rather, the overall framework works through a top-down mechanism. It is indeed the role of local leaders alone to organize all staff, to assess risk to the organisation, to establish roles across departments and other organisations, and to develop policies and procedures. Different condition might apply in Bantul if the local leaders change. In addition to unavailability of disaster mitigation and preparedness programs before the 2006 earthquake in Bantul, absent too was disaster recovery planning, which Erbschloe (2003, p.2) defines as a process of assessing risks that an organisation faces, then developing, documenting, implementing, testing and maintaining procedures that help the organization quickly return to normal operations and minimize losses after a disaster. However, this obstacle was resolved with the support and guidance of central and provincial government and the help of NGOs.

Second is the problem of attitude. This study reveals that apathy is one of the biggest problems for local government in its planning and preparedness activities. Apathy or lack of concern or interest in disaster issues is present in

the disaster management field for a variety of reasons – for example, disaster is infrequent so that it is something that local government does not face it every day, and, additionally, the community does not have extensive knowledge about disaster in its area, which also contributes to lack of concern.

The third constraint is budget. The research finds that only a limited budget for financing response and recovery in Bantul existed. Hence the problem had to be solved through the support of central government, provincial government, overseas grants, by securing financial assistance domestically and by diverting funds from the public budget.

Fourth is the issue of local expertise and volunteers. This research shows that, although local expertise and volunteers contributed significantly to rescue and relief, most were untrained. They therefore need to be more organised to provide rescue and relief support more efficiently.

9.4. Methodology, Implications, Limitations, Contribution and Future Research

This section discusses methodology issues, the implications and limitations of this study and its contribution to existing theory and practical implication. The last section deals with suggestions and recommendations for future research.

9.4.1. Methodology

This research is a case study that utilized mixed method for data collection. However, in this case study, qualitative methods predominated in the study of processes in which data collection, analysis and action often take place concurrently. There are lessons to be learnt from the methodology of this study. This study attempts to revive the insights of key informants through qualitative data from key stakeholders in local, provincial and central government institutions, NGOs, funding agencies, and community leaders, in order to understand the context of pre-, during and post-disaster management in the Bantul local government, using *NVivo* as the analytical tool. One practical problem found was that the use of analytical tools like *NVivo* can make the

management of a huge quantity of data relatively easy, but in practice only a small part of these data can be fully analysed. Although all of the interview transcriptions were read and relevant parts selected for further coding, it was impossible in practice to cover all the texts and place exactly the same emphasis on all parts of the texts. Partly because of this problem, and partly because some parts of the interview transcription are more 'meaning intensive' from the research problem's viewpoint, some parts of the text may remain marginal in the interpretation process.

9.4.2. Implications

Implications of these research findings are the benefits for other local governments in Indonesia in learning how to manage pre-, during and post-disaster programs.

First, the research findings show that valid and timely information sharing with other institutions is critical, particularly in the emergency response phase. Building trust among public, private and non-profit organisations can best be done prior to emergency situations. Sharing information, willingness to collaborate and shared values are also important factors for network formation between all levels of government and other institutions – hence the huge effort needed to open dialogue and to build trust among the multiple stakeholders.

Second, the research revealed that communities that have strong working relationships on a daily basis generally function better in emergency situations because of increased trust. This can be useful for local government with a greater need for local mobilisation and organisation. Increased coordination and capacity building among the local community significantly contributed to improving post-disaster action at the community level. At the same time, empowering individuals within natural disaster threatened communities is critical to any successful local government mitigation program.

Third, it is certainly important for every local government to develop the necessary policies and concrete procedures for raising disaster awareness in the community through media dissemination and inserting a disaster discourse

into the school curriculum. This will thus require great effort on the part of all those involved and will entail a strong commitment of everyone to working together.

9.4.3. Limitations

The scope of this study is limited in a number of ways.

Firstly, since the case study is used as the main research design, it is generally weak in generalisability and reliability and it may not reflect the condition of all local government in Indonesia. Apart from the background material presented, much of the data that form the basis of the empirical findings are drawn primarily from a local government that has experience in facing disaster. Since decentralisation has been implemented in Indonesia, many local government policies have much in common but areas are different in terms of geographical and cultural behaviour. To this end, the Bantul experience, which is presented as a representative case of local government's disaster management, cannot be representative of local government in Indonesia. It is their views that form the primary assumption of the study.

Secondly, the researcher believes that the community in the three districts chosen, which have substantially different economic status, demographics and education levels, can effectively contribute to the findings. However, due to both time and cost factors, data collection from the whole community who had experience of the 2006 Bantul earthquake was not anticipated.

Thirdly, the main source of this data collection is in-depth interviews of approximately one hour for each key informant. Therefore information regarding sensitive questions such as real barriers in local government caused by the central government leader's power will be limited.

9.4.4. Contribution

As a case study, this study is limited in generalising the local government capability in managing a disaster, the capability requirement, network interaction, government relationships and local government obstacles, because

of the different institutional and demographical features of local governments in Indonesia, as well as the type of natural disasters that local governments face. In spite of this limitation, the study contributes to providing policymakers and scholars with key functional success factors and critical actions in disaster management. It also concretely describes how local government can manage a disaster within its limited resources and what should exist during the pre-, during and post-disaster event. This study thus contributes to the following areas:

First, it makes a contribution to the wider application of resource-based theory. Resource-based theory has been one of the most influential and cited theories for over two decades in the history of management theorizing. The theory has also been applied to a wide range of studies such as information systems, organizational networks, strategic management, human resource management, operations management and marketing. However, study on disaster management at the local government level using resource-based theory is hardly found. Little research has been undertaken using resource-based theory to answer questions about local government capability. This study therefore adopted an integrated perspective of the resource-based theory of the organisation that could also be used to examine other local governments' cases in managing disaster.

This study also argues that institutional theory plays an important role for the organisation being influenced not only in internal processes but also in its external environment. The researcher answered the research question of how social networks and local government interact in each stage of disaster management to identify the nature relations between government, the community and other organisations.

The study argues that it is important to draw on an integrated perspective of resource-based theory and institutional theory to answer the research questions. It offers a preliminary step towards understanding the management of disaster at the local government level based on an integrated perspective of

institutions and resources. The findings provide an impetus for future research to more fully explore the relationship of resources and institutions, particularly for the local government level.

Second, the findings can be used to provide lessons for policymakers and local government bodies that are vulnerable to natural disaster to adopt others' institutional values and policy to ease the plight of victims, even though, for many Indonesian local governments, adopting another local government's values and policies is not easy because of pride. However in adopting another's institutional values involves bringing resources together in such a way that the values envisaged are delivered. This imagining of value and the bringing together of resources can be considered a process of mutual interaction in which resources partially shape people's mental models and enable them to find value in the resources.

Third, considering the practical implications of this study, the findings encourage government leader to think more deeply about institutions, thus enabling the creation of sustained advantage for managing a disaster in the future. To successfully establish an effective institution, local government should not only focus on a regulative or normative institutional system, it also needs to create a cognitive, trust-based institution which focuses not only on increased employee satisfaction and loyalty but must be able to form a basis for a reinforcing mechanism in human capital resources.

9.4.5. Future Research

This study was a single case study only conducted in one local government that had experienced an earthquake. More comprehensive lessons might be learnt if future research undertook comparison of two or more local governments with experience of different natural disaster (volcanic eruption, flood and tsunami) in different geographical conditions, such as on Java Island versus Non-Java Islands.

The research may generate interesting findings if it went further than community surveys and in-depth interviews. Focus group discussions, government staff

surveys and in-depth interviews that covered more organisations involved in the 2006 earthquake and more of the community being surveyed in all 17 districts in Bantul might produce valuable outputs.

Future research might need to be conducted to evaluate whether the Bantul local government remains committed to disaster management as a mainstream element in its local policy and to see how people participate in the mitigation and preparedness stages after the successful recovery period is concluded.

9.5. Conclusion

This study has elicited the resource capability for local government in managing disasters. Learning from the experience from Bantul's case in its management of natural disaster, the study has found that not only does local government lack skills and expertise when dealing with a crisis, but the community itself must face the unexpected and the worst possible outcomes because it does not know what to do in an emergency. Fortunately, local wisdom has become a trigger for community survival in addition to the role played by local leaders. The lessons learned by local government are that education, socialization and escape structures, and warning systems are important factors in making people safer in the event of future disasters.

From this, we can highlight the importance of the capability of local government and the preparedness needed to address broader issues rather than only immediate responses to a disaster. The physical and economic vulnerability of the community in disaster areas needs to be adequately taken into consideration. Owing to a lack of disaster management capability, local governments with a vital role in disaster response have been forced into making decisions based on piecemeal information that may be inaccurate and incomplete. Coordination and collaboration between all levels of government play an essential function, because in an emergency these will assist in saving lives. Unfortunately, lack of coordination and collaboration between different levels of government is a real issue. The Bantul local government has limited resources and expertise, while other levels of government, organizations or agencies may have adequate resources. To be effective, disaster management

planning needs to be accompanied by restructuring of government functions, and, as a part of strategic social planning, all the stakeholders must be involved in working collaboratively.

This study revealed that resource-based theory, institutional theory and networking theory have been well adapted by the Bantul local government in generating managerial policy concerning how the institution can achieve strategic advantage through its resource deployment. They also clearly explain the success of the process during and after a disaster through managing the institution's resources including all assets, capabilities, organizational process and attributes, information and knowledge, which are rare and imperfectly imitable.

However, there are still gaps in which the theory may underpin the process of disaster management at the local government level. Resource-based theory seems to tell local government leaders to develop and obtain resources which are valuable, rare, inimitable and non-substitutable, but it does not explain how this should be done. The creativity of the leader plays a pivotal role in the success or failure of disaster management. In this case institutions will need all kinds of resources to help turn ideas into reality, including adopting other institutions and community values.

The findings of this study suggest important aspects for enhancing local government capability in managing a disaster.

First, there is a need for a local emergency planning committee – consisting of public safety officers, planners, health care providers, environmental specialists, industry representatives, local government officials, representatives of schools and community actions groups – which is responsible for conducting vulnerability analysis, preparing comprehensive emergency response plans, developing site-specific emergency plans, organising training programs, conducting drills and compiling data about disasters.

Second, local government might consider changing or combining financial instruments with another mechanism such as hedging instruments, which are essential for aiding the response and recovery period. A hedging instrument is a pre-disaster arrangement in which the government incurs a relatively small cost in return for the right to receive a larger amount of money after a disaster occurs (Kunreuther & Linnerooth-Bayer, 2003). This is because of the small amount of private insurance that the citizens can access, the limited ability of government to utilize and provide reserve funds after a disaster and the unpredictable sums of voluntary international and national aid that can be expected. The main benefit to having such a mechanism in financing disaster recovery is that the local government can avoid having large capital outlays after the event and have a timely source of capital for disaster expenditure.

Third, the local government body should not avoid providing disaster mitigation and preparedness programs. The key to any successful mitigation and preparedness program is to lay a foundation, which means establishing a law or ordinance that gives the program power and authority. A law is necessary to mandate responsibility for the tasks of mitigation and preparedness. This, in turn, demonstrates a commitment on the part of the community's governing body to its constituents that mitigation and preparedness for a disaster are a top priority.

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MONASH University

Standing Committee on Ethics in Research Involving Humans (SCERH)
Research Office

Human Ethics Certificate of Approval

Date:	10 February 2009
Project Number:	CF08/3613 – 2008001760
Project Title:	Resource capability of local government in managing a disaster: Evidence from Indonesia
Chief Investigator:	Dr Quamrul Alam
Approved:	From: 10 February 2009 To: 10 February 2014

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained and a copy forwarded to SCERH before any data collection can occur at the specified organisation. **Failure to provide permission letters to SCERH before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by SCERH.
4. You should notify SCERH immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to SCERH and must not begin without written approval from SCERH. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. SCERH should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by SCERH at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.
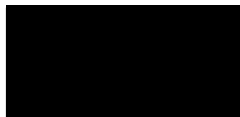
Professor Ben Canny
Chair, SCERH

Cc: Dr Kamal Siddiqui; Ms Bevaola Kusumasari

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
Telephone +61 3 9905 5490 Facsimile +61 3 9905 1420
Email scerh@adm.monash.edu.au www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

MONASH University
Department of Management
Faculty of Business and Economics

Explanatory Statement for In-depth Interview
Title: Resource Capability of Local Government in Managing Disaster:
Evidence from Indonesia

February, 2009

My name is Bevaola Kusumasari currently conducting PhD degree research under the supervision of Dr. Quamrul Alam and Dr Kamal Siddiqui. Both of whom are senior lecturers of Department of Management, Monash University Australia.

The aim of this research is to assess the capability of Bantul local government with regard to earthquake disaster management. Some of the critical success factors of disaster management implementation are having effective institution, supportive laws, effective information management system and responsive leadership. Therefore, these capability requirements must be fulfilled by local government institution in order to protect and provide social welfare to the community.

In this research, I intend to conduct in-depth interviews with stakeholders including senior public servants of local and, provincial governments, board of disaster management, local parliament members, national and regional planning board and the representatives of national/international NGOs, community groups, mass media and local volunteers who played an important role in the 2006 Bantul earthquake. I also intend to conduct a community survey with a sample of the community in selected areas in Bantul

Your experience in dealing with the 2006 Bantul earthquake would yield useful information not just for the benefit of this research but also for the improvement of the local government to create better policy particularly in earthquake disaster management. Therefore, I cordially invite you to participate in this research by allowing me to conduct your interview. The interview would take approximately an hour and the interview guide would be sent to you before the interview takes place in order to give you idea of what information is needed and would be discussed.

No findings, which could identify any individual participant, will be published. Only combined result of all participants will be published. The information you provide will be treated as strictly confidential and the anonymity of your participation is assured by Monash University regulation. Only the researchers will have access to the data and data collected will be stored securely for five years before it is destroyed.

Your participation in this research is voluntary, no financial payment or reward will be offered. You will be able to withdraw from participation at any stage. A copy of major findings is available upon request.

If you need further clarifications on this research, please contact Bevaola Kusumasari at email: ████████████████████████ Thank you very much for your participation in this study.

Sincerely yours,

Bevaola Kusumasari

If you would like to contact the researchers about any aspect related to this study, please contact the chief investigator : Dr. Quamrul Alam Monash University. PO. Box 197 Caulfield East Vic 3145 Australia Phone: +61 3 9903 2331 E-mail: ████████████████	Should you have any complaint concerning the manner in which this research is conducted, please do not hesitate to contact: Dr. Samodra Wibawa Head of Public Administration Departement Faculty of Social and Political Sciences Gadjah Mada University Yogyakarta, Indonesia 55281 Phone/Fax: ████████ Mobile: -████████ E-mail: ████████████

MONASH University
Department of Management
Faculty of Business and Economics

Surat Keterangan untuk Wawancara Mendalam
Judul: Kapabilitas Sumber Daya Pemerintah Lokal dalam Menangani Bencana Alam:
Studi Kasus Indonesia

Februari, 2008
Yang terhormat bapak/ ibu_____,

Nama saya Bevaola Kusumasari, mahasiswi tingkat doktoral dari Monash University, Australia dan saya bermaksud untuk meminta partisipasi Anda dalam riset yang sedang saya lakukan untuk memenuhi syarat pendidikan doktoral. Maksud dan tujuan dari riset ini adalah untuk mengetahui Kapabilitas pemerintah lokal dalam menangani bencana alam di Bantul, Yogyakarta. Seperti diketahui bahwa factor-faktor yang penting dalam menangani bencana antara lain adalah adanya institusi yang efektif, dukungungan kebijakan yang memadai, system informasi yang akurat dan kepemimpinan yang responsive. Untuk itulah, kapabilitas tersebut harus dimiliki dan dipenuhi oleh pemerintah daerah untuk melindungi masyarakat dari bahaya bencana alam. Pembimbing saya adalah Dr. Quamrul Alam dan Dr. Kamal Siddiqui dari Departemen Manajemen di Monash University Australia.

Dalam penelitian ini, Saya akan melakukan wawancara mendalam dengan stakeholder pemerintah pusat, provinsi dan daerah, serta perwakilan dari NGO nasional atau pun internasional, mass media dan sukarelawan yang terlibat pada gempa bumi di Bantul tahun 2006. Anda terpilih sebagai salah satu informan dalam wawancara ini. Untuk itu, Kami meminta Anda untuk berpartisipasi dalam riset ini dengan meluangkan waktu maksimal selama 1 jam dengan panduan wawancara yang akan kami kirimkan sebelum wawancara berlangsung. Kami sangat menghargai partisipasi anda dan kerahasiaan Anda akan kami jamin. Segera setelah wawancara dilakukan, kami akan memisahkan dan menyimpan segala bentuk informasi yang berhubungan dengan Anda dan organisasi Anda. Kami tidak akan mencantumkan identitas pribadi ataupun organisasi dalam laporan akhir kami. Hanya orang-orang yang terlibat dalam penelitian ini yang akan memiliki akses terhadap data. Semua data yang terkumpul akan disimpan secara aman selama lima tahun untuk kemudian dihancurkan, sesuai dengan peraturan yang ada di Monash University.

Jika Anda menginginkan salinan dari rangkuman hasil akhir penelitian ini, silakan melampirkan kartu nama dan alamat Anda dan kami akan mengirimkan hasil akhir tersebut, atau Anda dapat menghubungi **Bevaola Kusumasari** di e-mail: ▮▮▮▮▮▮

Terima kasih sebelumnya atas partisipasi Anda pada penelitian ini.
Hormat kami,

ORIGINALLY SIGHTED BY
IDP EDUCATION AUSTRALIA
COUNSELLOR: ANTONIUS C.
DATE : 5 December 2008
SIGNATURE :

▮▮▮▮▮

Bevaola Kusumasari

Jika Anda ingin melakukan kontak kepada periset mengenai segala aspek dalam studi ini, silakan Anda menghubunig kepala investigasi:	Jika Anda mempunyai per▮▮▮▮ mengenai dari studi ini, silakan Anda menghubungi:
Dr. Quamrul Alam Monash University. PO. Box 197 Caulfield East Vic 3145 Australia Phone: ▮▮▮▮	**Dr. Samodra Wibawa** Ketua Jurusan Ilmu Adminitrasi Negara, FISIPOL UGM, Yogyakarta, Indonesia 55281 Telephone/Fax: ▮▮▮▮ HP: ▮▮▮▮
E-mail: ▮▮▮▮	E-mail: ▮▮▮▮

Consent Form for In-depth Interview

Title: Resource Capability of Local Government in Managing Disaster:
Evidence from Indonesia

Name of the Participant: _____

I consent to participate in this Monash University research project, the details of which have been explained to me, and I have been provided with the Explanatory Statement to keep for my record.

I understand that my participation will involve interview and I agree that the researcher may use the results as described in the plain language statement.

I acknowledge that I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided.

I acknowledge that I have been informed the confidentiality of the information I provide will be safeguarded subject to any legal requirements.

I understand that my name will be referred to by a pseudonym in any publications arising from the research

I consent to this interview being audio-taped   □ yes   □ no

I consent to be interviewed by the researcher for an hour at a time   □ yes   □ no

Date _____

Signature _____

FORMULIR KESEDIAAN BERPARTISIPASI UNTUK WAWANCARA MENDALAM

Judul: Kapabilitas Sumber Daya Pemerintah Lokal dalam Menangani Bencana
Alam:
Studi Kasus Indonesia

Nama:

Saya bersedia untuk berpartisipasi pada proyek penelitian yang dilakukan Monash University di atas. Saya sudah mendapatkan kejelasan mengenai proyek ini dan sudah membaca surat keterangan mengenai kerahasiaan data saya.

Saya mengerti bahwa segala bentuk temuan atau artikel dari riset ini akan menggunakan nama samaran untuk meminimkan informasi yang berhubungan dengan identitas saya kepada khalayak umum.

Saya mengerti bahwa sesuai permintaan saya, saya akan diberikan data yang membutuhkan persetujuan saya sebelum dimasukkan di laporan riset ini.

Saya mengerti bahwa partisipasi saya pada riset ini adalah sebagai relawan, saya boleh menghentikan partisipasi saya kapan saja tanpa mendapatkan hambatan.

Saya mengerti bahwa segala informasi yang saya dapatkan tidak dapat digunakan untuk keperluan lain selain daripada riset ini sendiri

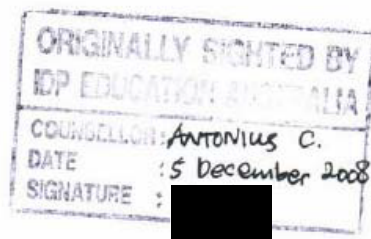**Tolong beri tanda centang pada kotak berikut:**

☐ Untuk diinterview oleh periset selama 45 menit pada waktu dan tempat yang disepakati bersama

☐ Mengijinkan untuk merekam interview dalam bentuk kaset

Tanggal   :

Tanda Tangan :

ORIGINALLY SIGHTED BY
IDP EDUCATION AUSTRALIA
COUNSELLOR: Antonius C.
DATE : 5 December 2008
SIGNATURE :

Explanatory Statement for Community Leaders Survey
Title: Resource Capability of Local Government in Managing Disaster:
Evidence from Indonesia

February, 2009

My name is Bevaola Kusumasari currently conducting PhD degree research under the supervision of Dr. Quamrul Alam and Dr Kamal Siddiqui. Both of whom are senior lecturers of Department of Management, Monash University Australia.

The aim of this research is to assess the capability of Bantul local government with regard to earthquake disaster management. Some of the critical success factors of disaster management implementation are having effective institution, supportive laws, effective information management system and responsive leadership. Therefore, these capability requirements must be fulfilled by local government institution in order to protect and provide social welfare to the community.

Your experience as a community leader who dealt with the 2006 Bantul earthquake would yield useful information not just for the benefit of this research but also for the improvement of the local government to create better policy particularly in disaster management.

This questionnaire would take about 20-25 minutes to complete and I would collect it at your convenient time. No findings, which could identify any individual participant, would be published. Only combined result of all participants will be published. The information you provide will be treated as strictly confidential and the anonymity of your participation is assured by Monash University regulation. Only the researchers will have access to the data and data collected will be stored securely for five years before it is destroyed.

Your participation in this research is voluntary, no financial payment or reward will be offered. You will be able to withdraw from participation at any stage. A copy of major findings is available upon request.

If you need further clarifications on this research, please contact Bevaola Kusumasari at email: ████████████████████████████ Thank you very much for your participation in this study.

Sincerely yours,

████████████████

Bevaola Kusumasari

If you would like to contact the researchers about any aspect related to this study, please contact the chief investigator :	Should you have any complaint concerning the manner in which this research is conducted, please do not hesitate to contact:
Dr. Quamrul Alam Monash University. PO. Box 197 Caulfield East Vic 3145 Australia Phone: ████████████ E-mail: ████████████████████	Dr. Samodra Wibawa Head of Public Administration Departement Faculty of Social and Political Sciences Gadjah Mada University Yogyakarta, Indonesia 55281 Phone/Fax: ████████████ Mobile: ████████████ E-mail: ████████████

MONASH University
Department of Management
Faculty of Business and Economics

Surat Keterangan untuk Survei Tokoh Masyarakat
Judul: Kapabilitas Sumber Daya Pemerintah Lokal dalam Menangani Bencana Alam:
Studi Kasus Indonesia

Februari, 2008
Yang terhormat bapak/ ibu_____,

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Dalam penelitian ini, Saya akan melakukan wawancara mendalam dengan stakeholder pemerintah pusat, provinsi dan daerah, serta perwakilan dari NGO nasional atau pun internasional, mass media dan sukarelawan yang terlibat pada gempa bumi di Bantul tahun 2006. Anda terpilih sebagai salah satu informan dalam wawancara ini. Untuk itu, Kami meminta Anda untuk berpartisipasi dalam riset ini dengan meluangkan waktu maksimal selama 1 jam dengan panduan wawancara yang akan kami kirimkan sebelum wawancara berlangsung. Kami sangat menghargai partisipasi anda dan kerahasiaan Anda akan kami jamin. Segera setelah wawancara dilakukan, kami akan memisahkan dan menyimpan segala bentuk informasi yang berhubungan dengan Anda dan organisasi Anda. Kami tidak akan mencantumkan identitas pribadi ataupun organisasi dalam laporan akhir kami. Hanya orang-orang yang terlibat dalam penelitian ini yang akan memiliki akses terhadap data. Semua data yang terkumpul akan disimpan secara aman selama lima tahun untuk kemudian dihancurkan, sesuai dengan peraturan yang ada di Monash University.

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Terima kasih sebelumnya atas partisipasi Anda pada penelitian ini.
Hormat kami,

███████████████

Bevaola Kusumasari
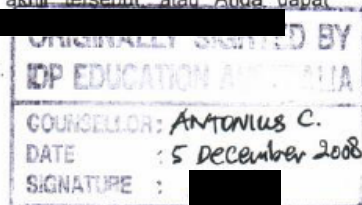
Jika Anda ingin melakukan kontak kepada periset mengenai segala aspek dalam studi ini, silakan Anda menghubunig kepala investigasi:	Jika Anda mempunyai pertanyaan mengenai dari studi ini, silakan Anda menghubungi:
Dr. Quamrul Alam Monash University. PO. Box 197 Caulfield East Vic 3145 Australia Phone: ███████████ E-mail: ███████████████	**Dr. Samodra Wibawa** Ketua Jurusan Ilmu Adminitrasi Negara, FISIPOL UGM, Yogyakarta, Indonesia 55281 Telephone/Fax: ███████████ HP: ███████████ E-mail: ███████████

List of Questions for In-depth Interview

Research Question 1a.
What capabilities exist in local government body in Bantul for managing disaster?

1a. How does the local government body mobilize human resources in:
- structural and non structural measures to limit the adverse impact of earthquake (mitigation)
- respond to earthquake including the issuing of an early warning system (preparedness)
- actions taken immediately after the earthquake, including the provision of assistance or intervention, the preservation of basic survival needs, need assessment coordination, sharing information between multi stakeholders and logistical expert (response)
- activities that restore infrastructural systems and guide long term efforts designed to return to normal life (recovery)

b. What were the difficulties that local government institutions face in mobilizing human resource in each stage of disaster management? Why were they occurred and what were the solutions to overcome those barriers?

2. How does the local government body see the importance of education and training which covers:
   a. Inclusion of disaster reduction from basic to higher education (curricula, material development and institutions)
   b. Vocational training
   c. Dissemination and use of traditional/indigenous knowledge
   d. Community training programmes

3. How is the structure of local disaster organization? What are the roles of local government officials in disaster management?

4. How does the local government body maintain links with comprehensive research on disaster and regional and international cooperation in research, science and technology?

5. How does the local government body deal with public awareness such as official public awareness policy and programmes with associated material, guidelines and instructions on earthquake disaster?

6. How does the local government body promote disaster prevention to the community? How does it integrate into development planning and sectoral policies?

7. Do the policy statements of key institutions refer to the importance of disaster and their commitment to disaster management and has this commitment been translated into practice?

8. a. Is there any revenue allocating within annual budget for disaster management activities?
   b. Are there any some potential sources for fiscal aid (grants) from national or international funding agencies?
   c. How much is the average budget of the government per year allocated for mitigation, preparedness, response and recovery?
   d. What role does international financial (lending) institution play in disaster management activities?

9. To what extent has earthquake disasters and their previous impact been mapped and have the data been used to guide policy decisions? Is there an ongoing commitment to periodically review and update the information?

10. How effective have been the expertise of local government bodies that were trained in first aid, warehouses, community disaster response and mitigation?

11. Are there sufficient human resources and knowledge available to enable local government bodies to engage with disaster management activities?

12. How was the commitment of Bupati in managing each stage of disaster management activities?
    What were the difficulties that local government institutions face in implementing each stage of disaster management activities/policies? Why were they occurred and what were the solutions to overcome those barriers?

Research Question 1b.
What gaps are there between capabilities required and existing in Bantul with regard to earthquake disaster management

1. What are the requirements that are important to local government in dealing with disaster?
   a. Community-based disaster management
   b. Damage assessment and need analysis
   c. Disaster environmental management
   d. Donation and relief supply management
   e. Emergency operation centre
   f. Management for disaster emergency personnel
   g. Mitigation and recovery planning
   h. Preparedness and response planning
   i. Public information
   j. Search and rescue
   k. Shelter management
   l. Stress management
   m. Telecommunication for disaster
   n. Warehouse emergency supplies management
   o. Drills and simulation exercises
2. What course from above choices that have been done by local government staff?
3. What are seen as gaps, outstanding needs and requirements for effective disaster management? What needs to be strengthened?

Research Question 2.
How do relations between central, provincial and local government bodies affect the management of disaster events in Indonesia?

1. To what extent has a national strategy for mainstreaming disaster management been implemented?
2. What is the nature of the relationship with regional disaster institutions? Have regional and international disaster reduction initiatives been successfully adopted at the national and local levels?
3. What is the role of the key actors in developing disaster management policy? Does the local government body have access to existing funds from the central government?
4. What activities are underway with regard to central – local government relations:
   a. Legislative review
   b. Institutional and organizational review
   c. Internal coordination
   d. Mitigation, preparedness and recovery activities
   e. International coordination
   f. Civil society involvement
5. How does central government decentralize decision making power to local government body?

Research Question 3
How do the local government bodies and social networks interact in the different stages of disaster management?

1. How does local government body interact with public, private and voluntary organizations in:
   - Mitigation phase
   - Preparedness phase
   - Response phase
   - Recovery phase
2. How does the local government body deal with Information management and communication
   - How are official information and programs disseminated to the community?
   - How does public and private information systems (including disaster, hazard and risk databases and websites) and networks operate in disaster management
3. To what extent have disaster plans been authored in partnership with national and international NGOs?
4. To what degree is there useful cooperation and exchange with regional and international funding agencies?
5. How does the local government body maintain:
   - the flow of resources from agencies
   - communication with the media
   - exchange of information, staff, goods, finances during the disaster

Research Question 4.
What problems do local government bodies in Indonesia face in dealing with the situation before, during and after the disaster event?

1. What was the role of local government body when dealing with previous earthquake disasters? What is the local government body's role according to law in:
   - Mitigation phase
   - Preparedness phase
   - Response phase
   - Rescue phase
2. How does local government body act to produce a rapid change and plan during and after the occurrence of earthquake disaster?
3. To what extent do the local government bodies act independently of the central disaster authority, and do they have their own local mitigation, preparedness, response and recovery plans?
4. What are the constraints of the local government body in:
   a. mitigation phase
   b. preparedness phase
   c. response phase
   d. recovery phase
5. How does the local government body manage:
   a. Budget/costs when disaster occurs?
   b. Decision making process, lines of authority and appropriate power from central government?
   c. Political pressures that are exerted in the current situation?
   d. Adverse attitude from staff that see disasters as a low priority
   e. Coordination with both horizontal and vertical agencies

Panduan Wawancara Mendalam

Pertanyaan 1a.
Bagaimana kapabilitas pemerintah kabupaten Bantul dalam menangani bencana?

1a. Bagaimana pemerintah kabupaten mengelola sumber daya dalam hal
- Struktural dan non structural untuk mengurangi kerugian dari bencana alam (mitigasi)
- Respon terhadap bencana melalui adanya system deteksi dini (preparedness)
- Tindakan yang langsung dilakukan setelah bencana termasuk penyaluran bantuan, logistic dan koordinasi dengan seluruh stakeholder (response)
- kegiatan yang memulihkan sistem infrastruktur dan panduan upaya jangka panjang yang dirancang untuk kembali pada kehidupan normal (recovery)
  a. Apa kesulitan yang dihadapi oleh pemerintah kabupaten dalam mengorganisir sumber daya di setiap tahap manajemen bencana?Mengapa hal tersebut dapat terjadi dan apa solusi yang dilakukannya?
2.   Bagaimana pemerintah kabupaten melihat pentingnya pendidikan dan training tentang
  a. Pengurangan dampak bencana untuk sekolah dasar sampai sekolah menengah atas (kurikulum, pengembangan material dan institusi)
  b. Pendidikan kejuruan
  c. Diseminasi dan penggunaan kearifan lokal
3. Bagaimana struktur organisasi tentang bencana di Bantul?Apa peran aparatur daerah dalam manajemen bencana?
4. Bagaimana pemerintah kabupaten memanfaatkan hasil penelitian tentang bencana alam dan menjalin hubungan dengan institusi nasional dan internasional dalam hal penelitian, sains dan teknologi?
5. Bagaimana pemerintah kabupaten Bantul menjaring kepedulian masyarakat akan bahaya bencana?
6. Bagaimana pemerintah kabupaten Bantul mempromosikan pencegahan bencana kepada masyarakat?
7. Bagaimana komitmen pemerintah kabupaten Bantul dalam manajemen bencana dan bagaimana realisasinya?
8. a.   Apakah ada budget yang dialokasikan untuk kegiatan manajemen bencana?
  b. Apakah ada sumber dana dari organisasi nasional/internasional untuk pencegahan bencana di Bantul?
  c. Berapa rata-rata dana yang dialokasikan oleh pemerintah kabupaten Bantul untuk kegiatan mitigasi, preparedness, response dan recovery?
9. Apakah bencana alam yang terjadi dimasa lalu dijadikan pegangan untuk menjadi pelajaran pada pembuatan kebijakan di masa depan? Apakah ada upaya untuk selalu memperbaharui data tentang ancaman bencana di Bantul?
10. Bagaimana efektivitas aparat birokrasi dalam penanganan bencana?

11. Apakah sumber daya dan pengetahuan aparat pemkab Bantul memadai dalam manajemen bencana?
12. Bagaimana komitmen Bupati dalam kegiatan penangan bencana di Bantul?Apa kesulitan yang dialami oleh pemerintah kabupaten dan bagaimana solusinya?

Pertanyaan 1b
Kesenjangan apa yang muncul dari kapabilitas yang diperlukan dan fakta di Bantul yang berkaitan dengan manajemen bencana?

1. Persyaratan apa yang dibutuhkan oleh pemerintahkabupaten dalam menanggulangi bencana?
   1. Manajemen bencana berbasis masyarakat
   2. Penilaian terhadap kerusakan dan analisis kebutuhan
   3. Manajemen lingkungan
   4. Donasi dan system penyaluran bantuan
   5. Pusat operasi krisis
   6. Manajemen personel untuk menangani bencana
   7. Perencanaan pada mitigasi dan response
   8. Informasi terhadap masyarakat
   9. SAR
   10. Manajemen rumah singgah
   11. Manajemen stress
   12. Telekomunikasi untuk bencana
   13. Manajemen pengelolaan dan penyimpanan bantuan
   14. Simulasi bencana
2. Pelatihan apa yang sudah diikuti oleh aparat pemerintah kabupaten Bantul yang berkaitan dengan bencana?
3. Apa yang dilihat masih menjadi kendala dan kesenjangan untuk mewujudkan manajemen bencana yang efektif? Apa yang masih perlu untuk dikuatkan?

Pertanyaan Penelitian 2
Bagaimana hubungan antara pemerintah pusat, provinsi dan kabupaten dalam manajemen bencana?

1. Bagaimana strategi kebijakan pemerintah pusat tentang manajemen bencana di implementasikan ?
2. Bagaimana hubungan pusat dengan pemerintah daerah dalam konteks manajemen bencana? Apakah kebijakan regional dan internasional diadopsi pada kebijakan di tingkat nasional dan daerah?
3. Apa peran pemangku kebijakan dalam mengembangkan kebijakan manajemen bencana? Apalah pemerintah daerah memiliki akses terhadap anggaran pada pemerintah pusat untuk kepentingan penanggulangan bencana?
4. Aktivitas apa yang dilakukan dalam kaitannya antara hubungan pusat dan daerah:
   a. Review kebijakan

b. Review organisasi dan institutional
c. Koordinasi internal
d. Mitigasi, preparedness dan recovery
e. Koordinasi internasional
f. Keterlibatan civil society

5. Bagaimana pemerintah pusat mendesentralisasikan kewenangannya terhadap pemerintah daerah?

Community Leaders' Survey on

**Resource Capability of Local Government in Managing Disaster:
Evidence from Indonesia**

Part One: Respondent Characteristics

1. Name (optional):
2. Address (optional):
3. Please indicate your age:
   1. 19 years old and below
   2. 20-29 years old
   3. 30-39 years old
   4. 40-49 years old
   5. 50 years old and above
4. Gender:
   1. Male   3. Female
5. Please indicate your level of education:
   1. No Schooling
   2. Grade School
   3. High School
   4. College Degree
   5. Undergraduate
   6. Postgraduate
6. Please indicate your main occupation:
   1. Fishery
   2. Agriculture
   3. Manufacture
   4. Business
   5. Government Servant
   6. Private Sector Employer
   7. Housewife
   8. Unemployed
   9. Other, please specify:
7. How long have you lived in this area:
   1. Less than one year
   2. 1-5 years
   3. 5-10 years
   4. More than 10 years

Part Two: Disaster Stages

A. Mitigation Capability

No.	Question	None	Little	Medium	Extensive	Very Extensive
1.	Were there any activities that local government did to identify disaster prone area a. before the 2006 earthquake? b. after the 2006 earthquake?	1 1	2 2	3 3	4 4	5 5
2.	Were there any communities that organize themselves to monitor potential disaster in this area a. before the 2006 earthquake? b. after the 2006 earthquake?	1 1	2 2	3 3	4 4	5 5

No.	Question					
3.	Were there any disaster awareness and public information (guideline, brochures, etc) that local government did					
	a. before the 2006 earthquake?	1	2	3	4	5
	b. after the 2006 earthquake?	1	2	3	4	5

B. Preparedness Capability

No.	Question	None	Low	Medium	High	Very High
1.	What did the level of awareness of disaster at the local government level					
	a. before the 2006 earthquake?	1	2	3	4	5
	b. after the 2006 earthquake?	1	2	3	4	5
2.	What did the level of awareness of disaster at the community level					
	a. before the 2006 earthquake?	1	2	3	4	5
	b. after the 2006 earthquake?	1	2	3	4	5
3.	Were there any early warning systems that local government implement to the community					
	a. before the 2006 earthquake?	1	2	3	4	5
	b. after the 2006 earthquake?	1	2	3	4	5
4.	How ready did the local government to understand official warnings and react					
	a. before the 2006 earthquake?	1	2	3	4	5
	b. after the 2006 earthquake?	1	2	3	4	5
5.	How ready did the community to understand official warnings and react					
	a. before the 2006 earthquake?	1	2	3	4	5
	b. after the 2006 earthquake?	1	2	3	4	5

C. Response Capability

No.	Question	Worst	Bad	Neither Nor	Good	Very Good
1.	In your opinion, what was the availability of local government resources in maintaining response after earthquake occurred?	1	2	3	4	5
2.	In your opinion, what was the local government capability in maintaining response after earthquake occurred?	1	2	3	4	5
3.	In your opinion, how was the information flow from local government to the community after earthquake occurred?	1	2	3	4	5
4.	In your opinion, how was the clarity of information gathered from local government staff?	1	2	3	4	5
5.	In your opinion, how was the local government staff response to earthquake?	1	2	3	4	5

6.	In your opinion, how was local government deliver emergency aid to the vulnerable people (shelter, tents, clean water, medicine, food)?	1	2	3	4	5
7.	How was the aid from officials' government distributed among population?	1	2	3	4	5

D. Recovery Capability

No.	Question	Very Ineffective	Ineffective	Moderate	Effective	Very Effective
1.	In your opinion, how was the local government staff assess the damages and losses houses after earthquake occurred?	1	2	3	4	5
2.	In your opinion, how was the local government rebuilding the community's house after earthquake occurred?	1	2	3	4	5
3.	In your opinion, how was the local government rebuilding the social infrastructure after earthquake occurred?	1	2	3	4	5
4.	In your opinion, how was local government distributing the money among population to rebuild their houses?	1	2	3	4	5
5.	In your opinion, how was the commitment of local government to reimage Bantul as a safe place to live after 2006 earthquake?	1	2	3	4	5
6.	In your opinion, how was the local government's commitment to help people continuing their life (open new jobs) after 2006 earthquake??	1	2	3	4	5
7.	In your opinion, how was local government maintaining problems or conflicts that occurred after disaster?	1	2	3	4	5

Part Three: Requirement Capability

Question	Very Little	Little	Medium	High	Very High
In your opinion, to what extent does local government need in order to strengthen disaster management policy?					
a. National coordination	1	2	3	4	5
b. Greater availability of data	1	2	3	4	5
c. Better telecommunication	1	2	3	4	5
d. More accurate warnings	1	2	3	4	5

		1	2	3	4	5
e.	Better dissemination	1	2	3	4	5
f.	Enhanced public awareness campaign risk	1	2	3	4	5
g.	Enhanced public education to understand disaster	1	2	3	4	5
h.	Effective distribution aid to disaster victim	1	2	3	4	5
i.	Improved networking with national NGOs	1	2	3	4	5
j.	Improved networking with international NGOs	1	2	3	4	5

Part Four: Network

No.	Question	Very Slow	Slow	Moderate	Fast	Very Fast
1.	In your opinion, what was the level of communication flow from local government to the community about disaster information after earthquake occurred?	1	2	3	4	5
2.	In your opinion, what was the level of communication flow from local government to the community about aid distribution?	1	2	3	4	5
3.	In your opinion, what was the level of communication flow from community to local government about disaster information?	1	2	3	4	5
4.	In your opinion, what was the level of communication flow from NGOs/volunteers to local government about disaster information?	1	2	3	4	5
5.	In your opinion, how was local government coordinate among local governments staff in responding disaster:					
	a. In response stage	1	2	3	4	5
	b. In recovery stage	1	2	3	4	5
6.	In your opinion, how was local government coordinating in distributing aid with :					
	a. national NGOs	1	2	3	4	5
	b. International NGOs	1	2	3	4	5
	c. Volunteers	1	2	3	4	5
	d. Community Groups	1	2	3	4	5
7.	In your opinion, how was the coordination between local government and third party (house constructor) in rebuild the damage house?	1	2	3	4	5

Translation

Survai Tokoh Masyarakat
"Resource Capability of Local Government in Managing Disaster:
Evidence from Indonesia"

Bagian 1: Karakteristik Responden

1. Nama (boleh tidak diisi):
2. Alamat (boleh tidak diisi):
3. Usia:
   a. 19 tahun kebawah
   b. 20-29 tahun
   c. 30-39 tahun
   d. 40-49 tahun
   e. 50 tahun keatas
4. Jenis Kelamin:
   1. Laki-Laki   3. Perempuan
5. Tingkat Pendidikan:
   a. Tidak Sekolah
   b. SD-SMP
   c. SMU
   d. D3
   e. Sarjana
   f. Pasca Sarjana
6. Pekerjaan Utama:
   a. Nelayan
   b. Petani
   c. Buruh
   d. Wiraswasta
   e. PNS
   f. Pegawai Swasta
   g. Ibu Rumah Tangga
   h. Tidak Bekerja
   i. Lainnya, jelaskan:
7. Berapa lama anda tinggal di daerah ini:
   a. Kurang dari 1 tahun
   b. 1-5 tahun
   c. 5-10 tahun
   d. Lebih dari 10 tahun

Bagian 2: Tahapan Bencana

A. Mitigation Capability

No.	Pertanyaan	Tidak Ada	Sedikit	Jarang	Sering	Sangat Sering
1.	Apakah ada aktivitas dari pemerintah kabupaten untuk mengidentifikasi daerah rawan bencana? a. Sebelum gempa bumi 2006? b. Sesudah gempa bumi 2006?	 1 1	 2 2	 3 3	 4 4	 5 5
2.	Apakah ada kelompok masyarakat yang melakukan identifikasi daerah rawan bencana					

	a. Sebelum gempa bumi 2006?	1	2	3	4	5
	b. Sesudah gempa bumi 2006?	1	2	3	4	5
3.	Apakah ada pemberian kesadaran kepada masyarakat yang dilakukan oleh pemerintah kabupaten terhadap kemungkinan datangnya bencana melalui pemberian informasi, brosur dll					
	a. Sebelum gempa bumi 2006?	1	2	3	4	5
	b. Sesudah gempa bumi 2006?	1	2	3	4	5

B. Preparedness Capability

No.	Pertanyaan	Tidak Ada	Rendah	Sedang	Tinggi	Sangat Tinggi
1.	Bagaimana tingkat kepedulian pemerintah kabupaten terhadap potensi terjadinya bencana					
	a. Sebelum gempa bumi 2006?	1	2	3	4	5
	b. Sesudah gempa bumi 2006?	1	2	3	4	5
2.	Bagaimana tingkat kepedulian masyarakat terhadap potensi terjadinya bencana					
	a. Sebelum gempa bumi 2006?	1	2	3	4	5
	b. Sesudah gempa bumi 2006?	1	2	3	4	5
3.	Apakah ada system peringatan dini dini (early warning systems) dari pemerintah kabupaten yang diimplementasikan di masyarakat					
	a. Sebelum gempa bumi 2006?					
	b. Sesudah gempa bumi 2006?	1	2	3	4	5
		1	2	3	4	5
4.	Bagaimana tingkat kesiapan pemerintah kabupaten untuk memahami peringatan dini bencana					
	a. Sebelum gempa bumi 2006?	1	2	3	4	5
	b. Sesudah gempa bumi 2006?	1	2	3	4	5
5.	Bagaimana tingkat kesiapan masyarakat untuk memahami peringatan dini bencana					
	a. Sebelum gempa bumi 2006?	1	2	3	4	5
	b. Sesudah gempa bumi 2006?	1	2	3	4	5

c. Response Capability

No.	Pertanyaan	Sangat Buruk	Buruk	Sedang	Baik	Sangat Baik
1.	Menurut pendapat anda, bagaimana ketersediaan sumber daya pemerintah kabupaten dalam merespons bencana yang terjadi?	1	2	3	4	5
2.	Menurut pendapat anda, Bagaimana kapabilitas pemerintah kabupaten dalam meresponse bencana?	1	2	3	4	5
3.	Menurut pendapat anda, bagaimana arus informasi dari pemerintah kabupaten terhadap masyarakat setelah gempa terjadi?	1	2	3	4	5
4.	Menurut pendapat anda, bagaimana kejelasan informasi yang diperoleh dari pegawai pemerintah kabupaten?	1	2	3	4	5
5.	Menurut pendapat anda, bagaimana pegawai pemerintah kabupaten meresponse gempa bumi yang terjadi?	1	2	3	4	5
6.	Menurut pendapat anda, bagaimana pemerintah kabupaten menyalurkan bantuan terhadap korban bencana?	1	2	3	4	5

d. Recovery Capability

No.	Pertanyaan	Sangat Tidak Efektif	Tidak Efektif	Sedang	Efektif	Sangat Efektif
1.	Menurut pendapat anda, bagaimana petugas pemerintah kabupaten melakukan penilaian terhadap kerusakan yang terjadi akibat gempa bumi?	1	2	3	4	5
2.	Menurut pendapat anda, bagaimana pemerintah kabupaten membangun kembali rumah yang rusak/hancur akibat gempa bumi?	1	2	3	4	5
3.	Menurut pendapat anda, bagaimana pemerintah kabupaten membangun kembali infrastruktur social yang rusak akibat gempa bumi?	1	2	3	4	5
4.	Menurut pendapat anda, bagaimana pemerintah kabupaten mendistribusikan uang untuk membangun rumah yang rusak kepada masyarakat?	1	2	3	4	5
5.	Menurut pendapat anda, bagaimana komitmen pemerintah kabupaten untuk memperbaiki image Bantul sebagai daerah yang aman	1	2	3	4	5

No.	Pertanyaan					
	untuk ditinggali setelah peristiwa gempa bumi tahun 2006 lalu?					
6.	Menurut pendapat anda, bagaimana komitmen pemerintah kabupaten dalam membuka lapangan pekerjaan yang baru bagi korban bencana?	1	2	3	4	5
7.	Menurut pendapat anda, bagaimana pemerintah kabupaten menangani konflik yang muncul akibat gempa bumi yang terjadi?	1	2	3	4	5

Bagian 3: Requirement Capability

Pertanyaan	Sangat Sedikit	Sedikit	Sedang	Tinggi	Sangat Tinggi
Menurut pendapat anda, apa yang perlu diperbaiki oleh pemerintah kabupaten untuk menciptakan kebijakan manajemen bencana yang lebih baik di masa depan?					
a. Koordinasi nasional	1	2	3	4	5
b. Ketersediaan data yang lebih luas	1	2	3	4	5
c. Komunikasi yang lebih baik	1	2	3	4	5
d. Peringatan dini yang lebih akurat	1	2	3	4	5
e. Diseminasi pendidikan bencana yang lebih baik kepada masyarakat	1	2	3	4	5
f. Memperbaiki keterlibatan masyarakat dalam pendidikan bencana	1	2	3	4	5
g. Memperbaiki pendidikan masyarakat akan pengetahuan terhadap bencana	1	2	3	4	5
h. Memperbaiki distribusi bantuan kepada korban bencana	1	2	3	4	5
i. Memperbaiki jejaring kerjasama dengan NGO nasional	1	2	3	4	5
j. Memperbaiki jejaring kerjasama dengan NGO internasional	1	2	3	4	5

Bagian 4: Network

No.	Pertanyaan	Sangat Lambat	Lambat	Sedang	Cepat	Sangat Cepat
1.	Menurut pendapat anda, bagaimana tingkat komunikasi mengalir dari pemerintah kabupaten kepada masyarakat tentang informasi mengenai bencana setelah bencana terjadi?	1	2	3	4	5
2.	Menurut pendapat anda, bagaimana tingkat komunikasi	1	2	3	4	5

Pertanyaan Penelitian 3.

Bagaimana pemerintah daerah dan jejaring social berinteraksi dalam seetiap tahapan manajemen bencana?

1. Bagaimana pemerintah daerah berinteraksi dengan public, swasta dan sukarelawan dalam
   a. Fase mitigasi
   b. Fase preparedness
   c. Fase response
   d. Fase recovery
2. Bagaimana pemerintah daerah mengatasi manajemen informasi dan komunikasi?Bagaimana informasi didesiminiasikan kepada public?Bagaimana system informasi swasta dan public termasuk data base bencana dan webstite dan jejaring bekerja dalam manajemen bencana?
3. Dalam konteks apa perencanaan bencana berkoordinasi dengan NGO nasional dan internasional?
4. Bagaimana kerjasama antara organisasi donor member manfaat pada pemerintah daerah dalam mengelola bencana?
5. Bagaimana pemerintah daerah mengelola
   a. Arus sumber daya dari organisasi-organisasi asing
   b. Komunikasi dengan media massa
   c. Pertukaran informasi, staff,barang-barang dan keuangan selama dan sesudah bencana terjadi

Pertanyaan Penelitian 4.

Masalah apa yang dihadapi pemerintah daerah dalam mengelola situasi sebelum, pada saat dan setelah bencana?

1. Bagaimana peran pemerintah daerah dalam mengelola gempa bumi pada tahun 2006 yang lalu? Menurut undang-undang, apa peran pemerintah daerah dalam
   a. Fase mitigasi
   b. Fase preparedness
   c. Fase Response
   d. Fase Rescue
2. Bagaimana pemerintah daerah bertindak untuk membuat kebijakan dengan cepat pada saat terjadinya bencana?
3. Dalam konteks apa pemerintah daerah mampu untuk bertindak independen tanpa adanya campur tangan dari pemerintah pusat? Apakah pemerintah daerah memiliki kebijakan sendiri tentang mitigasi, preparedness, response dan rescue?
4. Masalah apa yang dihadapi oleh pemerintah daerah dalam:
   a. Fase mitigasi
   b. Fase preparedness
   c. Fase response
   d. Fase recovery
5. Bagaimana pemerintah daerah mengelola:
   a. Budget ketika bencana terjadi
   b. Pengambilan keputusan dan kewenangan dari pemerintah pusat
   c. Tekanan politik pada saat bencana terjadi
   d. Perilaku negative dari aparat birokrasi yang melihat bencana sebagai prioritas yang tidak utama
   e. Koordinasi dengan organisasi vertical dan horizontal