

EVALUATING INSTITUTIONAL CAPACITY FOR LANDSLIDE DISASTER
RISK REDUCTION: A CASE STUDY OF MOUNT ELGON REGION, UGANDA

A thesis submitted in partial fulfillment of the requirements for Doctor of Philosophy
Degree in Environmental Governance and Management

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DEDICATION

Dedicated to my dear wife Safina; and children; Sumayah, Swabrah, Shamsa and Abdul Haq.

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TABLE OF CONTENTS

DECLARATION	i
Declaration Form for Students	ii
DEDICATION	iii
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF APPENDICES	xi
LIST OF ABBREVIATIONS	xii
ABSTRACT.....	xiii
CHAPTER ONE: GENERAL INTRODUCTION	2
1.1 Background	2
1.2 Problem statement	6
1.3 Research Questions	7
1.4 Research Objectives	8
1.5 Justification	8
1.6 Scope and limitations	9
1.7 Structure of the Thesis.....	9
CHAPTER TWO: LITERATURE REVIEW	10
2.1 Introduction	10
2.2 Evolution of disaster risk reduction institutions.....	10
2.2.1 Processes of institutional change	10
2.2.2 Theories of institutional change.....	12
2.3 Implementation of disaster risk reduction policy.....	14
2.4 Disaster risk governance	16
2.5 Research gaps.....	18
CHAPTER THREE: EVOLUTION OF LANDSLIDE DISASTER RISK REDUCTION INSTITUTIONS IN UGANDA.....	20
Abstract	20
3.1 Introduction	21
3.2 Materials and Methods	21

3.2.1	Research design and approach	21
3.2.2	Conceptual framework.....	22
3.3	Results	25
3.3.1	The colonial period (1894 to 1962)	25
3.3.2	The post-colonial period (1962 to 2015)	26
3.3.3	Drivers of landslide disaster risk reduction institutions.....	29
3.4	Discussion	30
3.5	Conclusion.....	31
CHAPTER FOUR: IMPLEMENTATION OF LANDSLIDE DISASTER RISK REDUCTION POLICY		32
	Abstract	32
4.1	Introduction	33
4.2	Methodology	35
4.2.1	Study setting.....	35
4.2.2	Research design	37
4.2.3	Study population, sample size and sampling procedure	37
4.2.4	Data collection and analysis.....	38
4.2.5	Conceptual framework.....	39
4.3	Results	40
4.3.1	Socio-economic and demographic characteristics of respondents.....	40
4.3.2	Implementation of landslide disaster risk reduction policy measures	41
4.3.3	Factors influencing implementation of landslide disaster risk reduction policy measures at household level	43
4.3.4	Challenges facing implementation of landslide disaster risk reduction..... policy measures at the organization level	45
4.4	Discussion	47
4.5	Conclusion.....	48
CHAPTER FIVE: LANDSLIDE DISASTER RISK GOVERNANCE IN THE MOUNT ELGON REGION, UGANDA		50
	Abstract	50
5.1	Introduction	51
5.2	Materials and methods	52
5.2.1	Conceptual framework.....	52

5.2.2	Study area description.....	53
5.2.3	Research design and sampling.....	54
5.2.4	Data collection and analysis.....	55
5.3	Results.....	56
5.3.1	The landslide disaster risk governance structure.....	56
5.3.2	Effectiveness of landslide disaster risk governance.....	57
5.4	Discussion.....	58
5.5	Conclusion.....	60
CHAPTER SIX: GENERAL DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS.....		61
6.1	General discussion.....	61
6.2	Conclusions.....	65
6.3	Recommendations.....	65
REFERENCES.....		67
APPENDICES.....		91

LIST OF TABLES

Table 1 Selected landslide disaster impacts for Uganda by year (1933-2014)	4
Table 2 Selected landslide disaster losses for Uganda by District (1933-2014)	5
Table 3 Key informants' perceptions on evolution of landslide disaster risk reduction policies	26
Table 4 Key informants' perceptions on evolution of landslide disaster risk reduction laws and regulations	27
Table 5 Landslide disaster risk management institutions in Uganda (1962 to 2015)	28
Table 6 Showing factors influencing implementation of landslide disaster risk reduction policy measures at household level	44

LIST OF FIGURES

Figure 1. Conceptual framework for evolution of landslide disaster risk reduction institutions	24
Figure 2. Part of Nametsi village buried by the March 1, 2010 landslides	34
Figure 3. Map showing location of the study area	36
Figure 4. Conceptual framework for effectiveness of landslide disaster risk reduction policy implementation	40
Figure 5. Conceptual framework for landslide disaster risk governance	53

LIST OF APPENDICES

Appendix A: Descriptive Statistics	91
Table A1 Socio-economic and demographic characteristics of respondents	91
Table A2 Key informants' perception on implementation of landslide disaster risk reduction policy measures	92
Table A3 Household respondents' perception on implementation of landslide disaster risk reduction policy measures	93
Table A4 Key informants perception on challenges facing implementation of landslide disaster risk reduction policy measures	94
Table A5 Household respondents' awareness of existence of village disaster risk management committees	95
Table A6 Household respondents' perception on the predictability of landslide disaster risk reduction institutions (policies)	96
Table A7 Household respondents' perception on the predictability of landslide disaster risk reduction institutions (laws and regulations)	97
Table A8 Key informants' perception on the effectiveness of the landslide disaster risk governance system	98
Appendix B: The governance structure for landslide disaster risk reduction in Uganda	99
Appendix C: Household questionnaire on institutional capacity for landslide disaster risk reduction in the Mount Elgon region, Uganda	100
Appendix D: Key informant discussion guide on institutional capacity for landslide disaster risk reduction in the Mount Elgon region, Uganda	110
Appendix E: Key informant discussion guide on landslide disaster risk governance in Mount Elgon region, Uganda	119

LIST OF ABBREVIATIONS

DECOC	District Emergency Coordination Centre
DESINVETAR	The National Disaster Loss Database
CRED	Centre for Research on the Epidemiology of Disasters
HFA	Hyogo Framework for Action
INFORM	Index For Risk Management
ISDR	International Strategy for Disaster Risk Reduction
NECOC	National Emergency Coordination Centre
NPDPM	National Policy for Disaster Preparedness and Management
SFDRR	Sendai Framework for Disaster Risk Reduction
UBOS	Uganda Bureau of Statistics
UN	United Nations
UNDP	United Nations Development Programme
UNISDR	United Nations Office for Disaster Risk Reduction
URCS	Uganda Red Cross Society

ABSTRACT

Uganda is a high landslide disaster risk country that has put in place several risk reduction institutions. However, the capacity of formal institutions to achieve landslide disaster risk reduction in the Mount Elgon region had not been evaluated. The objectives of the study were to: examine the evolution of landslide disaster risk reduction institutions, assess implementation of landslide disaster risk reduction policy measures, and evaluate the governance system for landslide disaster risk reduction. The study adopted a mixed method approach. Primary data were collected from 300 households and 10 key informants drawn from the landslide disaster prone district of Bududa in Eastern Uganda. The survey households were selected using systematic random sampling while the key informants were selected purposively. Secondary data were collected through document review. Quantitative data were analyzed using descriptive statistics and correlations while content analysis was used to analyze the qualitative data. The study findings revealed that most of the landslide disaster risk reduction institutions were put in place during the post-1986 period. The evolution was largely influenced by both global and local level factors, including the international disaster risk governance regimes and increase in landslide disaster events. The study findings further revealed that afforestation (65%), and appropriate farming technologies and land use practices (89%) were the most implemented landslide disaster risk reduction policy measures while gazetting of landslide prone areas and prohibiting settlement in such risky areas, resettlement of people living in landslide prone areas, and enforcement of relevant laws and regulations were the least implemented. The study findings also revealed that landslide disaster risk governance

had been decentralized, was predictable, transparent and participatory, but lacking in terms of accountability and credibility. The study concludes that landslide disaster risk reduction institutions in Uganda are still evolving, most of policy measures had not been implemented, the risk the governance system is poor, and the institutional capacity is low. The study recommends that gazettement of landslide prone areas and prohibiting settlement in such risky areas, resettlement of people living in landslide prone areas, and enforcement of relevant laws and regulations should be implemented as key landslide disaster risk reduction policy measures. To enhance landslide disaster risk governance, accountability mechanisms should be strengthened. Future research should focus on assessing the effectiveness of landslide early warning systems in the study area, and mapping institutions using Social Network Analysis to enable better resource allocation for landslide disaster risk reduction in Uganda.

CHAPTER ONE: GENERAL INTRODUCTION

1.1 Background

Globally, disasters are disrupting the functioning of communities through widespread losses beyond their capacity to cope using their own resources (CRED, 2014; DesInventar, 2014; ISDR, 2007, 2009; UN, 2015; UNISDR, 2013a).

Disasters result from an interplay of three main factors, namely: exposure to hazards, vulnerability, and lack of coping capacity. A hazard is something that may cause loss and damage while exposure is the situation of people and assets located in hazard-prone areas. Vulnerability refers to the characteristics and circumstances of a community that make it susceptible to the damaging effect of hazards while coping capacity is the ability to manage disasters using the available skills and resources. Disaster risk is therefore the potential loss which could occur to a community at a given time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity (INFORM, 2016; ISDR, 2007, 2009; UNISDR, 2013a).

Disasters are increasing in frequency, severity and impact. Between 2003 and 2013, the number of disaster events increased by 26% worldwide, resulting in enormous losses of life and property (Anderson, 2013; CRED, 2014; Millennium Ecosystem Assessment, 2005; McEntire, 2001; Munich Re, 2014; Palliyaguru, *et al.*, 2014; UN, 2015; UNDP, 2007; UNISDR, 2013a; Walhastrom, 2013).

Weather related loss events, including landslides are the major cause of damage in the world. About 11,000 extreme weather events were recorded between 1996 and 2015,

killing 528,000 people and causing economic losses amounting to US\$ 3.08 trillion (in Purchasing Power Parities) (Kreft, *et al.*, 2016). Although landslides account for only six percent of all disasters and one percent of casualties, the number of disasters associated with landslides is increasing worldwide (CRED, 2014; Hernandez-Moreno and Alcantara-Ayala, 2016).

Africa holds half of the world's disaster risk prone countries and is experiencing an increasing number of disasters due to climate change, poorly planned urbanization, environmental degradation, poverty and inequality, fragility and conflict (UNISDR, 2015a). With a risk index of 5.9, Uganda is considered one of the high disaster risk countries in the world. Although Uganda has a medium hazard and exposure index of 5.0, its vulnerability (6.0) and lack of coping capacity (6.9) indices are high (INFORM, 2016). In 2015, the country lost US\$ 0.986 million (in Purchasing Power Parity) to extreme weather events (Kreft, *et al.*, 2016). From 1980 to 2010, at least 61 disaster events resulting from various geological, hydro-meteorological, socio-natural and technological hazards were reported in the country (CRED, 2014).

Landslides involve down slope movement of soil, rock and organic material under the influence of gravity and the landforms that result from such movement (Highland and Bobrowsky, 2008). According to DesInventar (2014), landslide disasters have been on the increase in Uganda (Table 1) with Bududa District in the Mount Elgon region of Eastern Uganda being the worst hit (Table 2).

*Table 1**Selected landslide disaster impacts for Uganda by year (1933-2014)*

Year	Deaths	Missing	Houses		Relocated	Education	Hospitals	Crops	Roads
			Destroyed	Affected		Centers Damaged	damaged	Damaged (ha)	damaged (Meters)
1933	25	0	0	0	0	0	0	0	0
1964	36	0	0	0	0	0	0	0	0
1970	120	0	0	0	0	0	0	0	0
1997	100	0	97	0	0	0	0	0	0
1998	5	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	17	0	224	582	0	15	0	236	0
2010	1310	600	6	305677	50	4	1	41	0
2011	3	0	4	0	0	0	0	0	4080
2012	8	0	0	735	0	0	0	0	0
2013	1	0	21	117	0	0	0	0	0
2014	1	0	0	1680	0	0	0	0	0
TOTAL	1626	600	352	308791	50	19	1	277	4080

Source: DesInventar, 2014

Such unprecedented losses can be mitigated through disaster risk reduction, an approach to disaster risk management which aims at preventing new and reducing existing disaster risk, and managing residual risk to strengthen resilience and achieve sustainable development (ISDR, 2009).

Table 2

Selected landslide disaster losses for Uganda by District (1933-2014)

District	Deaths	Houses			Relocated	Educational centers	Crops (Ha)	Roads (Meters)
		Missing	Destroyed	Affected				
Bududa	1,626	600	352	308,791	50	19	277	4,080
Bukedea	0	0	0	30	0	3	0	0
Bukwo	11	0	1	0	0	0	0	35.4
Bulambuli	106	17	23	47,248	0	0	0	0
Bundibugyo	18	0	0	3,356	2,000	0	0	0
Bushenyi	9	0	0	0	0	0	0	0
Kaabong	14	0	201	0	0	0	0	0
Kabale	14	0	643	12,812	50	12	840	0
Kabarole	0	0	41	3,067	0	3	600	0
Kapchorwa	1	0	1	1,162	0	7	0	0
Kasese	0	0	469	2,973	0	3	417.36	0
Kisoro	6	0	187	2,877	0	3	215.46	76,420
Manafwa	0	0	18	0	0	0	0	0
Mbale	29	0	0	0	0	0	0	0
Mbarara	30	0	250	0	0	0	0	0
Nakapiripirit	0	0	0	0	0	0	0	0
Nsiika	7	0	3	812	0	0	0	0
Sironko	13	0	0	38,333	0	3	0	0
Total	1,884	617	2,189	421,461	2,100	53	2,350	80,535

Source: DesInventar, 2014

Disaster risk reduction cannot however, be achieved without effective institutions i.e. institutions that have capacity to manage risks (Brown, 2014). Capacity refers to the combination of all the strengths, attributes and resources available within an

organization, community or society to manage and reduce disaster risks and strengthen resilience (ISDR, 2009). Of paramount importance to coping capacity is institutional capacity which is measured in terms of implementation of disaster risk reduction strategies and good governance (INFORM, 2016). To achieve disaster risk reduction, institutions should address vulnerability which is the dependent variable of disaster (McEntire, 2001).

1.2 Problem statement

Uganda has put in place several formal landslide disaster risk reduction policies, laws and regulations, including the: Constitution of the Republic of Uganda, 1995 (as amended); National Environment Act Cap, 153; National Environment (Mountainous and Hilly Areas Management) Regulations, 2000; National Environment Management Policy, 1995; National Policy for Disaster Preparedness and Management (NPDPM), 2010; Second National Development Plan, 2015; and Uganda Vision 2040. The country also implemented the Hyogo Framework for Action [HFA] 2005-2015. Uganda is also currently implementing the Sendai Framework for Disaster Risk Reduction [SFDRR] 2015-2030 (Office of the Prime Minister, 2010, 2015; UNISDR, 2013a, 2013b, 2015b).

In spite of the above-mentioned institutions, landslide disasters continue to occur with increasing frequency, intensity and impact in the country. Paradoxically, limited research has been conducted to assess the capacity of formal institutions to achieve landslide disaster risk reduction in Uganda. Past research on landslides in the country mainly focused on landslide risk assessment and hazard mapping (Claessens, *et al.*, 2007; Claessens, *et al.*, 2013; Gumisiriza, 2014; Jacobs, *et al.*, 2015a, 2015b, 2016;

Kitutu, 2010; Kitutu, *et al.*, 2009; Knapen, *et al.*, 2006; Mugagga, 2011; Mugagga, *et al.*, 2012a, 2012b; Nakileza, 2007; Ngecu, *et al.*, 2004; Staudt, *et al.*, 2014). Other studies focused on landslide vulnerability assessments and impacts (Gorokhovich, *et al.*, 2013; Kato and Mutonyi, 2011; Kervyn, *et al.*, 2015; Mertens, *et al.*, 2016; Mugagga, 2011; Terry, 2011; Jacobs, *et al.*, 2015a, 2015b). Some studies also focused on informal institutions for landslide disaster risk reduction (Misanya, 2012; Misanya and Oyhus, 2014), and perceptions of landslide disaster risk (Cox, 2013; Kitutu, 2010; Wanasolo, 2012). The few studies on formal institutions have largely focused on landslide disaster preparedness and humanitarian response (Doocy, *et al.*, 2013) and effectiveness of resettlement programmes (Vlaeminck, *et al.*, 2015, 2016). Therefore there is paucity of information regarding the capacity of formal institutions to achieve landslide disaster risk reduction in Uganda, an issue that this study sought to address.

1.3 Research Questions

The research sought to address the following questions:

- a) How have landslide disaster risk reduction institutions evolved in Uganda?
- b) To what extent has the landslide disaster risk reduction policy been implemented?
- c) How effective is the governance system for landslide disaster risk reduction?

1.4 Research Objectives

The aim of the research was to evaluate the capacity of formal institutions to achieve landslide disaster risk reduction in the Mount Elgon region of Uganda. The specific objectives were to:

- a) Examine the evolution of landslide disaster risk reduction institutions in Uganda.
- b) Assess implementation of the landslide disaster risk reduction policy.
- c) Evaluate the effectiveness of the governance system for landslide disaster risk reduction.

1.5 Justification

Institutional capacity is critical for landslide disaster risk reduction (ISDR, 2009; UNISDR, 2013b; UNISDR, 2015a, 2015b). The capacity of institutions affects their effectiveness and performance (Brown, 2014; Hou and Shi, 2011). The subject of institutional capacity for landslide disaster risk reduction in Uganda has however, received limited scholarly and policy attention. The study sought to improve our understanding of the capacity of formal institutions to achieve landslide disaster risk reduction in the Mount Elgon region of Uganda. The study findings will benefit the various international, national and sub national agencies involved in landslide disaster risk reduction.

1.6 Scope and limitations

The research investigated the institutional capacity for landslide disaster risk reduction in the Mount Elgon region, Uganda. The study was conducted in the landslide prone Mount Elgon district of Bududa in Eastern Uganda. The study however, had some limitations. First, there was limited secondary data available since limited research had been conducted on landslide disaster risk reduction institutions in Uganda. Secondly, the study focused on formal landslide disaster risk reduction institutions and did not consider informal institutions. Besides, due to limitations of funds and time, the study did not cover the Kenyan part of Mount Elgon.

1.7 Structure of the Thesis

The thesis is made up of six chapters. Chapter one provides a general introduction to the study, including the: background, problem statement, research questions, study objectives, justification, scope and limitations. A review of the literature related to evolution of disaster risk reduction institutions, implementation of disaster risk reduction policy, and disaster risk reduction governance is presented in chapter two. Chapters three, four and five are based on the specific study objectives. Chapter three examines the evolution of landslide disaster risk reduction institutions in Uganda, chapter four assesses the implementation of landslide disaster risk reduction policy, and chapter five evaluates effectiveness of the governance system for landslide disaster risk reduction. Chapter six presents a synthesis of all the chapters through a general discussion, and draws conclusions and recommendations of the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review on institutional capacity for disaster risk reduction, with a focus on evolution of the institutions, implementation of disaster risk reduction policy and risk governance in Uganda, and in particular as these aspects relate to the study area.

2.2 Evolution of disaster risk reduction institutions

2.2.1 Processes of institutional change

North (1994) defines institutions as the humanly devised constraints that structure human interaction while Vatn (2005) views institutions as the conventions, norms and formally sanctioned rules of a society. Institutions can be categorized as formal or informal. Formal institutions include; rules, laws, and constitutions while informal institutions include; norms, conventions, and self-imposed codes of conduct. In the context of disasters, Lassa (2010) views institutions as the admixture of formal rules, informal norms, and enforcement characteristics that shape disaster risk reduction. Institutions can formally be described as laws, regulations, policies and procedures or they may emerge informally as norms, standard operating procedures and habits that delimit capacity for social change (Polski and Ostrom, 1999).

Institutions evolve, that is, observed patterns of change result in subsequent institutions according to circumstances (Lustick, 2011). As Dacin, *et al.*, (2002) note,

institutions are powerful drivers that shape the nature of change across levels and contexts, although they also change in character and potency overtime. Institutions change through self-conscious or unconscious processes. Self-conscious processes of institutional change include; imitation, influence external development interventions, rapid changes in biophysical conditions, competition and conflict. Unconscious processes of institutional change on the other hand include; forgetting, social cultural epistasis, and language ambiguity (Brown and Feldman, 2009; Kofinas, 2005; Ostrom, 2008; Ostrom and Basurto, 2011). Self-conscious processes of change are largely adaptive i.e. based on human ability to learn based on previous experiences (Henry, 2009). The researcher concurs that ambiguous language is often used in disaster risk reduction legislation making them poorly understood by policy makers, implementers and local communities, particularly in developing countries.

Previous studies by Lassa (2010) and Cheema, *et al.*, (2016) found that disaster risk management policy reform in Indonesia and Pakistan respectively was influenced by two major factors, namely; the recurrent disaster events and international risk governance regimes, particularly, the International Decade for Natural Disaster Reduction in the 1990s and International Strategy for Disaster Risk Reduction which started in 2000. The local disaster events also provided an opportunity and legitimacy for state and non-state actors to review and change the disaster risk reduction policy in the two countries. As Tierney (2012) notes, disaster risk reduction institutions and governance are largely influenced by social, economic and political forces, including globalization, and associated socio-demographic trends.

2.2.2 Theories of institutional change

The study locates the evolution of disaster risk reduction institutions within institutional theory based on the “old” and “new” schools of thought. Whereas the former focuses on the formal legal and administrative structure of government and the public sector, the latter is divided into four categories; rational choice approach, historical pathways approach, sociological approach, and discursive approach (Bell, 2002; Schmidt, 2008).

According to rational choice institutionalism or new institutional economics theory, ideal disaster risk management policies are planned ex-ante, for example, corresponding to the disaster management cycle. The theory asserts that institutions are important because they form the incentive structure of society (North, 1994). Consequently, institutional change can be achieved when actors are motivated by incentives or disincentives provided by formal and informal institutions while peoples’ preferences for disaster risk reduction are driven by their expected utility maximization. Critics of the rational choice paradigm however, argue that both decision makers and people at risk often make irrational decisions due to imperfect information, limits of cognitive ability and time-boundedness (Simon, 1978).

Historical institutionalism or “historical path dependency” theory on the other hand views disaster risk reduction strategies as not planned ex-ante but unfold depending on the dynamic environmental conditions (Kaag, *et al.*, 2003). Disaster risk reduction institutions therefore evolve as rather regularized patterns and routinized practices, which are the often unintended outcomes of purposeful choices (Schmidt, 2008). Consequently, local level disaster risk reduction strategies are largely a result of

historical interactions than advance planning while national level policies derive from national-international interactions built on pre-existing donor driven policy (Lassa, 2010).

From a sociological, cultural or anthropological view point, disasters and related risk reduction policies are embedded in a cultural context (Bankoff, 2003). While recognizing that cultures are difficult to change, Hoffman (1999) identifies the structure of cultural institutions (norms, customs and traditions) as one of the most important factors that may cause change. Lassa (2010) argues that culture can play a good or bad role as it may enable or disable disaster risk reduction.

One of the major limitations of the above-mentioned theories is failure to adequately explain how institutions change owing to their embedded assumption that institutions are exogenously given i.e. external to agents or actors (Schmidt, 2008). Discursive institutionalism or dynamic institutions approach or agent-centered approach on the other hand views institutions as both structures and constructs internal to agents. Accordingly, institutions change through discourse, ideas or ideation with such changes resulting from a complex interplay of institutions and agents both of which are relatively external and internal to each other (Lassa, 2010). Although the change process does not involve apriori judgments on the outcomes, it involves generation of new alternatives, selection among new and old combinations of structural attributes, and retention of those attributes that are successful (Ostrom and Basurto, 2011).

The researcher concurs with North (1994), Lassa (2010) and Lustick (2009) cited in Ostrom and Basurto (2011) that although formal institutions tend to change more

rapidly, such changes are not synonymous with progress in terms of practical improvements in local level decision making for disaster risk reduction.

2.3 Implementation of disaster risk reduction policy

Institutions, including policies have cognitive and normative elements i.e. at least to a certain extent can signal appropriate human behavior (Movik and Vatn, 2011) and define who has access to resources and the power to make decisions (Vatn and Angelsen, 2009). Policies are designed inter-alia to reduce risks, and actions cannot be taken until the respective institutions decide on them (Lassa, 2010). In the context of disaster risk reduction, policies are important because they define what and who will be at risk, and amend the way disaster risks are defined, perceived and acted upon (Label, *et al.*, 2006). Policies therefore make life and death decisions (Douglas, 1986), and provide incentives or disincentives that influence actor's decisions and preferences towards disaster risk reduction (North, 1994).

Implementation of disaster risk reduction depends on capacity or capability (ISDR, 2009). Countries should therefore develop strong institutions to manage disaster risks (ISDR, 2007; UNISDR, 2013b; UNISDR, 2015a, 2015b; Olowu, 2010). Less developed countries have however, been affected most by disasters due to weak institutional capacity (Ahrens and Rudolph, 2006; Shepherd, *et al.*, 2013; Tierney, 2012; United Nations, 2015; Walhastrom, 2013). As Raschky (2008) argues, developing countries with weaker institutions have a higher concentration of global disaster risks compared to developed countries that have better institutions. Lassa (2010) attributes the higher disaster risks in developing countries to institutional vulnerability i.e. institutions that are weak, cannot offer protection against disaster

risks and often ignorant of their duty to provide safety and human security. McEntire (2001) and Palliyaguru, *et al.*, (2014) argue, to achieve disaster risk reduction, institutions should address vulnerability which is the dependent variable of disaster.

Several studies have identified the challenges facing implementation of disaster risk reduction policy. Anderson (2013) noted that few ex-ante landslide risk reduction policy measures are implemented in developing countries while Maes, *et al.*, (2015) identified three major bottlenecks to disaster risk reduction policy implementation in developing countries, namely; limited access to capital by government and households, limited awareness of possible measures, and lack of law enforcement. Christopolis, *et al.*, (2014) noted limited funding, and inadequate policy and legal framework as key factors affecting disaster preparedness and management in Zambia, Nepal, Vietnam and Uganda. UNISDR (2013c, 2015a) reported that although more than half of the African countries had established or reformed their institutional frameworks, implementation of disaster risk reduction was inhibited by inter alia; limited political will, non-prioritization of disaster risk reduction in national budgets, lack of a standard disaster risk reduction budget monitoring system, and the persistent habit of focusing on emergency response to hazards.

Studies on disaster risk reduction in developing countries have also found fragmented institutions which are not effectively implemented or enforced due to limited political will and poor resourcing (Banana, *et al.*, 2014; Friis-Hansen, *et al.*, 2013; Maes, *et al.*, 2015; UNISDR, 2015). A study by Ahmed (2012) found that the existing policy in Pakistan did not signal any directions to budgetary mechanisms and extent of funds for disaster risk reduction. Oktari, *et al.*, (2017) noted that although the Government of

Indonesia had significantly increased funding for disaster risk management to one percent of the national budget, the local government of Banda Aceh spent only less than 0.6% on the same. In a related study, Syamsidik, *et al.*, (2017) noted that since the 2004 Indian Ocean tsunami, implementation of disaster risk reduction policy in the Aceh region of Indonesia was still hampered by poor coordination among key stakeholders. Pradhan, *et al.*, (2017) found that farmers in the Yunnan province of China measured the effectiveness of drought risk reduction policies by short term, immediate and tangible benefits rather than long term adaptation strategies. In Uganda, National Planning Authority (2010) identified inadequate policy and legal framework, and limited resources and capacity as the key factors affecting disaster risk reduction in the country.

2.4 Disaster risk governance

In analyzing institutions, governance is central. Institutions are better understood as networks (Lassa, 2010; Tierney, 2012). Governance is the interaction between actors (agents) and institutions (Vatn, *et al.*, 2012) and as Bell (2001) notes, modern governance occurs in and through institutions. Agent-centrism is therefore embedded in institutions and without agents, institutions have neither meaning nor presence (Lassa, 2010). Cash, *et al.*, (2006) argue that governance is multi-faceted, multi-level, multi-stakeholder and multi-scale in nature. Governance consists of: traditions and institutions by which authority in a country is exercised, including the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions

among them (The World Bank Group, 2017). Specifically, Lassa (2010) views disaster risk governance as the way society manages disaster risks while recognizing the overlapping centres of authority for decision making and responsibility. Institutional frameworks are therefore characterized by plurality, which if ignored can exacerbate conflicts that hinder disaster risk reduction efforts. Institutional frameworks are polycentric and best understood from a governance perspective (Tierney, 2012).

UNDP (2004) argues that governance is the application of “good governance” characteristics, including; participation, rule of law, transparency, responsiveness, consensus orientation, equity, effectiveness, efficiency, accountability and strategic vision. The World Bank (2017) and Kaufmann, *et al.*, (2010) identify the following important governance indicators; voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and corruption control. Ahrens and Rudolph (2006) on the other hand identify four main features of a governance system that can enhance development and disaster risk reduction; accountability, participation, predictability and transparency.

One form of governance that has recently characterized disaster risk reduction is decentralized governance or decentralization, a situation of power sharing between the central and local governments based on the principle of subsidiarity that transcends government to include the private sector and civil society (UNDP, 2004). Agrawal and Ribot (1999) define decentralization as any act by which the central government cedes rights of decision making to actors and institutions at lower levels in a political-administrative and territorial hierarchy. Through decentralization, functions, powers and resources are dispersed and distributed between the central and local authorities

(Delos Reyes and Espina, 2016). Decentralization outcomes should therefore be assessed in terms of who has greater benefits and decision making authority (Shackleton, *et al.*, 2002).

Several studies have noted the challenges of decentralization. Lassa (2010) found a missing link in Indonesia's vertical governance, and multiple hierarchies of structure, functions, funding and responsibilities which are structural challenges to implementation of disaster risk reduction. Most of the local governments in Indonesia relied on the central government for funding resulting in loss of fiscal autonomy, and experienced limited human resource capacity and poor coordination in planning and implementation of disaster risk reduction. Christopolis, *et al.* (2014) noted weak institutional capacity for disaster risk reduction at the district and community level in Zambia, Nepal, Vietnam and Uganda. Shackleton *et al.*, (2002) found that in Asia and Southern Africa, decentralization reflected more rhetoric than substance, with the central governments exercising significant control and management over natural resources. Relatedly, different actors also perceived decentralization differently, and the more powerful actors often manipulated devolution outcomes to suit themselves.

2.5 Research gaps

Prior to this study, the capacity of formal institutions to achieve landslide disaster risk reduction in the Mount Elgon region, Uganda had not been assessed yet this is important for policy and decision makers in the field of disaster risk management. Specifically, studies on evolution of landslide disaster risk reduction institutions, implementation of landslide disaster risk reduction policy, and effectiveness of the landslide disaster risk governance system have been lacking. Previous studies on

institutional capacity for disaster risk reduction in Uganda focused on other natural hazards and not landslides (Christopolos, *et al.*, 2014; Friis-Hansen, Bashaasha and Aben, 2013). Other Ugandan studies focused on natural resource management and social service delivery (Banana, *et al.*, 2007; Bartley, *et al.*, 2008; Muhereza, 2006; Nkonya, *et al.*, 2008; Sanginga, *et al.*, 2010; Van Alstine, *et al.*, 2014; Were, *et al.*, 2013). Elsewhere, studies on institutional capacity for disaster risk reduction did not focus on landslides (Ahmed, 2013; Brown, 2014; Cheema, *et al.*, 2016; Lassa, 2010; Oktari, *et al.*, 2017; Pradhan, *et al.*, 2017; Syamsidik, *et al.*, 2017).

CHAPTER THREE: EVOLUTION OF LANDSLIDE DISASTER RISK REDUCTION INSTITUTIONS IN UGANDA

Abstract

Uganda is one of the high disaster risk countries in the world that has put in place landslide disaster risk reduction institutions. The study examined the evolution of landslide disaster risk reduction institutions in Uganda. Primary data were collected through household surveys and key informant interviews conducted in the landslide disaster prone Mount Elgon district of Bududa in Eastern Uganda. The survey households were selected using systematic random sampling while the key informants were selected purposively. Secondary data were collected through document review. Quantitative data were analyzed using descriptive statistics while content analysis was used to analyze the qualitative data. The study findings show that most of the landslide disaster risk reduction institutions were put in place during the post-1986 period. The evolution was largely influenced by both global and local level factors, including the international disaster risk governance regimes and increase in landslide disaster events. The study concludes that landslide disaster risk reduction institutions in Uganda are still evolving, and should be implemented and enforced.

Key words: Disaster risk reduction, evolution, landslide, institutions, Uganda

3.1 Introduction

Weather related loss events, including landslides are the major cause of damage in the world (Kreft, *et al.*, 2016). From 1965 to 2014, about 644 landslide disaster events were recorded, killing 40,263 people and affecting 9.5 million worldwide (CRED, 2014; Hernandez-Moreno and Alcantara-Ayala, 2017).

Uganda has experienced enormous losses due to landslides. Landslides are the second major cause of death after accidents, affect 4% of the population, and account for 5% of houses destroyed and damaged in Uganda (DesInventar, 2014). In response to the increasing disasters, the government of Uganda has put in place disaster risk reduction institutions. The study analyzed the evolution of formal landslide disaster risk reduction institutions in the country.

3.2 Materials and Methods

3.2.1 Research design and approach

The study adopted a historical research design (Cheema, *et al.*, 2016; Lassa, 2010). A historical research design enables one to draw conclusions about causes, trends and effects of past phenomenon in order to explain the present, and predict and control the future (Oso and Onen, 2008). The study drew on both primary and secondary data sources. Primary data were collected using household surveys and key informant interviews. Data were collected from 300 household heads or their representatives using face to face interviews, and 10 key informants consisting of political leaders and technical staff of key disaster management agencies in the landslide prone Mount Elgon District of Bududa in Eastern Uganda. The survey households were selected

using systematic random sampling while the key informants were selected purposively. The district was selected because it experiences the highest number of landslide disasters in the Country (DesInventar, 2014). Secondary data were collected through document analysis, including review of government of Uganda legal and policy documents. Data were analyzed using content analysis and descriptive statistics (Russell, 2002).

3.2.2 Conceptual framework

The study conceptualized a framework for explaining the evolution of landslide disaster risk reduction institutions based on Ostrom and Basurto (2011) processes of institutional change (Figure 1). Accordingly, the self-conscious processes of institutional change include; imitation, influence external development interventions, rapid changes in biophysical conditions, competition and conflict. The unconscious processes of institutional change on the other hand include; forgetting, social cultural epistasis, and language ambiguity.

Imitation involves copying policies and laws used by other countries while external development interventions can be in form of international risk governance regimes that push for reform or change of local institutions. Rapid changes in biophysical conditions e.g. climate change induced landslide disasters can also act as a motivation for a country to change its policies and laws. Competitive processes involve citizens preferring some institutional arrangements over others while conflict over interpretation may also lead to change of policies and laws.

Forgetting takes place when there are very many policies and laws, and citizens cannot remember all of them without extensive research or when they are never implemented or enforced. Sociocultural epistasis occurs when the semiotic overlap of one idea necessarily implies a subsequent one, even though both ideas might not be related. Nevertheless, both ideas are continually associated and carried forward in the process of change. Language ambiguity arises when policies and laws are written using words which are not understood by everyone with the same meaning, and this can cause institutions to change.



Figure 1. Conceptual framework for evolution of landslide disaster risk reduction institutions (Source: Author's own design, based on Ostrom and Basurto, 2011)

3.3 Results

This section presents findings on the evolution of landslide disaster risk reduction institutions in Uganda with a focus on the post-independence period.

3.3.1 The colonial period (1894 to 1962)

Uganda became a British Protectorate in 1894 and most of the informal institutions that hitherto governed disaster risk management were replaced with new formal institutions. Although there was no specific landslide disaster risk reduction policy, law or regulation during this period, landslide disaster risk reduction relied on other natural resource and environmental management institutions, particularly forestry legislation. The majority of household respondents (67%) reported that landslide disaster risk reduction policies were put in place during the colonial times. This was confirmed by several key informants (Table 3). The majority of household respondents (64%) also indicated that landslide disaster risk reduction laws and regulations were put in place during the colonial period, and this too was confirmed by most of the key informants (Table 4). Some key informants also reported that regulations regarding tree planting, contour farming and terracing on steep slopes were strictly enforced during the colonial period. Local leaders and agricultural extension staff mobilized and trained farmers on how to plant trees and make contours on their farms. No one was allowed to cut trees without permission from the local leaders. This was evident during the Semei Kakungulu regime in the early 1900s, when tree planting regulations were strictly enforced and sanctions imposed on households that failed to comply.

Table 3

Key informants' perceptions on evolution of landslide disaster risk reduction policies (n=10)

Question	Policy in place (%)
What was Uganda's landslide disaster risk reduction policy during colonial times?	50
What was Uganda's landslide disaster risk reduction policy from independence in 1962 to 1986?	50
What has been Uganda's landslide disaster risk reduction policy since 1986?	100

3.3.2 The post-colonial period (1962 to 2015)

After attaining independence in 1962, most of the colonial institutions persisted. Several key informants reported that landslide disaster risk reduction policy measures were put in place during post-colonial period (Table 3). Most of the key informants also reported that landslide disaster risk reduction laws and regulations were put in place and effectively implemented during the post-colonial period (Table 4). A review government of Uganda post-independence national plans, policies, laws and regulations indicates that most of them recognized or addressed landslide disaster risk reduction issues (Table 5).

Table 4

Key informants' perceptions on evolution of landslide disaster risk reduction laws and regulations (n=10)

Question	Laws and regulations in place (%)
What landslide disaster risk reduction laws and regulations were in place during colonial times?	70
What landslide disaster risk reduction laws and regulations were in place from independence 1962 to 1986?	80
What landslide disaster risk reduction laws and regulations have been in place in Uganda since 1986?	100

Since the advent of the National Resistance Movement (NRM) government in 1986, the number of landslide disaster risk reduction institutions increased (Table 5). All the key informants reported that most of the landslide disaster risk reduction policies were put in place during post-1986 period (Table 3). All the key informants also reported that most of the landslide disaster risk reduction laws and regulations were put in place during the post-1986 period (Table 4). A review of the various policy and legal documents indicates that the NPDPM, 2010 was the first comprehensive disaster risk management policy to address landslide disaster risk reduction in the country.

*Table 5**Landslide disaster risk management institutions in Uganda (1962 to 2015)*

-1962 Independence constitution, established a decentralized governance system
-1964 Uganda Red Cross Society Act passed, focused on emergency response
-1967 Republican constitution, established a centralized governance system
-1970-79 Constitution suspended, Idi Amin ruled by decree and institutions collapsed
-1980-85 Military commission and Obote 11 era, continued collapse of institutions
-1986 Ten Point Programme of NRM government, did not recognize landslide disasters
-1988 Forestry policy, did not recognize forests outside gazetted reserves
-1993 Decentralization policy adopted
-1995 Constitution adopted a decentralized governance system, recognized disaster risk management
-1995 National Environment Management Policy, did not address landslide disaster risks
-1995 National Environment Act, Cap 153, recognized landslide disaster risks
-1997 Local Government Act, Cap 243, operationalized the decentralization policy
-2000 National Environment (Mountainous and Hilly Areas Management) Regulations, addressed landslides
-2001 The Uganda Forestry Policy, recognized landslide hazards
-2003 The National Forestry and Tree Planting Act, 8/2003, did not address landslide disaster risks
-2004 Poverty Eradication Action Plan (2004/5 – 2007/8), did not specifically address landslides
-2006 The National Land Use Policy, did not address landslide disaster risks
-2007 Climate Change National Adaptation Programmes of Action, recognized landslide disaster risks
-2007 Vision 2040 adopted, did not address landslide disaster risks
-2010 National Development Plan 1 (2010/11 – 2014/15), recognized landslide disasters
-2010 National Policy for Disaster Preparedness and Management, addressed landslide disaster risks
-2013 The Uganda National Land Policy, did not address landslide disaster risks
-2015 National Development Plan 11 (2015/16 – 2019/20), recognized landslide disasters

3.3.3 Drivers of landslide disaster risk reduction institutions

The development of landslide disaster risk reduction institutions in Uganda was influenced by both local and global level events, including increase in landslide disasters and influence of international risk governance regimes. Some household survey respondents (11%) reported that landslide disaster risk reduction policies were put in place due to increase in landslide disasters. Some household survey respondents (10%) also reported that the landslide disaster risk reduction laws and regulations were put in place due to increase in landslide disasters.

A review of government of Uganda policy documents also indicates that the various regional and international disaster risk governance regimes, in which Uganda participated, could have influenced local action. For example, Uganda signed the East African Community Protocol on Environment and Natural Resources Management in 2006 which provides for common disaster preparedness and management policies, laws and strategies among member states. Uganda also implemented the African Union Regional Strategy for Disaster Risk Reduction, 2004, HFA, and SFDRR. The HFA was particularly instrumental in shaping Uganda's current disaster risk reduction policy. Under the HFA mechanism, the government of Uganda periodically reported to the United Nations Office for Disaster Risk Reduction on its progress concerning implementation of disaster risk reduction (Ecweru, 2013; Onek, 2015; Office of the Prime Minister, 2004, 2015).

3.4 Discussion

The objective of the study was to examine the evolution of landslide disaster risk reduction formal institutions in Uganda. The study findings show that most of the policies, laws and regulations were put in place during the post-1986 period. The evolution was largely influenced by both global and local level factors, including the influence of international disaster risk governance regimes and increase in landslide disaster events. At the local level, the post-1986 period coincides with increase in landslide disasters in the country and this could have created a sense of agency. Post-1986 was also a period of relative political and economic stability, and rebuilding of institutions. The international community also regained confidence in Uganda during that period, enabling the country to participate in various regional and international disaster risk governance regimes.

The study concurs with Ostrom and Basurto (2011) that rapid changes in biophysical conditions, including disastrous landslide events can act as catalysts for institutional change. It is therefore not surprising that the National Policy for Disaster Preparedness and Management was passed seven months after the March 1, 2010 landslide disaster in Bududa District, which was ranked among the top ten disasters in the world by number of deaths (CRED). The findings concur with other studies outside Uganda that noted rapid changes in biophysical conditions, including disasters as an important factor influencing institutional change (Ostrom and Basurto, 2011). The findings also concur with other studies conducted in Uganda and other parts of the world that noted the influence of international development agencies and risk governance regimes on

local disaster risk reduction institutions (Christoplos, *et al.*, 2014; Friis-Hansen, *et al.*, 2013; Lassa, 2010; Tierney, 2012; Ramanujam, *et al.*, 2012).

3.5 Conclusion

The study examined the evolution of landslide disaster risk reduction formal institutions in Uganda. The study findings show that most of the institutions were put in place during the post-1986 period. The evolution was largely influenced by both global and local level factors, including the international disaster risk governance regimes and increase in landslide disaster events. The study therefore concludes that the formal landslide disaster risk reduction institutions in Uganda are still evolving and should be implemented and enforced.

CHAPTER FOUR: IMPLEMENTATION OF LANDSLIDE DISASTER RISK REDUCTION POLICY

<mailto:Abstract>

Globally, policies have been implemented to mitigate against disaster risks whose frequency, severity and impact is increasing. The aim of this research was to assess the extent to which the landslide disaster risk reduction policy had been implemented in the Mount Elgon region, Eastern Uganda. Primary data were obtained through household surveys and key informant interviews conducted in the landslide disaster prone district of Bududa. Secondary data were collected through document review. Data were analyzed using descriptive statistics, correlations and content analysis. The study findings revealed that afforestation, and appropriate farming technologies and land use practices were the most implemented landslide disaster risk reduction policy measures while gazetting of landslide prone areas and prohibiting settlement in such risky areas, resettlement of people living in landslide prone areas, and enforcement of relevant laws and regulations were the least implemented. The study concludes that to a large extent, the landslide disaster risk reduction policy had not been implemented. Future research should focus on assessing the effectiveness of early warning systems for landslide disaster risk reduction in Uganda.

Keywords: Disaster, Landslide, Risk, Policy, Uganda

4.1 Introduction

Globally, disasters are increasing in frequency, severity and impact. Between the year 2003 and 2013, the number of disaster events increased from 700 to 880 worldwide, affecting at least 2.9 billion people, killing more than 1.2 million and causing economic loss exceeding US\$1.7 trillion (Anderson, 2013; ISDR, 2007; McEntire, 2001; Millennium Ecosystem Assessment, 2005; Munich Re, 2013; Palliyaguru, *et al.*, 2014; Raschky, 2008; UNDP, 2007; UNISDR, 2013; Walhastrom, 2013). Africa holds half of the world's most risk prone countries (UNISDR, 2015). About 1,700 disaster events were recorded in Africa between 1980 and 2008, affecting more than 319 million people, killing over 708,000 and causing economic loss in excess of US\$24 billion (CRED, 2014). Disasters threaten development in Africa with Uganda listed among the 11 countries most at risk of disaster induced poverty in the world (Manyena, 2016; Shepherd, *et al.*, 2013). Between the year 2000 and 2005, about 66% of households experienced at least one type of disaster in Uganda (Akeru, 2012; National Planning Authority, 2010).

Landslides kill more people (14%) than any other socio-natural disaster in Uganda, and affect 4% of the population (DesInventar, 2014). The Country has experienced enormous losses due to landslides, including the March 1, 2010 landslide which was ranked among the top ten disasters by number of deaths in the world (Figure 2). The landslide killed 388 and affected at least 8,500 people in the Mount Elgon District of Bududa in Eastern Uganda (CRED, 2014; Doocy, *et al.*, 2013; Kato and Mutonyi, 2011; Misanya, 2011; Terry, 2011; Vlaeminck, *et al.*, 2015, 2016; Wanasolo, 2012).

Such unprecedented landslide disasters can be attributed to institutional vulnerability (Lassa, 2010).



Figure 2. Part of Nametsi village buried by the March 1, 2010 landslides (Source: Wanasolo, 2012)

In response to the increasing number of disasters in the country, the government of Uganda put in place the NPDPM (Office of the Prime Minister, 2010). The NPDPM recognizes landslides as one of the major hazards in the country and recommends the following landslide disaster risk reduction measures: gazettement landslide prone areas and prohibiting settlement in such risky areas; resettling all persons living in landslide-prone areas; undertaking to promote afforestation; enforcing the relevant laws and policies; and applying appropriate farming technologies and land use practices. There has however, been no comprehensive study to assess implementation of the landslide disaster risk reduction policy measures recommended by the NPDPM. Therefore, the

aim of the study was to assess the extent to which the landslide disaster risk reduction policy measures have been implemented. The key research question was, to what extent have landslide disaster risk reduction measures been implemented in Uganda? The findings of the study will inform future implementation of the NPDPM.

4.2 Methodology

4.2.1 Study setting

Bududa district is located on the south-western slopes of Mount Elgon in Eastern Uganda along the Kenya boarder (Figure 3). The Mount Elgon ecosystem is shared between Uganda and Kenya, and is an international watershed, important conservation area and agricultural landscape supporting up to two million people in both countries (Muhweezi, *et al.*, 2007). Bududa district lies between latitude $2^{\circ} 49'N$ and $2^{\circ} 55'N$, and longitude $34^{\circ} 15'E$ and $34^{\circ} 34'E$. It covers a total land area of about 274km^2 . The area receives very high annual rainfall (above 1,500mm), and characterized by high altitude ranging between 1,250m to 2,850 meters above sea level. The steep concave north and north-east facing windward slopes (above 14°) favour land sliding. With exception of the Central Bukigai zone, the study area is dominated by vertisols which are “problem soils” i.e. where slope failure can occur even without human intervention. The soils have a high amount of clay, are fine textured and highly plastic, resulting in low permeability, excessive water retention, high susceptibility to expansion and sliding. The most common types of landslides in the study area include; debris slumps, bottle slides, mudslides and sheet slides (Gumisiriza, 2014; Osuret *et al.*, 2016; Bududa District Local Government, 2007; Nakileza, 2007; Claessens, *et al.*,

2007, 2013; Cox, 2013; Kitutu, *et al.*, 2009; Kitutu, 2010; Knapen, *et al.*, 2006; Mugagga, 2011; Mugagga, *et al.*, 2012a, 2012b).

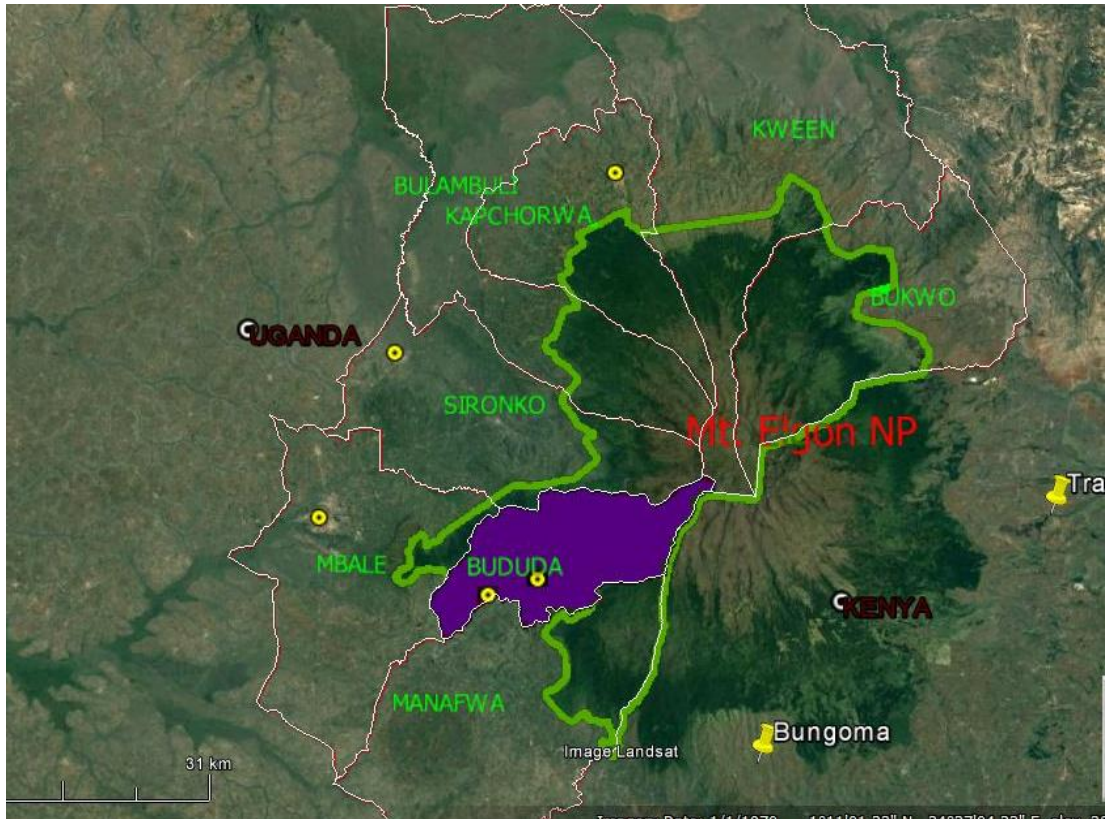


Figure 3. Map showing location of the study area

Bududa is a highly populated and predominantly rural district (97%). Between 2002 and 2014, the population grew by 72% from 123,103 to 211,683. The population is largely distributed among 37,028 households, with an average household size of 5.7 far above the national average of 4.7. The annual population growth rate is very high (4.52%), far above the national average of 3%. The population density is also very high (499 persons per km²) compared to the national average of 173. The population is relatively homogeneous and traditional with a predominant household population (99%), and the Bagisu or Bamasaba constitute the major ethnic group (99%). The

largely traditional nature of the population makes it conservative and less willing to accept birth control programmes or relocate to other areas. Although Mount Elgon national park covers 40% of the district, the fertile volcanic soils support intensive subsistence farming and a high population density. Both rapid population growth and intensive agriculture are the key drivers of landslides in the study area. In terms of administrative units, Bududa district has one town council, 15 sub-counties, 36 parishes and 336 villages (Bududa District Local Government, 2007; Cox, 2013; Osuret *et al.*, 2016; UBOS, 2009, 2013, 2014)).

4.2.2 Research design

The study used a survey design since the aim of the researcher was to describe and explain events as they are. Such a design enabled extensive and rapid data collection, and understanding of the study population from part of it (Oso and Onen, 2008; Russell, 2002). The study used a mixed method approach involving household surveys and key informant interviews, and employed both qualitative and quantitative approaches. A mixed method is superior to a single method because it enhances data quality through triangulation, facilitation and complementarities (Palliyaguru, *et al.*, 2014; Lassa, 2010; Were, *et al.*, 2013).

4.2.3 Study population, sample size and sampling procedure

The study was conducted in the landslide disaster prone district of Bududa in Eastern Uganda. The target population was all the 37,028 households in the district (UBOS, 2014) of which 84% were living with landside risks. The sample consisted of 300 households drawn from three parishes. The sample size was determined statistically

(Russell, 2002). The study used various sampling techniques. Purposive sampling was used to select Bududa district as the study area since it experiences the highest number of landslide disasters in the country (DesInventar, 2014). Stratified random sampling was used to select the sample sub-counties of Bukigai, Bushika and Bukalasi on the basis of low, medium and high landslide disaster risk respectively (Cox, 2013). Simple random sampling was used to select the sample parishes of Bunamubi, Bufutsa and Bundesi while systematic random sampling was used to select the sample households. Such randomization enhances data validity and reliability since it reduces the effects of extraneous variables (Oso and Onen, 2008; Russell, 2002).

4.2.4 Data collection and analysis

Primary data were collected through household surveys and key informant interviews, conducted by the principal researcher and one research assistant. The household surveys were conducted from January to March 2015 while the key informant interviews were conducted in April 2016. Data were collected from 300 household heads or their representatives using face to face interviews. To enhance data validity and reliability, the questionnaires were pretested before final use (Oso and Onen, 2008; Russell, 2002). A total of 10 key informant interviews were conducted with political leaders and technical staff of the disaster risk management agencies working in Bududa District. The key informants were asked questions about their role in landslide disaster risk reduction, how the landslide disaster measures proposed by the NPDPM had been implemented, and the challenges faced. Secondary data were collected through document analysis, including review of government of Uganda policy documents. Quantitative data were analyzed using standard descriptive statistics

and Spearman's correlation tests. The Statistical Package for Social Scientists [SPSS] software version 16 was used to enter and manage the quantitative data. Content analysis was used to analyze the qualitative data by identifying codes from which basis categories were generated and grouped into themes (Russell, 2002).

4.2.5 Conceptual framework

The conceptual framework used in this study was based on Pradhan, *et al.*, (2017) modified framework for analyzing effectiveness of policy implementation. The framework relates policy to practice to performance (Figure 4) with feedback loops between them. In the context of landslide disaster risk reduction policy, the first step (policy) describes the landside disaster risk reduction measures proposed by the NPDPM (2010). The second step (practice) considers the planning and selection of appropriate landslide disaster risk reduction measures on the ground. The third step (performance) analyzes the implementation of the landslide disaster risk reduction policy measures in order to measure its effectiveness.

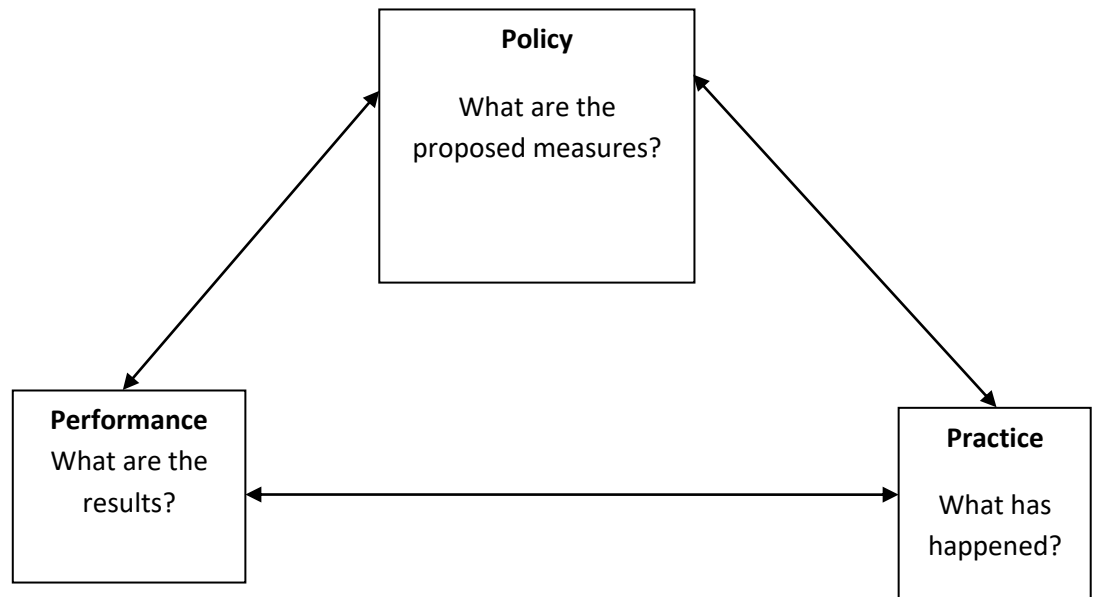


Figure 4. Conceptual framework for effectiveness of landslide disaster risk reduction policy implementation (adapted with some modifications from Pradhan, *et al.*, 2017).

4.3 Results

The study findings are presented under four thematic topics, namely: socio-economic characteristics of the respondent households, implementation of landslide disaster risk policy reduction measures, factors influencing implementation of landslide disaster risk reduction policy measures at the household level, and challenges facing implementation of landslide disaster risk reduction policy measures at the organizational level.

4.3.1 Socio-economic and demographic characteristics of respondents

The study findings reveal that in terms of ethnic composition, the Bagisu or Bamasaba were the dominant tribal group, constituting 99% of the population (Appendix A, Table A1). The majority of respondents were female (51%) and married (84%), with

an average household size of 6.4 people. Most of respondents were aged 18 to 55 (74%) and farmers (93%). In terms of education, 85% of the respondents had attained at least primary level education, and 86% earned a monthly income of less than 235,000 Uganda shillings (equivalent to 67 United States Dollars). Most of the respondents had lived in the study area for more than 12 years (79%), with homesteads located within a distance of 2.5 Kilometers from previous landslides (75%), and had been affected by past landslides (67%).

4.3.2 Implementation of landslide disaster risk reduction policy measures

The study findings show that most of the landslide disaster risk reduction policy measures had not been implemented (Appendix A, Tables A2 & A3). All household survey respondents and some key informants reported that gazetting of landslide prone areas and prohibiting settlement in such risky areas had been done by the local authorities. Some key informants argued that it was the responsibility of the Central government and not Bududa district local government to implement this particular policy measure.

Resettlement of persons living in landslide prone areas had also not been effectively done. Although some key informants indicated that this particular landslide disaster risk reduction policy measure had been implemented, almost all household survey respondents reported that they had not been resettled. Some key informants reported that after the March 1, 2010 landslide disaster, less than half of the affected households were relocated to Kiryandongo district in North Western Uganda but most of them have returned to Bududa district due to strong cultural ties with their ancestral lands, limited involvement of the local community in planning the resettlement

programmes by government, and harsh bio-physical conditions and lack of basic services in the destination area.

Afforestation as a landslide disaster risk reduction policy measure had been implemented by most households. This was confirmed by all the key informants who reported that afforestation was one of the most implemented landslide disaster risk reduction policy measures in the study area. Several key informants acknowledged the support of both governmental and non-governmental agencies to local communities through sensitization and distribution of seedlings. One key informant reported that during the 2014/2015 Financial Year, Bududa District Local Government distributed 40,000 tree seedlings to households and another 100,000 was planned for 2015/2106.

Enforcement of the relevant laws and policies had not been effectively implemented as a landslide disaster risk reduction policy measure. Although some key informants reported that enforcement of the existing landslide disaster risk reduction laws and policies had been done, almost all household survey respondents indicated that landslide disaster risk reduction laws and policies had not been enforced.

The study findings further reveal that most of the households had implemented the appropriate farming technologies and land use practices as landslide disaster risk reduction policy measures. This was confirmed by the majority of the key informants. The most commonly adopted appropriate farming technologies and land use practices by households include; terraces (59%), grass strips (23%), trenches (15%) and infiltration ditches (13%).

4.3.3 Factors influencing implementation of landslide disaster risk reduction policy measures at household level

To understand the socio-economic and demographic factors influencing implementation of the landslide disaster risk reduction policy measures at household level, a spearman's correlation test was done. There results (Table 6) show a significant positive correlation between awareness and implementation of landslide disaster risk reduction policy measures ($r_s=.183$). There also exists a significant negative correlation between the respondents' sex and implementation of the landslide disaster risk reduction policy measures ($r_s=-.168$).

Table 6

Showing factors influencing implementation of landslide disaster risk reduction policy measures at household level

Variable	Implementation of policy measures (Spearman's correlation coefficient r_s)
Tribe	-.095
Sex	-.168*
Age	.078
Parish	.067
Occupation	.022
Marital status	-.096
Income	.064
Household size	.072
Education	.038
Awareness	.183*
Member of Disaster management committee	-.038
Duration of stay in area	.077
Affected by previous landslides	-.075
Distance of household from previous landslide	-.041

*Significant at the 0.01 level (2- tailed)

4.3.4 Challenges facing implementation of landslide disaster risk reduction

policy measures at the organization level

At the organization level, implementation of landslide disaster risk reduction policy measures in Bududa District is faced with several constraints (Appendix A, Table A4). All the key informants reported that lack of adequate financial resources had adversely affected implementation of the landslide disaster risk reduction policy measures. One key informant reported that Bududa District Local Government spends less than 1% of its annual budget on disaster risk reduction. A review of the ministerial policy statements for the Office of the Prime Minister also indicates that due to financial constraints, only 50% of planned houses for resettling the March 1, 2010 landslide disaster victims in Kiryandongo district were constructed in the 2012/2013 Financial Year. Some key informants also reported that emergency logistics and equipment were inadequate and no significant post-disaster recovery reconstruction had been undertaken in Bududa District since the March 1, 2010 landslide disaster. Bududa district had also not established its own Emergency Coordination and Operations Centre and relied on the neighbouring Mbale district to coordinate emergency response.

The study findings further reveal that the human resource capacity for implementing the landslide disaster risk reduction policy measures was limited. Some key informants reported that most of the disaster management committees had either not been put in place or were not effective. Some disaster management committee members indicated that they had not been trained and did not have good knowledge of landslide disaster risk reduction. At the village level most of the disaster management committees were non-functional. The majority of household respondents (89%) who were potential

members were not aware of the existence of any village disaster management committee (Appendix A, Table A5). Bududa district had also not established its own environmental police unit to enforce land use regulations and relied on the neighbouring Mbale district.

Political interference was also reported as a bottleneck to implementation of landslide disaster risk reduction policy measures. Several key informants reported that local politicians often interfered with implementation of landslide disaster risk reduction policy measures. Some key informants also reported that resettlement of the March 1, 2010 landslide disaster victims was de-campaigned by some politicians in Bududa district on account of loss of voters during the 2011 general elections.

Misuse of resources meant for implementing the landslide disaster risk reduction policy measures by the local leaders was found to be another bottleneck. Some key informants reported that during the March 1, 2010 landslide disaster, many non-victims were registered as beneficiaries of emergency relief at the expense of bonafide victims and some emergency relief items were sold by the local leaders, leaving the victims to suffer.

The study findings also show that implementation of the landslide disaster risk reduction policy measures was also affected by lack of cooperation among local communities. Several key informants reported that the local community had not cooperated well during implementation of the resettlement programmes. For instance, only 40% of the March 1, 2010 landslide disaster affected households accepted to be relocated to Kiryandongo district although most of them have since returned to Bududa. Another government of Uganda resettlement proposal to Bunambutye

lowlands in the Mount Elgon District of Bulambuli has not been accepted by the local community in Bududa.

Some key informants also reported that implementation of landslide disaster risk reduction was hampered by limited awareness of laws and policies by local communities. Several key informants also reported that Bududa district local government had not made any by-laws for landslide disaster risk reduction. A review of government of Uganda legislation also indicated that a sectoral law for disaster preparedness and management had not been put in place.

4.4 Discussion

The study sought to assess implementation of the landslide disaster risk reduction policy in Uganda. The study findings reveal that afforestation, and appropriate farming technologies and land use practices are the most implemented landslide disaster risk reduction policy measures while gazettement of landslide prone areas and prohibiting settlement in such risky areas, resettlement of people living in landslide prone areas, and enforcement of relevant laws and regulations are the least implemented. The high adoption of afforestation, and appropriate farming technologies and land use practices could be attributed to the sensitization and support to households by governmental and non-governmental agencies. The poor implementation of other policy measures could be attributed to lack of adequate financial and human resource capacity, political interference, limited cooperation by the local community, and misuse of resources meant for landslide disaster risk reduction. It could also be attributed to limited awareness of relevant laws and regulations by the local community, and lack of a sectoral law and supporting regulations. Although the NPDPM, 2010 proposed

enactment of a National Disaster Management Act, this had not yet been done. Besides, the socio-economic and demographic characteristics of the local community also reveal high social, cultural, economic and physical vulnerability to landslide disaster risks.

Effective implementation of policies is key to disaster risk reduction. The study findings concur with Kato and Mutonyi (2011), Osuret *et al.* (2016) and Cox (2013) that afforestation, and appropriate farming technologies and land use practices as the most implemented landslide disaster risk reduction measures in the study area. The study findings however, reveal that terracing is a popular landslide disaster risk reduction practice among households contrary to earlier studies (Kitutu, 2010). The study findings also concur with Gumisiriza (2014) that local communities in Mount Elgon region do not support resettlement as a landslide disaster risk reduction measure. The study findings however, contradict earlier studies by Vlaeminck *et al.* (2015, 2016) which indicated that local communities in Bududa District were willing to be resettled. The study findings also concur with Maes *et al.*, (2015) that awareness and lack of law enforcement are the key factors affecting implementation of landslide risk reduction measures. The study findings also concur with earlier studies that identify institutional vulnerability as the key factor affecting disaster risk reduction in developing countries (Cox, 2013; Kato and Mutonyi, 2011; Lassa, 2010; Maes *et al.*, 2015; Terry, 2011; UNISDR, 2015; Wanasolo, 2012).

4.5 Conclusion

The study assessed implementation of the landslide disaster risk reduction policy in the Mount Elgon region of Uganda. The study findings revealed that afforestation, and

appropriate farming technologies and land use practices were the most implemented landslide disaster risk reduction policy measures. Gazetting of landslide prone areas and prohibiting settlement in such risky areas, resettlement of people living in landslide prone areas, and enforcement of relevant laws and regulations were however, the least implemented. The study concludes that to a large extent, the landslide disaster risk reduction policy had not been implemented.

CHAPTER FIVE: LANDSLIDE DISASTER RISK GOVERNANCE IN THE MOUNT ELGON REGION, UGANDA

Abstract

Governance is critical to reducing disaster risks. The study examined the effectiveness of landslide disaster risk governance in Uganda. Primary data were collected through household surveys and key informant interviews conducted in the landslide disaster prone Mount Elgon district of Bududa, Eastern Uganda. The survey households were selected using systematic random sampling while the key informants were selected purposively. Secondary data were collected through document review. Household survey data were analyzed using descriptive statistics. Key informant interview and document review data were analyzed using content analysis. The study findings revealed a decentralized landslide disaster risk governance system which is predictable, transparent and participatory, but lacking in terms of accountability and credibility. The study concludes that the governance system is poor and has not enabled landslide disaster risk reduction. The study recommends that accountability mechanisms should be strengthened to achieve landslide disaster risk reduction.

Keywords: Decentralization, Disaster Risk Reduction, Governance, Landslides, Uganda

5.1 Introduction

Globally, climate change related disasters are increasing in frequency, severity and impact. Between the year 2003 and 2013, the number of disaster events increased by 26% worldwide, affecting 2.9 billion people, causing 1.2 million deaths and economic loss exceeding US\$1.7 trillion. In Africa, about 1,700 disaster events were recorded between 1980 and 2008, affecting more than 319 million people, killing over 708,000 and causing economic loss exceeding US\$24 billion (Anderson 2013; CRED, 2014; McEntire 2001; Millennium Ecosystem Assessment 2005; Munich Re 2013; Palliyaguru, *et al.*, 2014; UNDP 2007; UNISDR 2013a; Walhastrom 2013). Disasters threaten development in Africa with Uganda listed among the 11 countries most at risk of disaster induced poverty in the world (Shepherd, *et al.*, 2013).

In Uganda, at least 61 disaster events occurred between 1980 and 2010 affecting 4.9 million people, killing more than 2,200 and causing economic loss exceeding US\$72.6 million. Disasters affect more than 200,000 people annually, and between 2000 and 2005 about 66% of the households experienced at least one type of disaster in Uganda (Akera 2012; National Planning Authority, 2010; Office of the Prime Minister 2010). Landslides kill more people (14%) than any other socio-natural disaster in Uganda and affect 4% of the population. The Country has experienced enormous losses due to landslides since 1933, including: 1,903 deaths; 427,658 people affected; 2,487 houses destroyed; and 53 educational centers, 2,350 hectares of crops and 80,535 meters of roads damaged. One such disaster was the March 1, 2010 landslides which were ranked among the top ten disasters by number of deaths in the world. The landslides killed 388 and affected at least 8,500 people in the Mount Elgon District of Bududa in

Eastern Uganda (CRED, 2014; DesInventar, 2014; Doocy *et al.*, 2013; Misanya, 2011; Office of the Prime Minister, 2010; Terry, 2011; Vlaeminck, *et al.*, 2015, 2016).

Risk governance can enhance landslide disaster risk reduction (Ahrens and Rudolph 2006; Kahn, 2005; Lemos and Agrawal, 2006; Office of the Prime Minister 2010; Tierney, 2012). One of the key priority actions of the HFA was to ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation. Its successor regime, the SFDRR also focuses strengthening disaster risk governance to manage disaster risk as one of its priority actions (UNISDR, 2013a, 2013b, 2015b). The study evaluated the effectiveness of landslide disaster risk governance in Mount Elgon region, Uganda.

5.2 Materials and methods

5.2.1 Conceptual framework

The study conceptualized a framework (Figure 5) according to Ahrens and Rudolph (2006) based on the four dimensions of effective governance structures; accountability, participation, predictability and transparency. Accountability ensures that policy makers and implementers are held responsible for their actions while participation enables the voices of stakeholders to be heard during implementation of landslide disaster risk reduction. Predictability on the other hand requires that rules binding both public officials and private actors are put in place while transparency ensures that there is openness and better information flow during implementation of landslide disaster risk reduction.

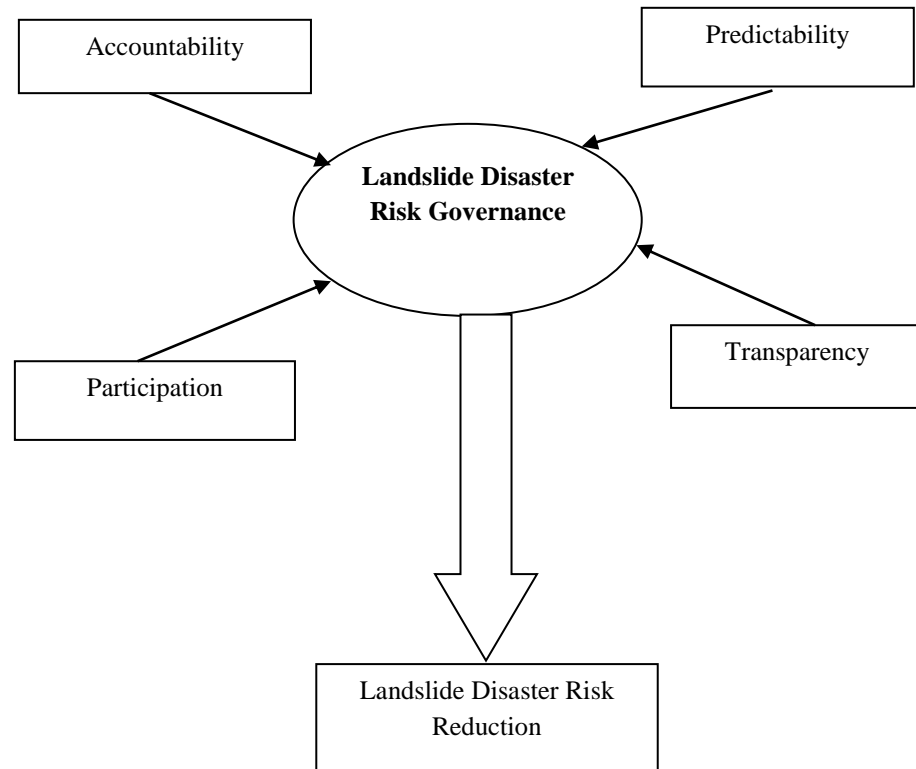


Figure 5. Conceptual framework for landslide disaster risk governance (Source: Author's own design based on Ahrens and Rudolph, 2006)

5.2.2 Study area description

Bududa District is situated on the south-western slopes of Mount Elgon in Eastern Uganda, along the Kenya border (Figure 3). The Mount Elgon ecosystem is shared between Uganda and Kenya, and is an international watershed, important conservation area and agricultural landscape supporting up to two million people in both countries (Muhweezi, *et al.*, 2007). The district lies between latitude $2^{\circ} 49'N$ and $2^{\circ} 55'N$, and longitude $34^{\circ} 15'E$ and $34^{\circ} 34'E$, and covers a total land area of about 274km^2 . The area receives very high annual rainfall (above 1,500mm), and characterized by high altitude ranging between 1,250m to 2,850 meters above sea level. The steep concave north and north-east facing windward slopes (above 14°) favour land sliding. Although

Mount Elgon National Park covers about 40% of the district, the area has fertile volcanic soils and subsistence farming is the main economic activity. With the exception of Central Bukigai zone which is a carbonatite hill, the study area is dominated by “problem soils” i.e. where slope failure can occur even without human intervention (Claessens, *et al.*, 2007; Claessens, *et al.*, 2013; Bududa District Local Government, 2007; Kitutu, 2010; Mugagga, 2011; Mugagga, *et al.*, 2012a, 2012b; Cox, 2013; Shilaku J., personal communication, January 11, 2015).

Bududa is a highly populated and predominantly rural district. Between 2002 and 2014, the population grew by 72% from 123,103 to 211,683. At 4.5%, the annual population growth rate is very high and far above the national average of 3%. The population density is also very high (>450 persons per km²) far above the national average of 123. The average household size is 5.7 people. The population is relatively homogeneous and traditional, with a predominant household population of 99.8% and the Bagisu or Bamasaba constitute the major ethnic group (99%). In terms of administrative units, Bududa District has 15 Sub-counties, one Town council, 36 Parishes and 336 Villages (Bududa District Local Government, 2007; Cox, 2013; UBOS, 2009, 2013, 2014).

5.2.3 Research design and sampling

The study adopted a mixed method approach involving household surveys, key informant interviews and document review, and employed both qualitative and quantitative approaches. Such a mixed method approach is superior to a single method because it enhances data quality through triangulation, facilitation and complementarities (Lassa, 2010; Oso and Onen, 2008; Palliyaguru, *et al.*, 2014;

Russell, 2002; Were, *et al.*, 2013). For the household surveys, the target population was all the 37,028 households in Bududa district. The sample size was 300 households, and determined statistically (Russell, 2002). The study used various sampling techniques. Purposive sampling was used to select Bududa District as the study area. Bududa District was selected because it experiences the highest number of landslide disasters in the country (DesInventar, 2014). Stratified random sampling was used to select the sample Sub counties of Bukigai, Bushika and Bukalasi on the basis of low, medium and high landslide disaster risk respectively (Cox, 2013). Simple random sampling was used to select the sample parishes of Bunamubi, Bufutsa and Bundesi while systematic random sampling was used to select the sample households. Such randomization enhances data validity and reliability since it reduces the effects of extraneous variables (Oso and Onen 2002).

5.2.4 Data collection and analysis

Primary data were collected using questionnaires and key informant interviews. The choice of data collection methods was guided by the study objective and nature of data to be collected. The objective of the research was to evaluate the landslide disaster risk governance system in the Mount Elgon region, Uganda. The research was therefore mainly concerned with views, opinions, perceptions, feelings and attitudes, and such information could best be collected using questionnaires and key informant interviews. To enhance data validity and reliability, the questionnaires were pretested before final use (Russell, 2002; Oso and Onen, 2002). Primary data were collected from 300 household heads or their representatives, and 10 local leaders and staff of key disaster risk reduction agencies. Secondary data was collected through document analysis,

including review of government of Uganda disaster risk reduction policy documents. Both primary and secondary data were analyzed using descriptive statistics and content analysis.

5.3 Results

5.3.1 The landslide disaster risk governance structure

A review of the NPDPM revealed that Uganda has put in place a decentralized disaster risk governance system (Appendix B). At the national level, cabinet is the chief policy making organ of government and advises the President on landslide disaster risk reduction matters. The Ministerial Policy Committee of cabinet is responsible for policy formulation, oversight and mainstreaming landslide disaster preparedness and management in the governance of the country. The Ministry for Disaster Preparedness, Management and Refugees in the office of the Prime Minister is the lead agency that coordinates landslide disaster preparedness and management. The National Platform for Disaster Management is in charge of implementing landslide disaster risk reduction policy while the National Emergency Coordination and Operations Centre [NECOC] is responsible for coordinating emergency response.

At the sub national level, the City, District, Municipal and Town disaster policy committees offer policy direction while the respective management committees implement landslide disaster risk reduction policy. The District Emergency Coordination and Operations Centre [DECOC] is in charge of coordinating emergency response at the district level. The Sub County Disaster Management Committee is in charge of implementing landslide disaster risk reduction policy at that level while the

Village Disaster Management Committee is the lowest unit of landslide disaster risk reduction policy implementation in the country.

5.3.2 Effectiveness of landslide disaster risk governance

The effectiveness of the landslide disaster risk governance system was assessed and the findings are presented below and in Appendix A; Tables A6, A7 and A8. The study findings reveal that the landslide disaster risk governance system is predictable. The majority of household respondents reported that clearly defined policies and laws for landslide disaster risk reduction had been put in place. This was confirmed by all key informants.

The study findings further revealed that the risk governance system is transparent. The majority of key informants reported that reliable and timely information about landslide disaster risk reduction was made available to all stakeholders. Most of the key informants indicated that radio (70%), mobile telephone (50%), written reports (50%), and meetings with local leaders (50%) were the common ways through which information on landslide disaster risk reduction was shared among stakeholders.

The study findings also indicate that the landslide disaster risk governance system is participatory. All the key informants reported that both formal and informal channels through which members of the local community can influence policy and decision makers on landslide disaster risk reduction had been put in place. The most common channels through which local communities made their voices heard on landslide disaster risk reduction issues were: through local councils (50%), mobile telephone communication (50%), meetings with local leaders (50%), written reports (20%) and radio talk shows (20%). This was confirmed by several household survey respondents

who acknowledged that landslide disaster risk reduction was a shared responsibility between the government and households (47%). Some household survey respondents also acknowledged that both governmental and non-governmental organizations were key actors in landslide disaster risk reduction (36%).

The study findings however, reveal that the landslide disaster risk governance system lacked in terms of accountability. Most of the key informants reported that local leaders were not held responsible for their actions on landslide disaster risk reduction matters. All the key informants confirmed that no appropriate action was taken against local leaders who mismanaged the distribution of relief items during the March 1, 2010 landslides disaster.

The landslide disaster risk governance system also lacks credibility. Most of the key informants reported that they did not trust the commitments made by political leaders on landslide disaster risk reduction matters. Several key informants (50%) also indicated that previous commitments made by their political leaders on landslide disaster risk reduction had not been fulfilled.

5.4 Discussion

The objective of the study was to evaluate the effectiveness of the landslide disaster risk governance system in the Mount Elgon region, Uganda. The study findings reveal that the landslide disaster risk governance system is decentralized, predictable, transparent and participatory but lacking in terms of accountability and credibility. The study findings indicate that although the decentralized governance system has streamlined coordination between the different landslide disaster risk reduction

agencies, it not effectively enabled landslide disaster risk reduction. This could be attributed to the continued centralization of powers and resources for disaster risk reduction at the national level. Besides, there is also limited participation by the private sector in landslide disaster risk reduction.

Predictability, transparency, participation, accountability and credibility are important features of a good disaster risk governance system (Ahrens and Rudolph, 2006; UNDP, 2004). The decentralized landslide disaster risk reduction is consistent with the general governance system in the country which aims at bringing services closer to the citizens. The better predictability could be attributed to the numerous disaster risk reduction policies and laws that have been put in place in Uganda, particularly during the post-1986 period. The better transparency and participation on the other hand could be attributed to the rapid democratization in the country over the last three decades. In spite of the above, the researcher noted limited participation by the private sector in landslide disaster risk reduction. Besides, most of the most of the powers and resources for landslide disaster risk reduction remain centralized at the national level. The study findings are consistent with other studies that note corruption and lack of trust in political leaders as key factors affecting service delivery in Uganda (Friis-Hansen, *et al.*, 2013; Transparency International, 2017; Uganda Vision 2040). The study findings also occur with Hernandez-Moreno and Alcantara-Ayala (2017) who found that in Mexico, local people did not trust government agencies to provide information about landslide disaster preparedness and response.

5.5 Conclusion

The study evaluated the effectiveness of the landslide disaster risk governance system in Uganda. The study findings revealed a decentralized landslide disaster risk governance system that is predictable, transparent and participatory, but lacking in terms of accountability and credibility. The study concludes that the governance system is poor and has not enabled landslide disaster risk reduction. The study recommends that accountability mechanisms should be strengthened to achieve landslide disaster risk reduction.

CHAPTER SIX: GENERAL DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

6.1 General discussion

This study was conducted to examine the evolution of formal landslide disaster risk reduction institutions. Prior to this study, the evolution of landslide disaster risk reduction institutions in Uganda had not been studied and this is pioneering work on the subject. The study therefore advances the importance of a historical approach and enriches existing knowledge on disaster risk management institutions in Uganda.

The study found that most of the landslide disaster risk reduction policies, laws and regulations were put in place during the post-1986 period. This is not surprising since the country experienced relative political and economic stability, and rebuilding of institutions during the last three decades. There was also an increase in landslide disasters in the country during that period and this could have created agency. It is therefore not surprising that the NPDPM was passed seven months after the March 1, 2010 landslides disaster in Bududa District which was ranked among the top ten disasters in the world by number of deaths (CRED, 2014). Besides, the international community regained confidence in Uganda during that period, enabling the country to participate in various regional and international disaster risk governance regimes, including the HFA and SFDRR.

The findings concur with other studies outside Uganda that noted rapid changes in biophysical conditions, including disasters as an important factor influencing institutional change (Ostrom and Basurto, 2011). The findings also concur with other studies conducted in Uganda and other parts of the world that noted the influence of

international development agencies and risk governance regimes on local disaster risk reduction institutions (Christoplos, *et al*, 2014; Friis-Hansen, *et al.*, 2013; Lassa, 2010; Tierney, 2012; Ramanujam, *et al.*, 2012).

The study also sought to assess the implementation of the landslide disaster risk reduction policy. This is the first comprehensive study to evaluate implementation of the NPDPM with regard to landslide disaster risk reduction in the Uganda. The study provides original research evidence about implementation of the NPDPM and thus enriches existing knowledge of disaster risk management policy in the country. The study also provides an analysis of the challenges facing implementation of the NPDPM and proposes how these challenges could be overcome.

The study found that most of the landslide disaster risk reduction policy measures had not been implemented. Afforestation, and appropriate farming technologies and land use practices were the most implemented landslide disaster risk reduction policy measures while gazetting of landslide prone areas and prohibiting settlement in such risky areas, resettlement of people living in landslide prone areas, and enforcement of relevant laws and regulations were the least implemented. This is however, not surprising given the poor culture implementing policies, and enforcing laws and regulations in Uganda. Interestingly, only landslide disaster risk reduction policy measures that bring immediate direct livelihood benefits to households were better implemented. These findings echo the results of earlier studies that documented the importance of incentives and disincentives provided by disaster risk reduction institutions (North, 1994).

Better implementation of some policy measures could be attributed to the support offered to local communities by governmental and non-governmental agencies. However, the performance of trees after planting and their effectiveness in stabilizing the unstable slopes could be investigated in future studies. The findings are consistent with earlier studies conducted in Uganda that found inadequate financial and human resource capacity, political interference, limited awareness of relevant laws and regulations, and poor cooperation by the stakeholders as major challenges to implementation of disaster risk reduction (Christoplos, *et al.*, 2014; Friis-Hansen, *et al.*, 2013). It could also be attributed to lack of a sectoral law and supporting regulations for landslide disaster risk reduction. Although the NPDPM proposes enactment of a National Disaster Management Act, this has not yet been done. The contingency fund which currently serves as the National Disaster Fund is poorly resourced. Besides, the local community remains socially, culturally, economically and physically vulnerable to landslide hazards.

The findings echo results from earlier studies which documented afforestation, and appropriate farming technologies and land use practices as the most implemented landslide disaster risk reduction measures (Cox, 2013; Kato and Mutonyi, 2011; Kervyn, *et al.*, 2015; Osuret, *et al.*, 2016). The study findings however, reveal that terracing is a popular landslide disaster risk reduction practice among households contrary to an earlier study conducted in the same area (Kitutu, 2010). The findings also concur with Gumisiriza (2014) that local communities do not support resettlement as a landslide disaster risk reduction measure. This is contrary to an earlier study by Vlaeminck *et al.* (2015, 2016) which indicated that local communities in Bududa district were willing to be resettled. The study findings also concur with earlier studies

that identify limited awareness, lack of law enforcement, and institutional vulnerability as key factors affecting disaster risk reduction (Cox, 2013; Kato and Mutonyi, 2011; Lassa, 2010; Maes, *et al.*, 2015; Terry, 2011; UNISDR, 2015; Wanasolo, 2012).

The study also sought to evaluate the effectiveness of the landslide disaster risk governance system. Prior to the study, the effectiveness of the landslide disaster risk governance system in Mount Elgon region had not been assessed. This study is therefore pioneering on the subject. The study highlights the importance of good governance to landslide disaster risk reduction, and thus enriches existing knowledge of disaster risk governance in Uganda. The study also provides evidence of the accountability and credibility challenges facing disaster risk reduction in the country.

The study found that the landslide disaster risk governance system was decentralized, predictable, transparent and participatory, but lacking in terms of accountability and credibility. The decentralized landslide disaster risk reduction is consistent with the general governance system in the country which aims at bringing services closer to the citizens. The better predictability could be attributed to the numerous disaster risk reduction policies and laws that have been put in place in Uganda, particularly during the post-1986 period. The better transparency and participation on the other hand could be attributed to the rapid democratization in the country over the last three decades. In spite of the above, the researcher noted limited participation by the private sector in landslide disaster risk reduction. Besides, most of the powers and resources for landslide disaster risk reduction remain centralized at the national level. The study findings are consistent with other studies that note corruption and lack of trust in political leaders as key factors affecting service delivery in Uganda (Friis-

Hansen, *et al.*, 2013; Transparency International, 2017; Uganda Vision 2040). The study findings also occur with Hernandez-Moreno and Alcantara-Ayala (2017) who found that in Mexico, local people did not trust government agencies to provide information about landslide disaster preparedness and response.

6.2 Conclusions

The conclusions drawn from the study were that the formal landslide disaster risk reduction institutions are still evolving. Furthermore, to a large extent, the landslide disaster risk reduction policy had not been implemented. The risk governance system was also poor since it lacks accountability and credibility. Consequently, the institutional capacity for landslide disaster risk reduction was low.

6.3 Recommendations

From the study, it was recommended that at the national level, a National Disaster Preparedness and Management Act should be put in place as an enabling law to operationalize the NPDPM. Supporting regulations, should also be put in place. The contingency fund which currently serves as the National Disaster Preparedness and Management Fund should be allocated more resources (at least the statutory one percent of the national budget threshold) to enable financing of inter alia landslide disaster risk reduction programmes.

At the local level, landslide prone areas should be gazetted and settlement prohibited in such risky areas. Local communities should also be sensitized and supported to adopt resettlement as feasible landslide disaster risk reduction policy measure. The District, Sub county and Village Disaster Management Committees should also be

operationalized. Bududa District Local Government Council should put in place a by-law to support landslide disaster risk reduction.

At both national and local level, accountability mechanisms should be enhanced and leaders be held accountable for misuse of resources meant for landslide disaster risk reduction.

Future research should focus on assessing the effectiveness of landslide early warning systems in the Mount Elgon region, and mapping actors, institutions and governance using Social Network Analysis to enable better resource allocation for disaster risk reduction in Uganda.

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APPENDICES

Appendix A: Descriptive Statistics

*Table A1**Socio-economic and demographic characteristics of respondents (n=300)*

Variable	%
Tribe (Bamasaba)	99
Sex (Female)	51
Male	49
Marital status (Married)	84
Age (Between 18-55 years)	74
Main Occupation (Farmer)	93
Formal education attainment (At least Primary level)	85
Monthly Income (Below 235,000 Uganda Shillings)	86
Duration of stay in the area (More than 12 years)	79

Table A2

Key informants' perception on implementation of landslide disaster risk reduction policy measures (n=10)

Policy measures (Question 6)	Implemented (%)
Gazetting of landslide prone areas and prohibiting settlement in such risky areas	20
Resettlement of persons living in landslide prone areas	20
Afforestation	100
Enforcement of relevant laws and policies	20
Appropriate farming technologies and land use practices	70

Table A3

Household respondents' perception on implementation of landslide disaster risk reduction policy measures (n=300)

Policy measures (Question 8)	Implemented (%)
Gazetting of landslide prone areas and prohibiting settlement in such risky areas	0
Resettlement of persons living in landslide prone areas	0.3
Afforestation	65
Enforcement of relevant laws and policies	0.3
Appropriate farming technologies and land use practices	89

Table A4

Key informants perception on challenges facing implementation of landslide disaster risk reduction policy measures (n=10)

Challenges (Question 7)	Response (%)
Lack of financial resources	100
Limited human resource capacity	10
Political interference	40
Misuse of resources	20
Lack of cooperation among local community	50
Limited awareness of laws and policies by local communities	50
Centralization of disaster management	10

Table A5

Household respondents' awareness of existence of village disaster risk management committees

Existence of village disaster risk reduction committee (Question 24)		Frequency	Percent	Valid	Cumulative
				Percent	Percent
Valid	Yes	17	5.7	5.7	5.7
	No	268	89.3	89.3	95.0
	Do not know	15	5.0	5.0	100.0
	Total	300	100.0	100.0	

Table A6

Household respondents' perception on the predictability of landslide disaster risk reduction institutions (policies)

Policies for landslide disaster risk reduction are in place (Question 1)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	297	99.0	99.0	99.0
	No	2	.7	.7	99.7
	Do not know	1	.3	.3	100.0
	Total	300	100.0	100.0	

Table A7

Household respondents' perception on the predictability of landslide disaster risk reduction institutions (laws and regulations)

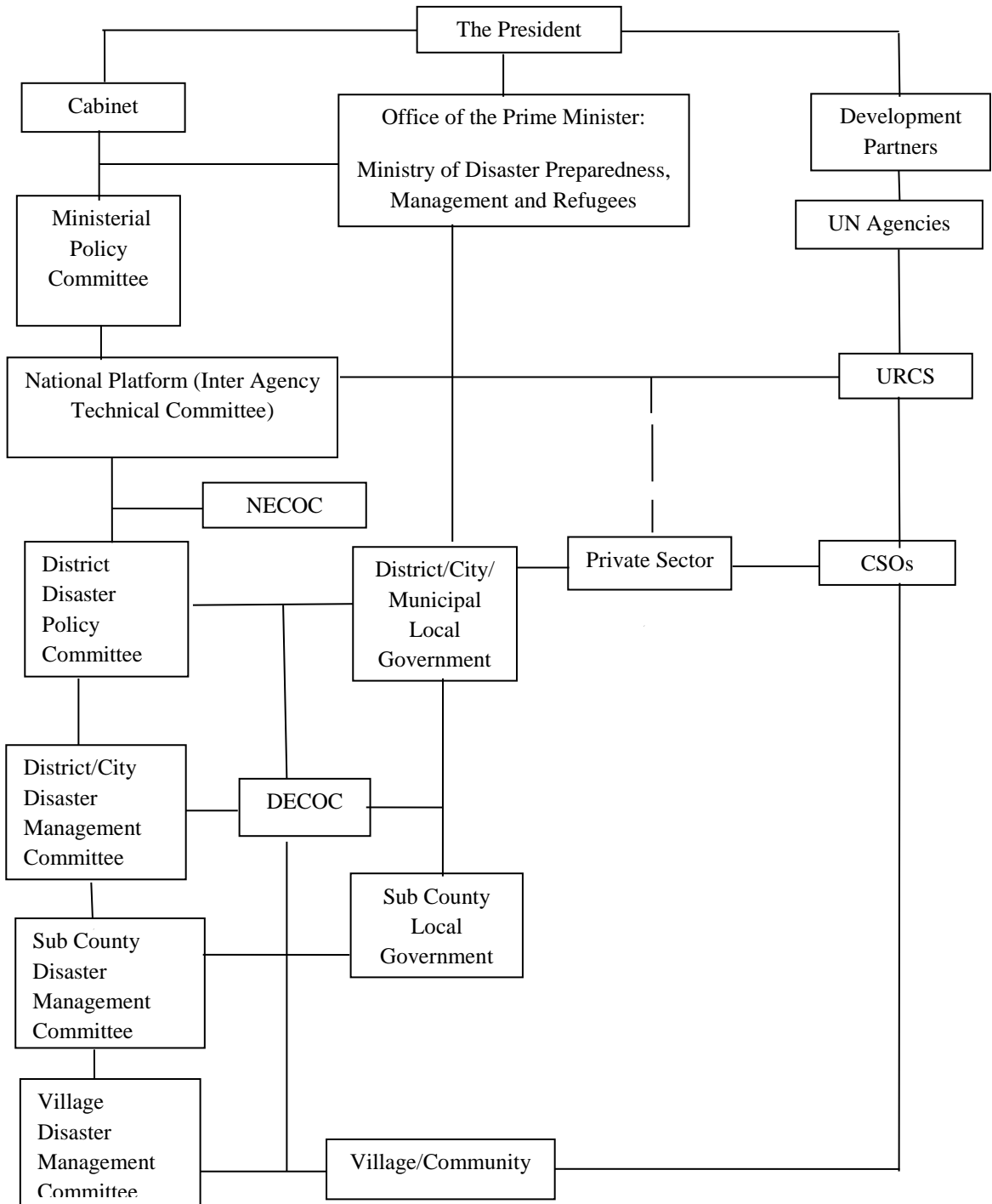
Laws and regulations for landslide disaster risk reduction are in place (Question 9)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	266	88.7	88.7	88.7
	No	28	9.3	9.3	98.0
	Do not know	6	2.0	2.0	100.0
	Total	300	100.0	100.0	

Table A8

Key informants' perception on the effectiveness of the landslide disaster risk governance system (n=10)

Question	Yes (%)
Question 1: There are clearly defined policies and regulations for landslide disaster risk reduction	100
Question 2: Reliable and timely information about landslide disaster risk reduction is available to all stakeholders	70
Question 3: There are formal or informal channels through which one can influence policy and decision makers on landslide disaster risk reduction issues	100
Question 4: Leaders are held responsible for their actions on landslide disaster risk reduction	30
Question 5: I trust the commitments made by political leaders on landslide disaster risk reduction matters	30

Appendix B: The governance structure for landslide disaster risk reduction in Uganda



Source: Office of the Prime Minister, 2010

Appendix C: Household questionnaire on institutional capacity for landslide disaster risk reduction in the Mount Elgon region, Uganda

Good Morning/Afternoon. My name is Sowedi Masaba a PhD student at University of Nairobi, carrying out research on institutional capacity for landslide disaster risk reduction in the Mount Elgon region of Uganda. I request you to participate in this interview and assure you that the information obtained will be used solely for purposes of research, and that your identity as well as responses will be treated with confidentiality. In responding to the questions, there is no right or wrong answer, I am only interested in your honest opinion. The research findings will enhance the institutional capacity for landslide disaster risk reduction in the Country.

Section A: Performance of landslide disaster risk reduction institutions

1. Are there any policies for landslide disaster risk reduction in this community?

1. Yes	2. No (GO TO 9)	Don't Know (GO TO 9)
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2. If yes, identify the landslide disaster risk reduction policies in this community?

3. How have the landslide risk reduction policies evolved since colonial times?

4. How have the landslide disaster risk reduction policies been implemented?

5. How effective is landslide disaster risk reduction policy implementation in this community?

1. Very effective	2. Effective	3. Less effective	4. Not effective (GO TO 7)	5. Don't Know (GO TO 9)
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6. If effective, why?

7. If not effective, why?

8. How have you participated in the implementation of the landslide disaster risk reduction policies?

9. Are there any laws and regulations for landslide disaster risk reduction in this community?

1. Yes	2. No (GO TO 17)	Don't Know (GO TO 17)
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10. If yes, identify the landslide disaster risk reduction laws and regulations that exist in this community?

11. How have the landslide risk reduction laws and regulations evolved since colonial times?

12. How have the laws and regulations been enforced to achieve landslide disaster risk reduction?

13. How effective are the landslide disaster risk reduction laws and regulations in this community?

1. Very effective	2. Effective	3. Less effective	4. Not effective (GO TO 15)	5. Don't Know (GO TO 17)
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14. If effective, why?

15. If not effective, why?

16. How have you complied with the landslide disaster risk reduction laws and regulations?

17. Are there any governmental or non-governmental landslide disaster risk reduction organizations working in this community?

1. Yes	2. No (GO TO 24)	Don't Know (GO TO 24)
--------	---------------------------	--------------------------------

18. Name the landslide disaster risk reduction organizations working in this community.

19. When did each of the landslide disaster risk reduction organisations start working in this community?

20. How have the above-mentioned organizations contributed to landslide disaster risk reduction?

21. How effective are the landslide disaster risk reduction organizations working in this community?

1. Very effective	2. Effective	3. Less effective	4. Not effective (GO TO 23)	5. Don't Know (GO TO 24)
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22. If effective, why?

23. If not effective, why?

24. Is there any committee responsible for disaster risk reduction in this community?

1. Yes	2. No (GO TO 32)	Don't Know(GO TO 32)
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25. When was the committee responsible for disaster risk reduction formed?

26. How was the disaster risk reduction committees formed?

27. How does the disaster risk reduction committee function?

28. How has the committee contributed to landslide disaster risk reduction in this community?

29. How effective is the disaster risk reduction committee?

1. Very effective	2. Effective	3. Less effective	4. Not effective (GO TO 31)	5. Don't Know (GO TO 32)
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30. If effective, why?

31. If not effective, why?

32. Are there any informal landslide disaster risk reduction institutions (culture, tradition, norms and religion) in this community?

1. Yes	2. No (GO TO 39)	Don't Know (GO TO 39)
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33. If yes, identify the informal landslide disaster risk reduction institutions (culture, tradition, norms and religion) that exist in this community?

34. How have the informal landslide disaster risk reduction institutions (culture, tradition, norms and religion) evolved since pre-colonial times?

35. How has culture, tradition, norms and religion contributed to landslide disaster risk reduction in this community?

36. How effective are the informal institutions (culture, tradition, norms and religion) in achieving landslide disaster risk reduction?

1. Very effective	2. Effective	3. Less effective	4. Not effective (GO TO 38)	5. Don't Know (GO TO 39)
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37. If effective, why?

38. If not effective, why?

39. Did any previous landslides affect your household?

1. Yes	2. No (GO TO 42)
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40. How did the previous landslides affect your household?

41. Please rank the impact of previous landslide disasters on your household?

1. Very High	2. High	3. Low
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42. Are you currently involved in any landslide disaster risk reduction activities?

1. Yes	2. No (GO TO 45)
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43. If yes, specify the landslide disaster risk reduction activities you involved in?

44. Why are you involved in the above-mentioned landslide risk reduction activities?

45. Why are you not involved in any landslide disaster risk reduction activities?

46. In future, would you be willing to participate in any landslide disaster risk reduction activities in your community?

1. Yes	2. No (GO TO 49)	Don't Know (GO TO 50)
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47. If yes, why?

48. Specify the landslide disaster risk reduction activities you would be willing to participate in?

49. If no, why?

50. Is your household prepared for future landslide disasters?

1. Yes	2. No (GO TO 52)	Don't Know (GO TO 53)
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51. If yes, specify the landslide disaster risk reduction measures you have put in place?

52. If no, why?

53. With whom should the responsibility for landslide disaster risk reduction lie?

54. Why should the responsibility for landslide disaster risk reduction lie with the person/organisation named above?

Section B: Socio-economic and demographic characteristics of respondents

55. Sex

1. Male	2. Female
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56. What is your age? -----

57. What is your marital status?

1. Single	2. Married	3. Separated	4. Divorced	5. Widowed
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58. What is your tribe?

1. Gishu	2. Other (specify):
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59. What is your main occupation?

1. Farmer	2. Civil servant	3. Self employed	4. Other (specify):
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60. Can you please indicate your highest level of formal education?

1. No formal education	2. Primary	3. Secondary	4. Tertiary/University
------------------------	------------	--------------	------------------------

61. Please indicate your approximate monthly income (after taxes)?

1. ≤235,000	2. 235,001- 500,000	3. 500,001- 1,000,000	4. 1,000,001 & above
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62. How many people regularly live with you, including yourself? -----

63. Of the people who regularly live in your household, including yourself, how many are gainfully employed? -----

64. For how long have you lived in this area?

1. Less than 12 years	2. More than 12 years
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65. How far is your homestead from the nearest known previous landslide point?

1. Less than 2.5 Km	2. Between 2.5 to 5 Km	3. More than 5 KM
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66. Are you a member of any disaster management committee?

1. Yes	2. No (GO TO 68)
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67. If yes, name the disaster management committee.

68. Name of Sub-county-----

69. Name of Parish-----

70. Name of Village-----

Section C: Respondent’s Evaluation

71. How do you evaluate this questionnaire in terms of interest, understanding, length and being educative?

Interest	1. Interesting	2. Not interesting
Understanding	1. Easy to understand	2. Difficult to understand
Length	1. Not too long	2. Too long
Educativeness	1. Educative	2. Not Educative

Thank you for your cooperation.

Interviewer’s Name: ----- Signature: ----- Date: -----

Appendix D: Key informant discussion guide on institutional capacity for landslide disaster risk reduction in the Mount Elgon region, Uganda

Good Morning/Afternoon. My name is Sowedi Masaba a PhD student at University of Nairobi, carrying out research on institutional capacity for landslide disaster risk reduction in the Mount Elgon region of Uganda. I request you to participate in this discussion and would like to assure you that the information obtained will be used solely for purposes of research, and that your identity as well as responses will be treated with confidentiality. In the course of discussion, there is no right or wrong answer, I am only interested in your honest opinion. The research findings will enhance the institutional capacity for landslide disaster risk reduction in the Country.

1. What is your role in landslide disaster risk reduction in Uganda?

2. Under what policy framework do you operate?

3. What has been Uganda's landslide disaster risk reduction policy since 1986?

4. What was Uganda's landslide disaster risk reduction policy from independence (1962) to 1986?

5. What was Uganda's landslide disaster risk reduction policy during colonial times?

6. Comment on implementation of the following landslide disaster risk reduction policy measures in the Mount Elgon region of Uganda.

a) Gazetting landslide prone areas and prohibiting settlement in such risk areas

b) Resettling all persons living in landslide prone areas

c) Promoting afforestation

d) Enforcing relevant laws and policies

e) Applying appropriate farming technologies and land use practices

7. What challenges face implementation of the above-mentioned landslide disaster risk reduction policy measures?

8. Under what legal framework do you operate?

9. What landslide disaster risk reduction laws and regulations have been in place in Uganda since 1986?

10. What landslide disaster risk reduction laws and regulations were in place from independence (1962) to 1986?

11. What landslide disaster risk reduction laws and regulations were in place during colonial times?

12. Comment on the enforcement of the following landside disaster risk reduction laws and regulations in the Mount Elgon region of Uganda.

a. District Councils making bye-laws identifying mountainous and hilly areas within their jurisdiction where landslides have occurred as at risk from environmental degradation

b. Land use mapping in all mountainous and hilly areas showing the characteristics, status, use and any other information relevant to such areas by the District Council

c. Regulating land use through zoning by the District Environment Committee

d. Restricting and controlling activities which are inconsistent with good land husbandry practices by the District Environment Committee

- e. Making guidelines for the management of landslide prone areas by the District Environment Committee

- f. Restricting the use of mountainous and hilly areas where the slopes are steep through permits by the Local Environment Committee

- g. Reducing water runoff through grassing of medium and steep slopes by land owners, occupiers and users

- h. Mulching and bunding of gardens on medium and steep slopes by land owners, occupiers and users

- i. Practicing agro-forestry by land owners, occupiers and users

- j. Preventing the burning of grass in areas of intensive agriculture and steep slopes by land owners, occupiers and users

13. What challenges face enforcement of the above-mentioned landside disaster risk reduction laws and regulations?

14. Under what landslide disaster risk reduction organization do you operate?

15. For how long has the organization been involved in landslide disaster risk reduction?

16. What landslide disaster risk reduction activities is your organization involved in:

a. Before landslide disasters occur

b. After landslide disasters have occurred

17. What other landslide disaster risk reduction organisations have been operating in the Mount Elgon region since 1986?

18. What were the main landslide disaster risk reduction organizations in the Mount Elgon region from independence (1962) to 1986?

19. What were the main landslide risk reduction organisations operating in the Mount Elgon region during colonial times?

20. Comment on the following issues with regard to implementation of landslide disaster risk reduction by your organization:

a. Effective leadership

b. Adequacy of staffing (indicate number)

c. Knowledge and skills of staff (specify type of training)

d. Adequate and dedicated financial resources, including contingency funds (provide budget details & sources)

e. Stakeholder participation

f. Availability and adequacy of emergency logistics & equipment

g. Volunteer teams in place

h. Availability of data on landslides for planning and management (specify data types)

i. Emergency plan with standard operating procedures in place

j. Regular meetings to discuss landslide disaster risk reduction issues

21. What challenges does your organization face while undertaking landslide disaster risk reduction?

Thank you for your cooperation

Interviewer's Name: ----- Signature: ----- Date: -----

Appendix E: Key informant discussion guide on landslide disaster risk governance in Mount Elgon region, Uganda

Good Morning/Afternoon. My name is Sowedi Masaba a PhD student at University of Nairobi, carrying out research on institutional capacity for landslide disaster risk reduction in Bududa District, Uganda. I request you to participate in this discussion and would like to assure you that the information obtained will be used solely for purposes of research, and that your identity as well as responses will be treated with confidentiality. In the course of discussion, there is no right or wrong answer, I am only interested in your honest opinion. The research findings will enhance the institutional capacity for landslide disaster risk reduction in the Country.

Comment on the following statements with regard to landslide disaster risk reduction in Bududa district:

1) There are clearly defined policies and regulations for landslide disaster risk reduction? -----

i. The landslide disaster risk reduction policies and regulations are consistently and impartially implemented and enforced? -----

ii. If yes, how? -----

iii. If not, why? -----

2) Reliable and timely information about landslide disaster risk reduction is available to all stakeholders? -----

i. If yes how? -----

ii. If not, why -----

3) There are formal or informal channels through which one can influence policy and decision makers on landslide disaster risk reduction issues? -----

i. If yes, how? -----

ii. If not, why? -----

4) Leaders are held responsible for their actions on landslide disaster risk reduction? -----

i) If yes, how? -----

ii) If not, why? -----

5) I trust the commitments made by political leaders on landslide disaster risk reduction matters? -----

i) If yes, why? -----

ii) If not, why? -----

Thank you for your cooperation

Interviewer's Name: ----- Signature: ----- Date: -----