

Integrating parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community

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DECLARATION

I, Livhuwani David NemaKonde, hereby declare that: ***“Integrating parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community”*** is my own work, that all sources used or quoted have been indicated and properly acknowledged by means of complete references, and that this thesis was not previously submitted by me or any other person for degree purposes at this or any other university.

Signature

Date

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ABSTRACT

This study addresses disaster risk governance problematics, particularly the ways in which governments should integrate organisations for disaster risk reduction and climate change adaptation. The focus is on assisting attempts to overcome problems associated with governing across departmental or ministry boundaries. The central argument in this study is that effective and efficient integration will require inter-organisational relations that can overcome structural impediments of government hierarchy as well as the tradition of inter-jurisdictional duplication. This is important because most government systems are not designed to address complex and boundary-crossing problems such as disaster risk that require integrated processes within and across levels of government. Moreover, governance of disaster risk through disaster risk reduction and climate change adaptation has until now evolved largely in isolation from each other – through different conceptual and institutional frameworks, response strategies, and plans, at both international and national levels. As a result, the majority of disaster risk reduction and climate change adaptation initiatives at national level continue to function in parallel and in isolation.

There is growing consensus among researchers, scholars and practitioners regarding the integration of disaster risk reduction and climate change adaptation. This is so because the integration of the two fields of practice provides opportunities to strengthen the common agendas and improve the management of present and future hazards and risks. However, most of the scholarship that advocates for the integration of disaster risk reduction and climate change adaptation hardly goes beyond the inter-linkages of the two, thus focusing on similarities, differences, areas of convergence and the challenges. As such questions about the modalities of integration as well as the reasons for and the effects of their separation remain unanswered. Answers to such questions are critical to moving beyond the theoretical conceptualisation of the inter-linkages to practical integration. It is acknowledged in this study that no single approach represents a panacea for integrating disaster risk reduction and climate change adaptation and thus this study aims to contribute to the body of knowledge on the topic by reviewing the literature and providing a comprehensive picture on the governance of disaster risk both in general and with specific reference to SADC member states.

Specifically, the main objective of the study is to develop a normative model for integrating structures for disaster risk reduction and climate change adaptation within the SADC member states. To achieve this objective, the study employed both theoretical and empirical dimensions. Firstly, the study conducted a literature review on the theories and practices of disaster risk reduction and climate change adaptation and their convergence. The study also conducted a desktop analysis of the existing structures for disaster risk reduction and climate change

adaptation in each of the Southern African Development Community member states. To address the objective in full, the study undertook empirical research by means of a mixed-methods research design. This method was chosen because the use of both qualitative and quantitative approaches are considered to offer in-depth experience of individual perspectives while allowing generalisation and providing precision.

The empirical study involved, firstly, the collection of data through semi-structured, face-to-face interviews. Data collected through these methods was analysed using a thematic analysis approach for qualitative data. The findings in this phase were used to inform the development of instruments for the second phase of the study, the quantitative research. Secondly, in the quantitative research, data was collected through an online survey. A total of 35 practitioners in the fields of disaster risk reduction, climate change adaptation, environmental management and meteorology from nine SADC member states participated in the study.

Respondents were able to articulate the reasons for and effects of having separate structures for disaster risk reduction and climate change adaptation. Respondents further provided ways in which the integration of the structures should take place. Subsequently, the thesis proposes a generic model to assist SADC member states' practitioners in their efforts to integrate disaster risk reduction and climate change adaptation. The model is generic in that it can be adapted to member state's particularities. Successful implementation of the model hinges on five enablers including legal and regulatory frameworks, strategies, policies and plans, political interest and commitment, access to sufficient capacity and resources support by regional and international organisations.

A recommendation of note made by the study is that if circumstances of a particular country do not allow for the structural adjustment or merging, organisations for disaster risk reduction and climate change adaptation need to strengthen their cooperative, coordinative and collaborative relationships. Other recommendation made in the study include the mainstreaming of climate change adaptation and disaster risk reduction into sectoral policies, improved political will and commitment, improvement of information awareness and advocacy, building institutional capacity and joint funding of programmes and projects. As a result of the limitations of the study and the infinite nature of research on the subject of integrating disaster risk reduction and climate change adaptation, the study was able to propose further areas of research.

Keywords: disaster risk reduction; climate change adaptation; governance; organisation; institution; disaster risk

OPSOMMING

Hierdie studie is gefokus op ramprisikobestuurprobleemareas, veral in terme van die wyses waarop regerings organisasies wat te doen het met ramprisikovermindering en klimaatsveranderingaanpassings, behoort te integreer. Die fokus is veral op die oplossing van probleme wat voortspruit uit beheer en bestuur wat wydsbeen oor departementele en ministeriële grense loop. Die sentrale argument in hierdie studie is dat effektiewe en doeltreffende integrasie die skep van interorganisasoriese verhoudinge wat strukturele struikelblokke uit die weg sal ruim in terme van regeringshiërargieë en die tradisie van inter-jurisdiksie-duplisering sal vereis. Dit is belangrik omdat meeste regeringstelsels nie ontwerp is om ingewikkelde en oorgrensprobleme soos ramprisiko, wat, om te kan werk, geïntegreerde prosesse binne en oor departementele vlakke vereis, aan te pak nie. Voorts het die bestuur van ramprisikovermindering en klimaatsveranderingaanpassings tot dusver grootliks in afsondering van mekaar ontwikkel – deur verskillende konseptuele en institusionele raamwerke, reaksiestrategieë en planne op nasionale en internasionale vlak. As gevolg hiervan funksioneer die meeste ramprisikovermindering- en klimaatsveranderingaanpassingsinisiatiewe op parallelle vlak en in isolasie van mekaar.

Daar is toenemende konsensus onder navorsers, akademici en praktisyns oor die integrasie van ramprisikovermindering en klimaatsveranderingaanpassing. Dit gebeur omdat die integrasie van die twee praktykvelde geleenthede verskaf om die gedeelde agendas te versterk en die bestuur van huidige en toekomstige bedreigings en risiko's aan te spreek. Die meeste van die akademiese werk wat die integrasie van ramprisikovermindering en klimaatsveranderingaanpassing aanspreek gaan egter nouliks verder as die tussenskakels van die twee, en fokus dus op ooreenkomste, verskille, areas wat saamloop en die uitdagings daaraan verbonde. As sodanig bly vrae oor die modaliteite van integrasie sowel as die uitwerking van hulle skeiding onbeantwoord. Antwoorde op sulke vrae is belangrik indien verby die teoretiese konseptualisering beweeg wil word na die praktiese integrasie. Geen enkele benadering verteenwoordig 'n universele oplossing of panasee om ramprisikovermindering en klimaatsveranderingaanpassing tot praktiese integrasie te voer nie en dus is hierdie studie gemik daarop om by te dra tot die bestaande kennisbronne oor die onderwerp deur die literatuur te bestudeer, en 'n omvattende prentjie te skep oor die oorsig oor ramprisiko in die algemeen met besondere klem op lidstate van die SAOG.

Die hoofdoelwit van die studie is baie spesifiek gemik op die ontwikkeling van 'n normatiewe model vir ramprisikovermindering en klimaatsveranderingaanpassing deur die SAOG-lidstate.

Om hierdie doelwit te bereik, is daar gebruik gemaak van teoretiese en empiriese dimensies. Eerstens is 'n literatuuroorsig van die teorieë en praktyke wat saamhang met ramprisikovermindering en klimaatsveranderingaanpassing gedoen. Die studie het ook 'n lessenaargebaseerde ontleding gedoen van ramprisikovermindering en klimaatsveranderingaanpassing in elk van die SAOG-lidstate. Ter volledige bereiking van hierdie doelwit is daar ook empiriese navorsing gedoen deur gebruik te maak van beide kwalitatiewe en kwantitatiewe benaderings om die leser in staat te stel om individuele perspektiewe in-diepte te bestudeer en ook veralgemening en presisie te bereik.

Die empiriese studie het eerstens gekyk na dataversameling deur semi-gestruktureerde een-tot-een onderhoude. Data wat op hierdie manier versamel is, is ontleed deur gebruik te maak van 'n tematiese analise geskik vir kwalitatiewe data. Hierdie data is gebruik as basis en fondament vir die ontwikkeling van instrumente vir die tweede fase van die studie, die kwantitatiewe navorsing. In die kwantitatiewe navorsing is data versamel deur die gebruik van 'n aanlynopname. 'n Totaal van 35 praktisyns in die velde van ramprisikovermindering en klimaatsveranderingaanpassing, sowel as omgewingsbestuur en meteorologie, van agt SAOG-lidlande het aan die studie deelgeneem.

Respondente kon die redes vir en die uitwerking van verskillende soorte strukture en samehang vir ramprisikovermindering en klimaatsveranderingaanpassing verskaf. Respondente het ook maniere voorgestel waarop die integrasie van strukture gedoen sou kon word. Hierna het die proefskrif 'n generiese model voorgestel om praktisyns in die SAOG-lidlande in staat te stel om ramprisikovermindering en klimaatsveranderingaanpassing te integreer. Die model is generies in die sin dat dit gebruik sou kon word om lidstate se unieke situasies te kan akkommodeer. Die suksesvolle implementering van die model hang af van vyf instaatstellende handeling, insluitende wetlike en regulatoriese raamwerke, strategieë, beleide en planne, politiese belange en toewyding, toegang tot voldoende ondersteuning in terme van kapasiteit en bronne van regionale en internasionale organisasies.

'n Belangrike aanbeveling wat in hierdie studie gemaak word, is dat omstandighede van 'n besondere land nie noodwendig voorsiening maak vir die strukturele aanpassings van samesmelting nie, en dat organisasies wat betrokke is by ramprisikovermindering en klimaatsveranderingaanpassing hulle samewerkende, koördinerende en oorkoepelende verhoudinge moet versterk. Ander aanbevelings wat in die studie gemaak word sluit in die vooropstelling van klimaatsveranderingaanpassing en ramprisikovermindering in terme van sektorale beleide, verbeterde politieke wil en toewyding, verbeteringde kommunikasie en voorspraak, die opbou van institusionele kapasiteit en gesamentlike befondsing van programme en projekte. As gevolg van sekere beperkinge van die studie, en die onbeperkte

navorsingsmoontlikhede oor die onderwerp van integrasie van ramprisikovermindering en klimaatsveranderingaanpassing, kon voorstelle vir verdere navorsing gemaak word.

Sleutelwoorde: ramprisikovermindering; klimaatsveranderingaanpassing; staatsbestuur (governance); organisasie; instelling; ramprisiko

ACRONYMS

ACDS	African Centre for Disaster Studies
ADB	African Development Bank
AEC	African Economic Community
AOSIS	Alliance of Small Island States
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASEAN	Association of the South-eastern Asian Nations
CBNRN	Community-Based Natural Resource Management
CBO	Community Based Organisation
CCA	Climate Change Adaptation
CEPA	Comprehensive Economic Partnership Agreement
CESSAF	Centre of Excellence for Sciences Applied to Sustainability
CM	Common Market
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of Parties
CSO	Civil Society Organisation
CU	Customs Union
DiMTEC	Disaster Management Training and Education Centre for Africa
DFID	Department for International Development
DMA	Disaster Management Authority
DRC	Democratic Republic of Congo
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRRU	Disaster Risk Reduction Unit
EAC	East African Community
EEC	European Economic Community
EU	European Union
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organisation
FTA	Free Trade Area
GAR	Global Assessment Report
GATT	General Agreement on Tariffs and Trade
GEF	Global Environment Facility
GFDRR	Global Facility for Disaster Reduction and Recovery
GIZ	Gesellschaft für Internationale Zusammenarbeit

GoA	Government of Angola
HFA	Hyogo Framework of Action
IDGEC	Institutional Dimensions of Global Environmental Change
IDRC	International Development Research Centre
IFRC	International Red Cross and Red Crescent
IFPR	International Foundation for Production Research
IPCC	Intergovernmental Panel on Climate change
IUCN	International Union for the Conservation of Nature and Natural Resources
LDC	Least Developed Countries
LDCF	Least Developed Countries Fund
MU	Monitory Union
NAP	National Adaptation Plan
NAPA	National Adaptation Plan of Action
NGO	Non-governmental Organisation
NIV	New International Version
OCHA	Office for the Coordination of Humanitarian Affairs
OECD	The Organisation for Economic Co-Operation and Development
ODI	Overseas Development Institute
PIK	Potsdam Institute for Climate Impact Research
PWC	Price Waterhouse Coopers
RADAR	Research Alliance for Disaster and Risk Reduction
RISDP	Regional Indicative Strategic Development Plan
SACU	Southern African Customs Union
SADC	Southern African Development Community
SADCC	Southern African Development Coordinating Conference
SARCOF	Regional Climate Outlook Forums, Southern Africa
SARUA	Southern African Regional Universities Association
SASSCAL	Southern Africa Science Service Centre for Climate Change and Adaptive Land Management
SELA	Latin American and Caribbean Economic System
SIDS	Small Islands Development States
UN	United Nations
UNAM	University of Namibia
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific

UNFCCC	United Nations Framework Convention on Climate Change
UNHABITAT	United Nations Human Settlement Programme
UNHRC	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNISDR	United Nations International Strategy for Disaster Reduction
UJE	José Eduardo dos Santos University
USAID	United States Agency for International Development
UTCAH	Unit for Coordination of Humanitarian Assistance
WEF	World Economic Forum
WFP	World Food Programme
WMO	World Meteorological Organisation
WRC	Water Research Commission
WTO	World Trade Organisation

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Disaster risk governance at global, national, and subnational levels is of great importance for effective and efficient reduction of disaster risk (UNDP, 2015). In the last two or so decades, debates on addressing disaster risk effectively revolved around the integration of disaster risk reduction and climate change adaptation. An increase in the frequency, magnitude and severity of disasters, particularly those of hydrometeorological origin, has prompted scholars to explore the linkages between disaster risk reduction and climate change adaptation. This as disaster risk reduction and climate change adaptation as concepts and as field of practice developed separately and as a result operate in isolation. Practitioners addressing disaster risk through disaster risk reduction and climate change adaptation initiatives are affiliated to separate organisations and institutions both internationally, nationally and at subnational levels (Begum *et al.*, 2014; Mitchell & van Aalst, 2008; Venton & La Trobe, 2008). Particularly at national level of government, the traditional division of responsibilities into discrete areas (Howes *et al.*, 2012) has contributed to the location of disaster risk reduction and climate change adaptation on different administrative units. As such, Howes *et al.* (2012) identify the prevailing organisational and institutional structures or arrangements that have helped locate the two separately to be a hindrance to effectively address disaster risk.

As a result of being located in different administrative units of government, disaster risk reduction and climate change adaptation have taken different evolutionary paths, have a different conceptualisation of terms and use different methods, strategies and institutional frameworks to achieve their goals (Lavell *et al.*, 2012:37; Schipper, 2009:17; UNISDR, 2008). Consequently, disaster risk reduction and climate change adaptation are pitted against each in both policy and practice as discrete areas with limited overlaps. As such, the integration of structures for disaster risk reduction and climate change adaptation is assumed to be both necessary and desirable as a strategy for addressing disaster risk more effectively and efficiently. However, much of the literature that advocates for the integration of disaster risk reduction and climate change adaptation falls short of achieving this objective because it does not spell out the precise actions that must be taken. The literature only focuses on those elements that link the two and make them compatible, with much attention given to the similarities, differences, areas of convergence and the challenges for integration (see Birkmann & Von Teichmann, 2010; Mercer, 2012; Mitchell & van Aalst, 2008; Olhoff, 2011; Thomalla *et al.*, 2006) while others focus on the mainstreaming of both into sectoral policies (Escorcia, 2016;

Kelman & Gaillard, 2010; Turnbull *et al.*, 2013) and into development strategies (Benson & Twigg, 2009; Mitchell *et al.*, 2010; Schipper & Pelling, 2006; The World Bank, 2010).

Thus, progress towards integration of the two has mostly been done conceptually and on paper rather than in practice. Consequently, the majority of disaster risk reduction and climate change adaptation initiatives at national level continue to function in parallel and isolation. In addressing these gaps, this study aims to propose a model for integrating structures for disaster risk reduction and climate change adaptation with specific reference to the SADC member states. To achieve this aim, it is considered important in this study to unravel the reasons for and the effects of locating disaster risk reduction and climate change adaptation in different government departments, ministries and/or agencies within the SADC member states. This will help build the case for the integration of those organisations involved. By proposing the model, the study provides a tool to help government organisations address fragmentation and integrate their efforts in addressing disaster risk. Unlike with some scholars who view integration as being synonymous with mainstreaming (Escorcia, 2016; Kelman & Gaillard, 2010), or bringing of independent organisations or components thereof to constitute a unified whole (Barki & Pinsonneault, 2005), integration in this study is conceptualised as a continuum in which the one end is organisations that do not interact or have limited interactions while the other end requires the structural adjustments to take up new organisational functions and responsibilities. In between are the organisations who cooperate, coordinate and/or collaborate on issues of common interest (Axelsson and Axelsson, 2006).

This chapter is structured as follows: having introduced the main issues necessitating the study, the chapter moves on to demarcate the study problem whilst at the same time identifying the apparent need and justification for the integration of organisations working towards countering disaster risk through disaster risk reduction and climate change adaptation. The chapter then outlines a number of research questions and study objectives that will help address the study problem. This is followed by a description of the central theoretical statements on which the study is grounded. The research strategy adopted in this study which entails an analysis of existing literature and the empirical evidence is outlined in section 1.6 of this chapter. Before the conclusions are drawn, the chapter considers the contribution that will be made by the study and also maps the structure of the thesis to make it easier for the reader to follow the study.

1.2 ORIENTATION AND PROBLEM STATEMENT

There is compelling evidence that the numbers and seriousness of disasters are increasing, and that poor communities are disproportionately affected (CRED, 2010; GAR, 2009, IUCN & IISD, 2001; Kellett & Sparks, 2012). Global analysis of records reveals that the recorded number of

disasters, the number of people they affect and the economic losses they cause have risen dramatically each decade since reliable records began in the 1960s (DFID, 2004). Accordingly, statistics show that between 1994 and 2013, over 6800 disaster events claimed over 1.35 million lives at an average of 68 thousand lives per year, affecting a further 218 million people and estimated economic losses totalling 2,600 billion US\$ (CRED, 2015:07). The Global Assessment Report of 2015 has reported that between 1980 and 2012, 42 million years of life were lost in internationally reported disasters each year (UNISDR, 2015a).

Several scholars, including Birkmann and Von Teichman (2010); and Gupta *et al.* (2009:117) reported that the majority (90%) of disasters and loss of life caused by disasters that occurred in the past two decades were weather-related (hydro-meteorological). The International Displacement Monitoring Centre (IDMC) (2015) shares the same sentiments and has reported that an average of 26.4 million people are displaced worldwide every year and an average of 22.5 million of these are displaced by climate or weather related disasters. In economic terms, weather and climate-related hazards account for about 70-90% of the large-scale economic disasters (McBean & Adjibade, 2009:181; UNISDR, 2008) and is recorded to be over 1.5 billion US dollars (UNISDR, 2009). If present trends continue, global disaster losses will outpace average economic growth (Bouwer *et al.*, 2007) as it is estimated that by 2050 disasters could have a global cost of over \$300 billion a year (IUCN & IISD 2001).

Notwithstanding the importance of better information-gathering and reporting, population growth, settlement patterns and land use changes in the increase of disaster related damages (McBean & Adjibade, 2009:181; UNISDR, 2008), a growing body of evidence and lines of reasoning exist suggesting that climate change is exacerbating disaster risk through extreme and severe weather events in most parts of the world. It has been widely postulated that the recent increase in disaster is as a result of anthropogenic climate change (Birkmann *et al.*, 2009; Bouwer, 2011; IPCC, 2001, 2007, 2012a; Oxfarm, 2007; Shamsuddoha *et al.*, 2013; The World Bank, 2012; UNISDR, 2008b; Venton & La Trobe, 2008;). Whereas societies have a long record of adapting to climate risk and climate change (Heltberg *et al.*, 2008:89), disasters caused by climate extremes repeatedly wipe out development gains, destroying lives and livelihoods (Heltberg *et al.*, 2008:90). According to Mirza (2003:239); and Huq & Reid (2008), extreme weather events cause widespread damage and loss of life, shattering infrastructure and thereby destroying decades of development work and generating enormous pressure on poor economies and making the poor even more vulnerable.

The effects of climate change fall disproportionately on the people who have contributed the least to cause the problem and who have the least resources to cope (Heltberg *et al.*, 2008:90;

Mendlsohn *et al.*, 2006). As Heltberg *et al.* (2008:89) pointed out, the most adverse impacts of climate change are felt in the developing world because of their geographic exposure, reliance on climate-sensitive sectors, low incomes and weak adaptive capacity. Thus it is the combination of the climate-related and natural hazards, communities' vulnerability and exposure that has a bearing on the levels of the impacts of disasters (UNDP, 2010). According to the IPCC (2012), extreme weather and climatic events, interacting with exposed and vulnerable human and natural systems lead to disasters. Climate change threatens to heighten the impacts of hydro-meteorological hazards such as floods, droughts, and tropical cyclones in many areas by changing the frequency and/or intensity of extreme events and by bringing changes in mean conditions that may alter the underlying vulnerability of populations to hazards and even spur the emergence of new hazards (Few *et.al.*, 2006; Revi, 2008; and Mitchell & van Aalst, 2008).

An increase in disasters has, however, been accompanied by an evolution in approaches from relief and response to risk management and disaster risk reduction and this is having an influence on the way disaster management programmes are being planned and financed (Yodmani, 2001). In an attempt to increase the focus on proactive activities of reducing disasters, the concept of disaster risk reduction was introduced (Becker, 2013; White *et al.*, 2004; Twigg, 2004). Whereas a number of definitions for disaster risk reduction have been provided (see Davies *et.al.*, 2009; DFID, 2004; Schipper, 2009:19; Tran & Shaw, 2007; Twigg, 2004; and Wisner *et al.*, 2004), the definition that seems to be most widely accepted is that provided by the UNISDR (2009) which states that "disaster risk reduction is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events", Unfortunately, initiatives aimed at prevention and mitigation are few, poorly funded and insignificant in comparison with money spent by governments, donors and development banks on humanitarian assistance and relief as well as post-disaster reconstruction (Amendola *et al.*, 2008:164; Kellett & Sparks, 2012; Yodmani, 2001).

While disaster risk reduction initiatives are meant to provide resilience to vulnerable communities, disaster risks emanating from natural hazards and risk posed by climate change are two threats to human wellbeing that reinforce each other (O'Brien *et al.*, 2008). The debate on impacts of climate change vis-à-vis disasters conclusively establish the possibility of rise of extreme weather events resulting in disasters due to increased energy within the climate system (Prabhakar *et al.*, 2009:5). Scientific evidence shows that for disasters, climate change poses a threat because increases are expected in the frequency and intensity of weather and climatic hazards, such as floods, tropical cyclones, heat-waves and droughts (Mitchell & Van Aalst,

2008; IPCC, 2014). The adverse impacts of climate change on society increase disaster risk, while disasters erode environmental and social resilience and thus increase vulnerability to climate change (O'Brien *et al.*, 2008). In a similar line of thinking, Mercer (2010), argues that climate change exacerbates and increases meteorological hazards and contributes to noticeable seasonal fluctuations that severely affect natural resource based livelihoods. Due to this and other compelling reasons emanating from the relationship between climate change and the levels of disasters, an integrated approach to disaster risk reduction and climate change adaptation is becoming increasingly relevant and valuable as vulnerable communities seek to enhance their adaptive capacity and build resilience against a rapidly changing climate (McBean & Adjibade, 2009:182).

According to Mitchell and Van Aalst (2008), both adaptation to climate change and disaster risk reduction have much in common as they both aim to reduce the impacts of shock by anticipating risk and addressing vulnerabilities. Similarly, Wamsler (2014) indicates that disaster risk reduction and climate change adaptation share the aim of reducing the incidence and impacts of climate related disasters and the associated risk through an application of similar measures and strategies. Therefore, integrating the two fields can prove useful in responding to current and future impacts of climate change (McBean & Adjibade, 2009). In practice, though, disaster risk reduction and climate change adaptation occupy separate policy spheres in the international arena, at national levels and this situation percolates to sub-national levels. The international community has recognised this challenge and is thus exploring ways to confront both climate change and disaster risks in a more coherent manner (Birkmann & Von Teichman, 2010).

Although in practice the two developed in parallel as concepts and fields of practice rather than in an integrated manner, an increasing number of scholars view both as two sides of the same coin (Becker, *et al.*, 2013). To this end, a considerable body of work, both academic and policy-focused has been done on the convergence of disaster risk reduction and climate change adaptation (see Few *et al.*, 2006; Mitchell & Van Aalst, 2008; Schipper, 2009; Schipper & Perling, 2006; Sperling & Szekely, 2005; Yamin *et al.*, 2005). As indicated elsewhere in this study, much of the available literature on integration of disaster risk reduction and climate change adaptation focuses on identifying and analysing opportunities and barriers for coordination at the overall institutional or framework level (Birkmann & Von Teichmann, 2010; Mitchell & van Aalst, 2008; Olhoff, 2011; Schipper & Pelling, 2006; Sperling & Szekely, 2005) with less emphasis on strategies and modes for integration.

Despite the strong interrelationship between disaster risk reduction and climate change

adaptation, various challenges and differences between the two fields have been identified including conceptual and practical differences (terminology, actors and types of interventions); levels of governance (global, national and local) and funding, which leads to incomparable formulation of interventions (Schipper, 2009:21–25; Sperling & Szekely, 2005). Birkmann and Von Teichman (2010) have categorised the challenges and gaps between disaster risk reduction and climate change adaptation into three key areas: scales, knowledge and norms. In most instances environmental authorities have responsibility for climate change adaptation, whereas authorities for disaster management, civil defence, and home affairs typically have responsibility for disaster risk reduction (UNISDR, 2009). With mounting international concern at the rising frequency and severity of natural hazards and disasters, in part due to factors related to climate change, there is increased impetus in many countries to put in place policy, legal, technical, financial, organisational and institutional measures that will reduce the destructive effects on the lives of communities (Baas *et al.*, 2008).

The disaster situation in Africa is not different from other parts of the world since African countries as part of the developing world are among the most vulnerable to the impacts of natural hazards (UNISDR, 2011). The continent is recognised as having a complex disaster profile characterised by both slow and sudden onset disasters (Holloway, 2009), with the majority of disasters affecting the largest number of people being of a hydro-meteorological nature (The World Bank, 2010). Despite this clear evidence of an increasingly complex risk profile, African governments have been slow to take initiatives to reduce disaster risks proactively (Holloway, 2009). At the same time the frequency of weather and climate-related disasters has increased on the continent since the 1970s, with geological disasters, such as earthquakes and volcanoes, occurring to a lesser extent (The World Bank, 2010). An increase in the regional share of disasters on the African continent has increased hardship (Brown *et al.*, 2012 citing IPCC, 2007) and thereby poses a threat to Africa's ability to achieve the Millennium Development Goals and Sustainable Development (AU, 2004).

Several authors (Brown *et al.*, 2012, Olhoff, 2011; The World Bank, 2010; UNFCCC, 2007) have pointed out that Africa is particularly vulnerable to the effects of climate change because of multiple stresses and low adaptive capacities arising from endemic poverty, weak institutions, and complex disasters and associated conflicts. Conversely, the difficulty of coping with climate variability in the continent increases the poverty and underdevelopment situation (Washington *et al.*, 2006:1355). While African countries have experienced large-scale disasters such as the 2011 drought in the Horn of Africa, most disaster effects are small, recurrent events with highly localised impacts (UNISDR, 2011). A continuous increase in the number, scale and intensity of natural disasters has profound implications for the governance of disaster risk in Africa (Bang,

2013:1) since the continent is not only vulnerable to the impacts of natural hazards and of climate change, but also faces structural difficulties that aggravate the consequences of disaster risk including climate risk and limit its capacity to manage effective solutions (The World Bank, 2007).

Lukamba (2010) pointed out that among other things the vulnerability of the African continent to disasters is linked to poverty and planning issues and is caused and expressed by weak governance structures and institutional capacities; limited knowledge basis to forecast and respond to natural disasters and weak infrastructure to manage resources and recover from disasters. Whereas disaster risk reduction policies and institutional mechanisms do exist at various degrees of completeness and with limited effectiveness in most African countries (AU, 2004), where they exist, they follow an ex-post responsive approach to disasters and are often not equipped with the right strategies and instruments for an ex-ante approach to risk reduction. At the same time a few if any African countries have legislative and institutional models in place that integrate disaster risk reduction and climate change adaptation into broader development strategies (The World Bank, 2010). This is so despite the fact that disaster risk reduction and climate change adaptation rely on the same sources of baseline information such as hydro-meteorological data used in early warning systems and for long-term climate predictions (The World Bank, 2010).

The World Bank (2007) argues that statements on the impact of disasters, climate change and governance can hardly be applicable to the entire continent due in part to the fact that the continent is so diverse. Holloway (2009) is of the view that critical reflection on disaster risk in Africa must explicitly acknowledge the complexity and diversity that characterise the continent. Whilst sub-Saharan Africa is not the most disaster-prone region in Africa, it is the most vulnerable to disasters because of physical, social, economic and environmental factors that negatively affect the capacity of people to secure and protect their livelihoods (Bhavnani *et al.*, 2008). The World Bank (2010) pointed out that the disaster profile for sub-Saharan Africa is closely linked to the vulnerability of its population and its economies and it is exacerbated by the minimal coping capacities. Whereas Southern Africa as part of sub-Saharan Africa has historically been exposed to droughts and floods, the sub-continent has seen an increase in the frequency and severity of climatic hazards in recent decades (Ziervogel *et al.*, 2008) and this is despite its tiny contribution to climate change (The World Bank, 2007).

On the other hand, the institutional, legislative and administrative frameworks for governance of disaster risks including climate risk in the Southern Africa region are very diverse and have been integrated into the government administrative machinery with disaster management, risk

reduction and adaptation carried out by several agencies including government ministries, national organs, and local government in collaboration with humanitarian organisations and international partners (The World Bank, 2010). At country level, a number of countries in the Southern African Development Community, as in the rest of sub-Saharan Africa face significant governance challenges, including institutional and policy framework to effectively respond to disasters and manage risk reduction measures (The World Bank, 2010). Specifically, these governance challenges include: poor quality institutions, weak rule of law, an absence of accountability, tight controls over information, and high levels of corruption, poor staffing and skills, weak analytical and implementation capacity, an unclear institutional landscape addressing disaster risk management and climate change across various ministries and agencies, and weak partnerships with other agencies and academia, NGOs, and the private sector (Bräutigam & Knack, 2004; The World Bank, 2010).

The duplication of structures for disaster risk reduction and climate change adaptation within the SADC member states is viewed by some authors as unfortunate, inefficient and fertile ground for conflict over resources to implement similar activities (Becker *et al.*, 2013). Mitchell and van Aalst (2008) argues that the lack of integration of these two fields leads to redundant and conflicting response. Thus, integration of organisations for disaster risk reduction and climate change adaptation becomes pertinent in developing countries including Africa that cannot afford parallel structures as these structures might impede each other's work and send mixed messages to policy-makers and budget-holders (Becker *et al.*, 2013). There is, however, little empirical evidence of how disaster risk reduction and climate change adaptation are integrated practically through legislation, policy, organisations and budgetary processes at regional and national level, specifically in the Southern African Development Community. The problem under investigation of separating structures for disaster risk reduction and climate change adaptation in general and also with specific reference to SADC member states was further explored through addressing a number of key questions as outlined below.

1.3 KEY RESEARCH QUESTIONS

This study is guided by the following key questions:

- What are the theories and/or practices of disaster risk reduction and climate change adaptation and their convergence thereof?
- Which structures are involved in disaster risk reduction and climate change adaptation in each country of the Southern African Development Community?
- What are the reasons and rationale for establishing parallel structures for disaster risk reduction and climate change adaptation in Southern African Development Community?

- What are the concrete effects of having parallel structures for disaster risk reduction and climate change adaptation in Southern African Development Community?
- What are the potential strategic options for integrating disaster risk reduction and climate change adaptation structures for SADC countries?
- What recommendations in this regards can be made?

Answers to these questions were provided through both theoretical study of the literature and empirical perspectives of practitioners in the fields of disaster risk reduction and climate change adaptation respectively. In line with these research questions, the next section outlines the objectives of the study.

1.4 RESEARCH AIMS AND OBJECTIVES

The literature consulted shows that there are very few studies if any on how separate structures for disaster risk reduction and climate change adaptation are being integrated in-country in order to increase adaptive capacities to counter disaster risk. Furthermore, there are hardly any models developed to guide the integration of separate organisations for disaster risk reduction and climate change adaptation. Behind these research gaps, this study aims to provide a proposed normative model for integrating organisations for disaster risk reduction and climate change adaptation, a tool to help government organisations address fragmentation and integrate their efforts in addressing disaster risk. In line with these aims, the objectives of the study are:

- To investigate, assess and discuss the theories/practices of disaster risk reduction and climate change adaptation and their convergence thereof;
- To critically analyse existing structures for disaster risk reduction and climate change adaptation in each country of the Southern African Development Community;
- To unravel the reasons and rationale for establishing parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community;
- To unearth the concrete effects of having parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community;
- To develop potential strategic options for integrated disaster risk reduction and climate change adaptation structures for SADC countries.
- To present recommendations on the proposed options.

Whereas this study cannot claim that the achievement of these objectives will result in the reduction of climate related disasters nor solve silo approaches to disaster risk governance, achievement of these objectives holds a great potential for the improvement of how disaster risk which is exacerbated by the changing climate can be addressed in an integrated manner. These objectives were achieved within the context of the theoretical statement outlined below.

1.5 CENTRAL THEORETICAL STATEMENTS

The theoretical departure of this study is an organisational perspective, mainly bureaucratic assumptions based on the concepts of specialisation and differentiation. This perspective implies that implementation problems are viewed as deriving from organisational differentiation characterised by the proliferation of actors in terms of ministries and agencies each with its own agenda. A number of other theories, including institutional theory, complexity theory, inter-organisational theory and different governance perspectives (see chapters 2 and 8 of this study) are necessitated by the nature of the study. The choice of organisational theories is based on the premise that practitioners addressing disaster risk through disaster risk reduction and climate change adaptation initiatives are affiliated to separate organisations and institutions both internationally and nationally as influenced by Weber's theory of bureaucracy and Wilson's dichotomy between politics and administration (Jinshan & Tou, 2012). This has resulted in the administrative arm of government at different levels being divided into departments according to different functions (Howes *et al.* 2012), which led to fragmentation of government service delivery. This fragmentation has been cited as the major government failure in tackling the so called "wicked" problems and cross-sectoral problems. Moreover, inter-organisational theory within the organisational studies is important because it provides mechanisms to facilitate joint working in organisations. As Kuska (2005) indicates, interdependence among organisations is a characteristic of policy environment that serves as a foundation for integration.

The following theoretical statements informed the study:

- Actors in governance are structurally linked and coordinated through systematic and dynamic interdependencies, temporally and spatially evolving (Forino *et al.*, 2015). The interdependencies constitute a set of formal and informal linkages, structured around shared interest in exchanging resources to achieve goals and maximising their influence over outcomes (Rhodes, 1996).
- Most international and national processes and mechanism for addressing disaster risk through disaster risk reduction and climate change adaptation exist in parallel and have separate policy and institutional frameworks (UNISDR, 2009; Few *et al.*, 2006 and

Mitchell & Van Aalst 2008). As a result, disaster risk reduction and climate change adaptation are pitted against each in both policy and practice as discrete issues with limited overlaps.

- The isolation and limited coherence and convergence in institutions, organisations and policy frameworks result in confusing policies, administrative inefficiencies, ineffective use of resources, duplication of efforts and damaging competition between different inter-sectoral coordination mechanisms (Mitchell & Van Aalst, 2008).
- Disaster risk and climate change are two threats to human wellbeing that reinforce each other. The adverse impacts of climate change on society may increase disaster risk, while disasters erode environmental and social resilience and thus increase vulnerability to climate change (O'Brien *et al.*, 2008);
- An integration of parallel structures for disaster risk reduction and climate change for the Southern African Development Community (SADC) will enhance the region's ability to deal with disaster risk caused in part by climate change (Becker *et al.*, 2013).

The objectives of the study were achieved within the context of the theoretical statement outlined above and through the application of a structured methodology as outlined in the next section and also summarised in Chapter 7 of the study.

1.6 RESEARCH METHODOLOGY

The study employed a mixed-method research design as data was collected and analysed qualitatively and by using quantitative instruments (Creswell, 2015; Creswell & Clark, 2011; Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2006, Tashakkori & Teddlie, 2010; Teddlie & Tashakkori, 2009). This methodology was chosen because the use of either a quantitative or a qualitative research design alone was deemed insufficient for gaining an understanding of the problem. As Creswell (2015) argued, in mixed-methods research, a qualitative design offers in-depth experience of individual perspectives while quantitative design provides generalisation and precision. Morse (2010) shares similar views and indicates that a mixed-methods design is efficient as it incorporates both meaning and quantity in the same study. This use of multiple methods and different sources of data serves as a kind of triangulation which, according to Polkinghorne (2005:140), does not serve to verify a particular account but to allow the study to move beyond a single view of experience and deepen understanding. What is important, though, when using mixed-methods research is identifying the integration point of qualitative and quantitative methods. Creswell (2015) describes integration as the place in mixed-methods research where the qualitative and the quantitative phases of on study intersect. In this study integration is at the research design stage which,

includes sampling, data collection, data analysis and data interpretation. This is so because the research questions and the central theoretical statements were developed qualitatively, hence the weight of the study is more towards a qualitative study as indicated in section 1.6.2 below. A discussion of the main elements of the research methods applied in the study are presented below.

1.6.1 Literature study

In order to give a clearer understanding of the nature and meaning of the identified problem, the available literature on international, regional and national issues regarding disaster risk reduction and climate change adaptation was used as the foundation for the theoretical frame of reference for this study. Moreover, available literature on organisational theories was scrutinised in order to put into perspective and situate the topic in a larger knowledge pool (Vos *et al.*, 2011) as the focus is on the organisations for disaster risk reduction and climate change adaptation. As such academic books, peer-reviewed journal articles, research reports, dissertations and monographs, government publications, NGOs and international multilateral reports and other Internet sources were consulted. This literature was thoroughly analysed, synthesised and summarised to give a theoretical base for the study (Cronin, *et al.*, 2008; De Vos, 2008; Hart, 1998; Randolph, 2009).

1.6.2 Empirical study

The empirical study of this thesis assumed a mixed-methods research approach, applying both qualitative and quantitative strategies and tools. Besides, the study is qualitatively biased and adopts a qualitative dominant mixed-methods approach as it relies more on qualitative constructivist-post-constructivist critical view of the research process while recognising that the addition of quantitative approaches and data will benefit the study (Johnson & Onwuegbuzie, 2004). The next section presents the research design, sampling methods and strategies applied, data-collection methods and tools employed, data-analysis strategies used and issues of validity and triangulation of the study.

1.6.2.1 Research Design

Research design is the procedure for collecting, analysing and interpreting and reporting data in research studies (Creswell & Clark, 2011:53). Creswell and Clark (2011:53) further indicate that design helps guide the methods decision that the researcher must make during the study and set the logic by which researchers make interpretations at the end of the study. This study adopted a Sequential Exploratory design in which the problem under study was firstly explored

qualitatively and the findings of the first study were used to develop the instruments used to collect and analyse data quantitatively in the second phase of the study (Brannen, 2009; Creswell, 2015; Creswell, 2009; Johnson & Onwuegbuzie, 2007). In other words, quantitative questions were formulated based on the findings of the qualitative study and the quantitative study was conducted to answer the questions. Figure 1.1 below shows the process diagram of the sequential exploratory design followed in the study.

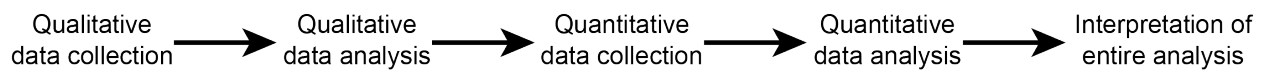


Figure.1: Sequential Exploratory design (Creswell, 2009; Creswell, 2015)

In this design the weight is placed on the qualitative phase and data is mixed through being connected by qualitative analysis and quantitative data-collection and results (Creswell, 2009). Exploration in this case began with the exploration of the topic through qualitative methods and the findings were built into the quantitative phase.

1.6.2.2 Sampling

Sampling in mixed-methods research refers to the procedure for selecting participants in both qualitative and quantitative research and the sampling strategies employed within each of the design (Creswell, 2015:75). Having adopted the Sequential Exploratory Mixed method design, Sequential Mixed Method sampling (Teddle & Tashakkori, 2009) was applied in the study in which participants and respondents were purposefully selected for the qualitative phase through what Collins (2010) calls Convenience purposeful sampling and randomly specifically using non-probability sampling and snowball sampling for the quantitative phase. Purposive sampling schemes are employed to choose strategically elite cases or key informants based on the researchers' perception that the selected cases will yield a wealth of information or a unique perspective relative to the phenomenon of interest (Collins, 2010). On the other hand, non-probability sampling and snowball sampling were utilised for the quantitative phase because the researcher did not have an idea of all participants and that the identified participants were able to recommend other suitable participants (Creswell, 2015).

One of the important issues to consider in sampling is the sample size. Creswell (2015) argues that sample size in qualitative research is not an issue but rather that consideration should be given to the saturation of the study. Due to the exploratory nature of the first phase of the study, a small number of individuals were intentionally selected to help explore the reasons for and

effects of having separate structures for disaster risk reduction and climate change adaptation within SADC member states and to find out how integration of these structures should take place. This stance was taken drawing from Creswell (2015) who argues that exploratory sequential design allows for a small number of individuals intentionally selected to help explore the problem. In this case, nine officials involved in disaster risk reduction and climate change adaptation from two SADC member states were selected and interviewed in semi-structured, face-to-face interviews. Maximal variation sampling (Creswell, 2015) was used in which government officials in the fields of disaster risk reduction and climate change adaptation at different levels from practitioners to Chief Executive Officers were selected so that diverse perspectives could be built into the study.

The quantitative methods in this study are intended to determine whether the qualitative themes that emerged from the qualitative study can be generalised and therefore the same population (disaster risk reduction and climate change adaptation practitioners within governments) but different in size and membership was selected (Creswell, 2015). In this sense the quantitative study was applied to a larger sample, in which an online questionnaire was circulated to government officials for disaster risk reduction and climate change adaptation in all the fifteen SADC member states. A total of 26 respondents from nine SADC member states including Botswana, Madagascar, Malawi, Namibia, South Africa, Tanzania, Swaziland, Zambia and Zimbabwe participated in the online survey. Thus a total of 35 respondents from nine SADC member states participated in the entire study.

1.6.2.3 Data Collection

There are different ways and procedures of collecting data (Zohrabi, 2013). In this study, mixed-methods were used to collect data. Mixed-methods data collection refers to the gathering of both qualitative and quantitative data in a single study (Teddlie & Tashakkori, 2009). Firstly, data was collected qualitatively with the use of semi-structured, face-to-face interviews with the selected participants who volunteered to participate. In this regard, a research protocol to guide the interviews was developed (see Annexure C). Secondly, quantitative data was collected using an online questionnaire developed and distributed through Survey Analytics (see Annexure D). The instrument for the quantitative study was developed based on the findings of the qualitative study (Brannen, 2009). The use of different types of procedures for collecting data and obtaining information through different sources augments the validity and reliability of the data and their interpretation (Zohrabi, 2013). By collecting qualitative data before quantitative data is collected, the main question answered by the study is “In what ways do the quantitative results generalise the qualitative findings? This question was identified by Creswell and Clark (2011:234) as the most important question that must be answered in exploratory

sequential mixed methods research.

1.6.2.4 Data analysis

Data analysis in mixed-methods research consists of analytic techniques applied to both the quantitative and qualitative data and the mixing of the two forms of data concurrently or sequentially (Creswell & Clark, 2011:212). The analysis of data in this study has gone through some of the stages of data analysis in a mixed-method framework as identified by Onwuegbuzie and Teddlie (2003) and Creswell and Clark (2011). These include preparing data for analysis, exploring the data, analysing the data, representing the analysis and interpreting the analysis. Specifically, sequential mixed-methods data analysis called Connected Mixed Methods data analysis to generalise findings (Creswell & Clark, 2011:218) was applied in this study.

In this type of data analysis, data is analysed chronologically such that the analysis in one strand depends on the previous strand (Teddlie & Tashakkori, 2009). As such data collected qualitatively was analysed first and the findings were used to inform the quantitative study. The analytic process followed in analysing the qualitative data included identifying useful quotes, codes and themes that were used to design items, variable and scales on the quantitative instrument (Creswell & Clark 2011). The quantitative results were then analysed and a discussion follows of how the comparison was presented. The study adopted a Joint Display strategy for comparing the results. The importance of this strategy is that it provides for theme display in merged data analysis whereby the qualitative themes derived from the qualitative analysis are arrayed with the quantitative categorical or continuous data from items or variables from quantitative statistical results (Creswell & Clark, 2011:226). The interpretation of the results in mixed methods was in the form of inferences and conclusions drawn. The focus of the inferences in this study was to check whether the quantitative study had provided a more generalised understanding of the problem under study than the qualitative study alone.

1.6.2.5 Validation and Triangulation

Validity in mixed methods means employing strategies to address potential issues in data collection, data analysis and the interpretation that might compromise the merging or connecting of qualitative and quantitative designs and the conclusions drawn from the combination (Creswell & Clark, 2011:238). When using mixed methods, convergence or agreement between the findings of the two methods enhances the belief that the results are valid (Jick, 1979). Some of the strategies employed in this study to minimise potential validity threats include drawing of the qualitative and quantitative samples from the same population, use of smaller qualitative sample and larger quantitative sample, and use of separate data-

collection procedures. Moreover, joint display was used to array quantitative categorical data and qualitative themes in data interpretation. Whereas joint display was used in data interpretation, qualitative interpretation was central to answering the study questions and addressing the research objectives, hence the study is qualitative biased.

In some instances, validity is checked through triangulation. Bergman (2009) refers to triangulations as checking the validity of an interpretation based on a single source of data by recourse to at least one further source that is strategically of different type. Denzin (1978) in Jick (1979:602) defines triangulation as the combination of methodologies in the study of the same phenomenon. Teddlie and Tashakkori (2009) point out that in triangulation findings from one method are used to corroborate findings generated through other methods. In this study the use of literature, data from qualitative findings, data from quantitative findings and the interpretations drawn from a combination of results from qualitative and quantitative are an important source of triangulation.

1.7 CONTRIBUTION OF THE STUDY

A key challenge and opportunity in developing countries lies in bridging the gap between disaster risk management efforts and efforts to promote climate change adaptation (Few *et al.*, 2006). For the reasons that both climate change adaptation and disaster risk reduction aim to reduce the impacts of shocks by anticipating risks and addressing vulnerabilities (Lasco & Delfino, 2010) and increase resilience (IPCC, 2012), it is crucial that practitioners in these fields work in tandem and that synergies between the two are further articulated to benefit both disciplines. With a focus of investigating the integration of parallel structures for disaster risk reduction and climate change adaptation at national level by the SADC member states, this study is significant because it proposes strategic options for integrated structures in the proposed model developed in chapter eight of the study. Moreover, the study contributes to the field of disaster risk governance by identifying further areas of research. The study also makes a timely contribution to the body of knowledge by providing new theoretical and/or methodological insights that will be useful for future studies. Specific contributions of the study to the body of knowledge are further highlighted in section 9.5 of the study.

1.8 THESIS CHAPTER LAYOUT

The study was carried out through nine logically linked chapters founded on the problem statement read with the objectives underscoring the study. These chapters and their links are depicted in figure 1.2 below.

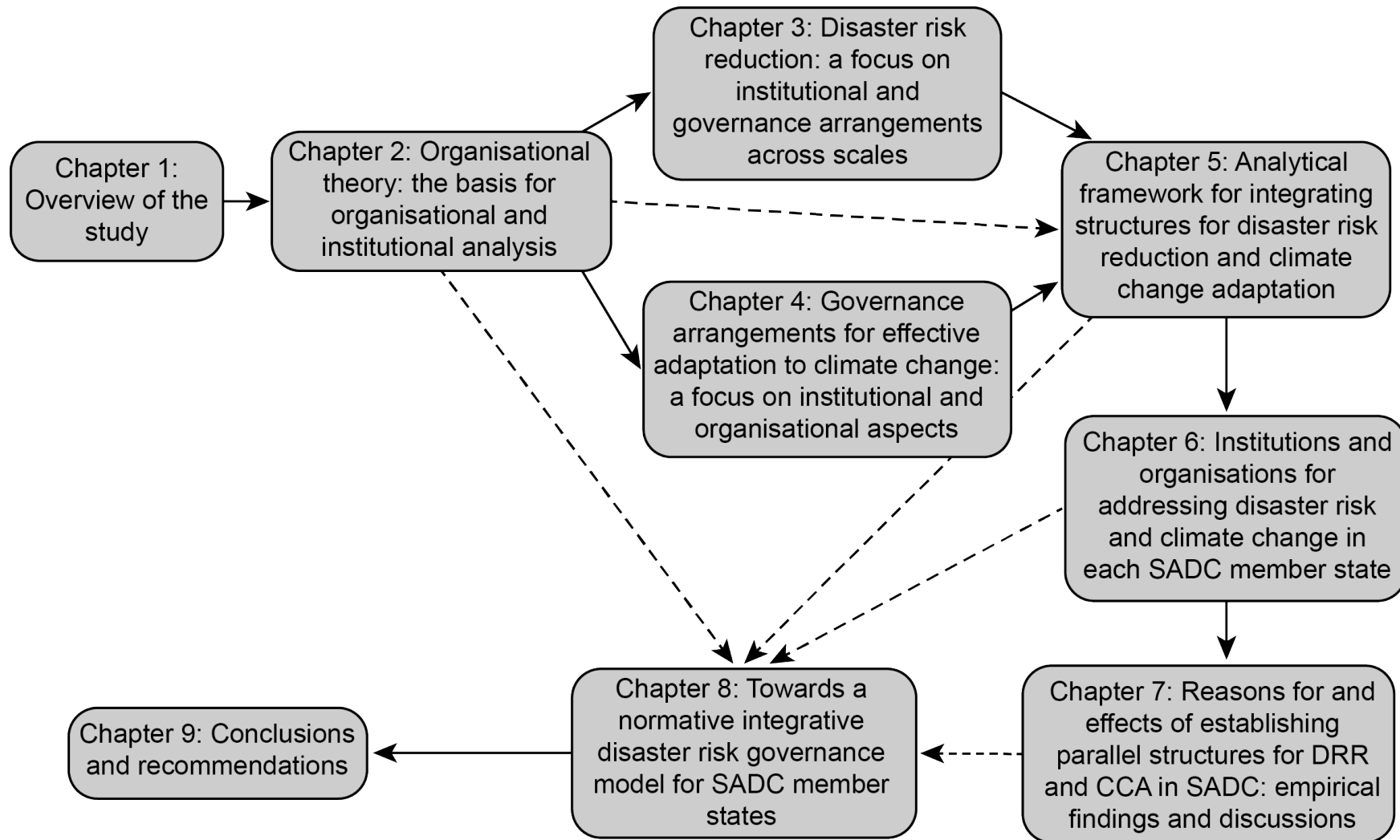


Figure. 2: Chapters of the Thesis

1.9 CONCLUSIONS

This chapter provided an overview of the study and identified the need and justification for the integration of structures for disaster risk reduction and climate change adaptation. Moreover, the chapter provided an orientation the study, thus clearly demarcating the problem statement and the study questions. To address the identified problem and the research questions, the study provided a number of research objectives to help direct the study. The central theoretical statements on which the study is grounded were highlighted followed by the research methods applied in the study. The chapter concluded by mapping out the structure of the thesis to make it easier for the reader to follow the study.

Integration of structures for disaster risk reduction and climate change adaptation is important for the reduction of disaster risk. It should, however, be noted that this integration of the structures is in no way a panacea for solving all disaster risk problems but it will rather potentially contribute to its reduction. The next four chapters, chapters 2, 3, 4 and 5, highlight, assess, discuss and synthesise the existing body of knowledge and assumptions on organisations; governance of disaster risk reduction and climate change adaptation respectively and their convergence. In doing so these chapters address the first objective of the study, to investigate, assess and discuss the theories and practices of disaster risk reduction and climate change adaptation and their integration thereof.

CHAPTER 2

ORGANISATIONAL THEORY: THE BASIS FOR ORGANISATIONAL AND INSTITUTIONAL ANALYSIS

“Certain order in any social relationship is necessary so that the participants themselves make sense of each other’s actions” (David Silverman, 1970).

2.1 INTRODUCTION

The previous chapter provided an overview to the study, identified and reflected on the apparent need for the integration of structures for disaster risk reduction and climate change adaptation to address disaster risk in an efficient and effective manner. The purpose of this chapter is to highlight, assess, discuss and synthesise the existing body of knowledge and assumptions on organisations, the organisational theory, and related theories as they have an influence on the structuring and functioning of organisations. This is done to provide a solid foundation for the analysis and discussion on the structures (institutions and organisations) for disaster risk reduction and climate change adaptation in each country constituting the SADC region (chapters 6 and 7 of this study). The conceptualisation of “structures” in this study that is used congenially to refer to organisations, mainly public sector organisations and institutions, and specifically, government departments and ministries is borrowed from Parker (1992).

Together with chapters 3, 4, 5, and 8 this chapter addresses the first objective of the study, viz. to investigate, assess and discuss the theories and practices of disaster risk reduction and climate change adaptation and the convergence thereof. Drawing from Fimrete and Laegreid (2005), organisational perspectives presume that one has to study how the public sector is organised in order to understand how it works. The importance of a proper understanding of organisations and the theories behind them lies in the fact that organisations are the fundamental building blocks of modern societies and the vehicle through which collective action is carried out (Aldrich, 1999:5). Through organisations, people pursue activities too broad in scope to be accomplished by individuals or families acting on their own (Aldrich, 1999). To this end, acquiring knowledge and understanding on organisational and related theories such as institutional theory, complexity theory, inter-organisational theory and governance perspectives will assist in framing how organisations responsible for climate change adaptation and disaster risk reduction, should be integrated to substantially reduce disaster risk.

This chapter is structured as follows: having introduced the chapter, the second section provides the conceptualisation of organisations in terms of evolutionary origins and definitions.

This is of importance because there are multitudes of definitions for organisations, which, must be put into context for this particularly study. This is followed in section three by a delineation of organisational theories ranging from classical to contemporary postmodernist. Some of these theories as discussed in chapter 5 of the study are seen as the main sources of fragmentation that exist between disaster risk reduction and climate change adaptation as fields of practices. Section four presents the institutional theories of organisations. Institutional theories provide a proper understanding of institutions, which is key to the survival of organisations and keeping them operating in complex environment (Burnes, 2005). It is also important to clarify the concept of institution because in everyday use, the word institution is used interchangeable with organisation to denote one and the same thing.

Section six briefly presents and discusses complexity theory. This is important as organisations are evolving from a bureaucracy with clear boundaries and internal areas of authority to new forms which have fluid and flexible external and internal boundaries (Schneider & Somers, 2006), thus rendering them complex. Finally, a synthesis on organisation and institutions as the major components of a governance system is brought into the picture in section seven to set the scene for the discussion of the governance of disaster risk reduction and governance of climate change adaptation in chapter 3 and chapter 4 of the study.

It is important to raise the point that there is a variety and variations of theoretical perspectives on organisations and this, present a complex and confusing picture, which is difficult to comprehend and produce an overview of. As such an exhaustive review of all the theories of organisations is beyond the scope of this chapter and therefore the discussion below focuses on the dominant approaches. Moreover, this chapter is not advancing any particular theory over the other but rather seeks to emphasise the role that these theories play in influencing the structuring organisations.

2.2 CONCEPTUALISATION OF ORGANISATIONS: EVOLUTIONARY ORIGINS AND DEFINITIONS

The organisation of societies for work purposes is as old as civilisation and human labour (Ivanko, 2013). People have socially come together since time immemorial to undertake various activities, necessarily so because they felt that there were so many things they could not do alone but to help each other. For instance, Moses in the Book of Exodus (Bible) brought together (organised) all the skilled people and those who were able to carry out work to construct a sanctuary (Tabernacle) (Exodus 36:2, NIV). Morgan (1990:4) thus puts it “as we come together and act in a coordinated fashion, our capacities increase not just arithmetically but geometrically”. However, before the industrial revolution, the organisation for work purposes

was not formalised and typical of the organisations of modern societies. Modern-day formal organisations meet exigencies arising out of complexities and large scope of an enterprise (Bittner, 2013:183). Bittner (2013:183) further points out that formal organisations implement programmes of action that involve a substantial dose of comprehensive and rational planning.

Organisations belong to the category of expressions about which there is maintained an air of informed vagueness (Bittner, 2013:183). Thus there are different variants of the definitions of the term *organisation*. Most of the definitions concur that the following elements are identifiable in organisations: grouping of people, interaction between the people, coordination and achievement of predetermined goals. Daft (2010:11) defined organisations “as social entities that are goal directed, designed as deliberately structured and coordinated activity system and are linked to external environment. Etzioni (1964:4) provided a similar conceptualisation and defines “organisations as planned units, deliberately structured for the purpose of attaining specific goals”. According to Argyris and Schon (1978:28), organisations are the actors who can be broadly defined as an organised body of people with a particular purpose where its members develop rules for collective decision delegation and membership.

These actors are usually individuals who represent governmental, non-governmental and private organisations (Lubell, 2015). Berkhout (2012:91) defines organisations as “collectivities of actors whose activities are coordinated within definable social units to achieve certain common goals”. Ronfeldt (2006) has categorised all forms of organisations that are catalysts for governance and evolution of all societies into four main forms. These include the tribal form, which is characterised by kinship, institutional form, which emphasises hierarchy, the market form and the network form.

In the literature, there is a tendency to confuse organisations with institutions (see section 2.4 for conceptualisation of institutions and the differences) and these two are frequently used interchangeably. This confusion is easily demonstrated by the assertion of some authors. Matczak *et al.* (2007) state that institutions are understood in a wide meaning comprising organisations like administrative bodies, agencies, laws and regulations. In a similar line of thinking, Dovers and Hezri (2010) assert that in common usage and in much of the climate change literature, institution means a specific organisation, policy instrument or policy programme. According to Leftwich (2007) it is clear that organisations themselves are institutions in that they manifestly have their own internal norms, conventions and rules that defines the hierarchies and functions and also regulate and facilitate the behaviour and interactions of members. In this study the two (organisations and institutions) are viewed to be different but interrelated and they coexist. Drawing from Hodgson (2006), institutions are viewed

in the study as constraints and opportunities within which governance actors (organisations) operate whereas governance actors are capable of changing and altering the institutions.

Organisations are understood to be the formally and informally coordinated vehicles for the promotion and protection of a mix of individual or shared interests or ideas (Leftwich & Sen, , 2010, 2011). In the same way as institutions, organisations may be formal or informal and may operate within, across and outside economic, political or social institutional arrangements (Leftwich & Sen, 2011). According to Berkhout (2012), organisations must be seen as unitary actors set up to achieve specific organisational goals. As March and Olsen (1984) indicate most of the actors in modern, social, economic and political life are formal organisations. To achieve their objectives, organisations have particular structures, capabilities and ways of doing things, a culture that shapes how they do things, resources to carry their actions out and a system of governance (Berkhout, 2012). Leftwich and Sen (2011) share similar views and reflect that organisations have their own internal institutions or rules that apply only to the members of the organisation and they have own internal systems of authority, hierarchy and command.

Organisations and informally organised interests play a key role in the politics of institutional formation, implementation and change (Leftwich & Sen, 2011). According to the (Leftwich & Sen, 2010), organisations are important for policy and practical purposes. As such they represent interests, and thus weak, divided or fragmented organisations mean that some interest will be side-lined in the political processes which shape, implement, monitor and reform institutions. Organisations aggregate and articulate interests and they are critical links between citizens and the decision-making organs of the state (Leftwich & Sen, 2010). Organisations are largely the outcomes of the collective behaviour as well as being significant influences on this behaviour (McAuley *et al.*, 2007).

Given the inherent complexity and enigmatic nature of organisations, there arises a need for tools to unravel the mysteries, paradoxes, and apparent contradictions that present themselves in the everyday life of organisations (Nadler *et al.*, 1982). As such organisational theory, the discipline that studies the structure and design of organisations (Robbins, 1990:7) provides these tools. As McAuley *et al.* (2007) indicate, because organisations impact on so many aspects of humanity, organisation theory is important in two key respects. Firstly, organisation theory helps reflect upon and understand humanity and why human beings are who they are. Secondly, organisation theory is about human beings and how they interact with each other during encounters in different, deceptively ordinary and mundane social contexts (McAuley *et al.*, 2007:5). With a clearer understanding of organisations and their importance provided, the next section presents the different theories of organisations.

2.3 ORGANISATIONAL THEORIES

Since the “division of labour” concept initiated by Adam Smith in 1776, there has been a rapid proliferation of a bewildering array of theoretical perspectives ranging from organisational efficiency to the postmodernist view of organisation. Whereas there are different perspectives on organisations, their commonality is that they are applied to better understand what goes on in formal and informal organisations. Thus the basis for organisational theory is to develop and promote understanding of the principles of organising and organisations. According to Gortner *et al.* (1990) there are two main dimensions in the evolution of organisational theory, each with opposing views. Firstly, organisations are viewed as systems for they consist of interconnected components that work together (Anderson, 1999). By focusing on the internal characteristics of the organisations and isolation from the environment, the classical and the neoclassical theories are characterised as closed systems. To the contrary, the contingency theories and post-modernist approaches are considered open systems because they focus on factors both inside and outside the organisation.

Open systems are considered open because they exchange resources in the form of information, energy and materials with their environment (Anderson, 1999; Bastedo, 2004; Kast & Rosenzweig, 1972) and they are systems because they consist of interconnected components that work together (Anderson, 1999; Nadler *et al.*, 1982). Of importance is that this environment amongst other things consists of other organisations that exert various forces of an economic, political and social nature (Bastedo, 2004). Kast & Rosenzweig (1972:450) draw attention to the fact that systems are neither absolutely open nor close. In this regard they are rather relatively open or relatively closed. Thus Kast and Rosenzweig (1972:454) posit that “open and closed are a matter of degree”.

Secondly, the “ends dimension” conceives of organisational structures as either rational or social (Gortner *et al.*, 1990). The rational dimension, which includes both the classical and contingency perspectives, argues that the organisational structure is a vehicle to effectively achieve organisational objectives (Gortner *et al.*, 1990). In this regard for organisations to be effective and efficient, they need to be designed such that they have a clear structure, a rational sense of order and stability and clear lines of authority and accountability (McAuley *et al.*, 2007). Conversely, the social perspective, which includes the neoclassical and postmodernist perspectives is interested in the ways in which values and beliefs of people shape and are shaped by their experience of organisational life (McAuley *et al.*, 2007).

The diverse theoretical base of organisations is important because it creates more possibilities

for effectively designing and managing organisations (Hatch & Cunliffe, 2006). Furthermore, organisation theory embraces multiple perspectives because organisations will remain too complex and malleable to ever be summed up by any single theory (Hatch & Cunliffe, 2006:5). The following timeline in the evolution of organisational theories can be observed in the literature: classical theories or the rational goal approach (1776, 1900 – 1930), neoclassical theories or human relation approach (1926 – 1960), contemporary approaches (1951 – 1975), and postmodernism (1976 to date). It is important to note that despite demarcating the time line for different theories, it is difficult to estimate with absolute certainty the period in which each group of theories was developed since their development overlaps and there are no clear boundaries that separates them.

2.3.1 Classical theories of organisation (1776, 1900 – 1930)

Classical approaches to the management of organisations with the exception of Adam Smith's division of labour in the *Wealth of the Nation* of 1776 were developed in the late nineteenth and early twentieth centuries (Gortner *et al.*, 1990; Parker, 1992; Robbins, 1990; Sarker & Khan, 2013). These perspectives owe their origin to the industrial revolution, which resulted in mass production and the mushrooming of factories. In those days, machinery was viewed as the core component of productivity and efficiency. The authors who developed these theories provided organisation theory with formative concepts and their ideas served as reference points around which the perspectives of organisation theory later developed (Hatch & Cunliffe, 2006:5). Frederick Taylor (1856 – 1915) pioneered in 1911 what came to be known as Scientific Management Theory. The theory focuses on standardising all the tasks in a factory. As Hissom (2009) notes, the theory was posited on careful specification and measurement of all organisational tasks.

Based on his experience and observation as a manufacturing manager, Taylor developed four main principles that are applicable to all kinds of human activities to increase efficiency in the workplace (Taylor, 1911). They range from formulation of rules, laws and mathematical formula to carry out each task (the science of work), scientific selection of workers for each task and development of their skills, all employees should follow the developed scientific methods to carry out their tasks, and as a result of observing, recording and planning of the work, increase the size of the management workforce (Stewart & Rogers, 2012; Taylor, 1911). While Taylor was working on the Scientific Management Theory, Karl Emil Maximilian popularly known as Max Weber (1864 – 1920) was working on what was to be the most influential theory on organisations, the Theory of Bureaucracy. However, his work only became popular in the 1940s with the publication of three books: *From Max Weber* by Greth and Mills in 1946; *Theory of Social and Economic Organisation* by Parsons in 1947 and *Methodology of Social Sciences* by

Shills and Finch in 1949 (Tribe, 2001; Gadjuscheck, 2003).

Bureaucracy has been described by Visitchaichan (2003) as management by office or position rather than person or patrimonial. Weber took as his basis the rationale that society has become rational in conducting their affairs and therefore organisations would become instruments of efficiency if structured around certain guidelines. As a result, Weber focused on dividing the organisation into hierarchies and establishing strong lines of authority and control. He identified six crucial principles in a bureaucracy: division of labour and authority; hierarchical structure of office; well-defined systems of rules; recruitment of staff based on specialisation and expertise; careerism; and duties and authority attached to positions and not persons. In this regard structures in an organisation are designed and operated like machines (Visitchaichan, 2003).

Furthermore, Henri Fayol (1841 – 1925) developed in 1916 what is known as the Principles of Management theory or Administrative Management theory. Fayol identified several management functions, which are planning, organising, directing, coordinating and controlling, all of which are important in the functioning of an organisation (Wren & Bedeian, 2009). Efficiency in executing these functions according to this school of thought, is achieved through the adoption and implementation of the Principles of Management, which include division of labour; authority and responsibility; unity of command; line of authority, centralisation; unity of direction; equity; order; initiative; discipline; remuneration of personnel; stability of tenure of personnel; subordination; devotion to common cause (Groth, 2012; Rodrigues, 2001; Wren & Bedeian, 2009).

Since there were no big corporates in the early stages of the development of these theories and others that are not discussed here, the classical management theories are considered to be applicable to simple, small and stable organisations rather than to dynamic and complex organisations of modern days (Mahmood *et al.*, 2012; Sarker & Khan, 2013) - this despite the influence they still have on modern organisations. The classical approach rests firmly on the assumption that the breaking down of a particular job into simplest component parts results in specialised and skilled worker. As indicated earlier, the Scientific Management Theory and the Theory of Bureaucracy are considered rational and closed systems in that they presuppose that actors in organisations are rational in all their decisions towards achieving the goals of the organisations (Gortner *et al.*, 1990). As such, the main belief in this school of thought is that the structure and functions of an organisation are independent of their environments.

The classical approaches to organisation theory conceive of organisations as mechanical

devices to achieve goals (Robbins, 1990; Visitchaichan, 2003). Whereas these three classical theories and others show some differences, broadly speaking, the division of labour, specialisation, rules of thumb and the exclusion of personal elements from the conduct of work are common elements that are identifiable in all the theories (Gajduschek, 2003). Proponents of the classical perspectives all concur that the adoption of these elements in an organisation will lead to high levels of efficiency. It is important to note that the classical theories discussed in this section are not the only ones. Other theories within this group that are omitted in this discussion include Gulick and Urwick's work on Science of Administration, Chester Barnard's "Function of the executive", Frank and Lilian Gilberth and Henry Gantt amongst others. Although the principles in these theories are still influential in the management of organisations, their downfall has been the ignorance of the human aspects of organisations and the influence of the prevailing environment. This provided a platform for the theories to be attacked and challenged and ultimately this led to the emergence of new perspectives, which focuses on human relations and behaviour in organisations, the neoclassical theories.

2.3.2 The Neoclassical theory of organisations (1926 – 1960)

The neglect of the human and social elements in organisations by the classic model of organisation has led to the adoption of viable alternatives that envisage organisations as social entities, the neoclassical theories. The neoclassical theories of organisations consider an individual, and social relations between individuals in an organisational setting, to be important. In this school of thought people are not only rational beings working to achieve the organisational goals but rather they are also driven by own interests, feelings and sentiments (Groth, 2012). Informal structures within organisations as a result of socialisation play an equal important role similar to the role played by the formal structures of decision-making. The three dominant perspectives that constitute the neoclassical approach identifiable in the literature include the Hawthorne studies, human relations movements and the organisational behaviour movement.

The Hawthorne experiments in the late 1920s played a pivotal role in re-orientating management approaches from task orientation of work to the human side of management (Docherty *et al.*, 2001). Elton Mayo and his associates conducted these experiments at the Western Electrical Company between 1927 and 1932 (Sarke & Khan, 2013). Sarke and Khan (2013) further report that four levels of experiments were conducted under the Hawthorne experiments, which are Illumination experiments, Relay assembly test room experiments, Mass interviewing programme, and Bank-wiring observation room study. One of the break-through of this study was the conclusion that human elements are important in the workplace. The Hawthorne experiments influenced a number of theorists to engage in conducting research in

the field of interpersonal and social relations. These include studies by Abraham Maslow on motivation, Douglas McGregor's theory X and Y and Frederick Herzberg to mention but a few. As a result of focusing on social and interpersonal relations, these studies were labelled the "Human Relations Movement" (Sarke & Khan, 2013). The main argument in the school of thought is that workers respond to the social context of the workplace and therefore to increase productivity this must be taken into consideration.

Proponents of this movement believe that understanding and considering human behaviours such as group dynamics, conflict and motivation leads to an increase in productivity. Advances in human relations movement prompted some sociologists and psychologists to study group dynamics. This led to the development of the field of organisational behaviour by Chris Argyris, Kurt Lewin and Katz, amongst others. As a result, the organisational behaviour movement extended and improved the outcomes of the human relations movement. These neoclassical theories made contributions of gigantic proportions to the understanding of human behaviour at work and in the organisation (Sarker & Khan, 2013).

The central tenet of the human relations movement is to balance the achievement of organisational goals and the worker's needs, with the assumption that this will improve productivity and thus organisational performance. One of the best recommendations to come from this school of thought is that managers must pay attention to human needs and improve human relations in an organisation. Due to the focus on internal processes of the organisation whilst ignoring the role played by the circumstances within which these organisations operate, the human relations perspective has been categorised by Scott (1987) as a closed natural system. With the consideration of the closeness of organisations in these perspectives, they were discarded in favour of the approaches that consider the external influences exerted on organisations by the environment, the postmodern view.

2.3.3 Postmodernist Approach

The period since the 1970s has been labelled by Reed (1992:1), as "the era of intellectual instability" within the field of organisational theory as a result of the proliferation of many and different theoretical perspectives. During this era, a number of factors such as size, production technology, environment, age, power relations, politics and culture have been brought into consideration in the study of organisations. The postmodernist perspectives to organisational studies include such approaches as the Systems approach, contingency theory, team-building theory, total quality management theory, learning organisation theory, and re-engineering, amongst others. A selected few of these theories, the systems approach and the contingency theory, will be illuminated in this section.

The significant role that systems theory played in management science and the understanding of organisations cannot be over-emphasised. As Bastedo (2004) points out, virtually all the modern theories of organisations are accustomed to the open systems perspective. Organisations and their units are conceptualised as sub-systems of individuals performing tasks designed to achieve organisational, group and individual goals (Zeithaml *et al.*, 2001). The rationale of the theory is that the system must work holistically to achieve the set objectives. This system comprises such elements as the inputs, the processes and the outputs and outcomes (Olum, 2004). The implication is that the removal or omission of one part of the system will result in the changes in the nature of the system. Biologist Ludwig von Bertalanffy (1950) is credited with initiating systems theory as part of the general systems theory when he explored the relationship between the organisms and the environment (Kast & Rosenzweig, 1972; Laszlo & Krippner, 1998; Rapoport, 1986; Weckowicz, 2000).

According to Olum (2004), the effect of the systems theory in management is that it helps managers to look at the organisation more holistically. Systems theory has been described as trying to find a balance between the scientific approach of the classical era and the human relations approach of the neoclassical era. In this perspective all organisations can be understood as systems, more especially open systems where the environment and the outside influence play a critical role in determining the organisation's effectiveness. To quote from Bastedo (2004), in the open system perspective "an organisation's survival is dependent upon its relationship with the environment". This is so because the environment provides key resources that sustain the organisation and lead to change and survival (Bastedo, 2004).

The contingency approach in the postmodern era was developed in the 1960s and the early 1970s to take systems theory to another level by considering factors that may impact on organisational performance. The open systems perspective from which the contingency theory finds its roots, views an organisation as a set of interdependent parts that together constitute a whole, which in turn is interdependent on the larger environment (Zeithaml *et al.*, 2001; Bastedo, 2004). Sorge (2002) distinguishes two types of environments that have an effect on organisations, the general environment and the task environment. The general environment consists of other organisations that exert economic, political and social forces (Bastedo, 2004). Sorge (2002:6) describes the task environment as "everything that bears on immediate achievement of the organisational goal such as state-of-the-art technology". Proponents of contingency theory argue that the effectiveness of an organisation is influenced by the "degree of fit" between the requirements of the environment and the characteristics of an organisation (Bastedo, 2004; Levchuk *et al.*, 2001).

The interaction between the organisation and the environment has two particular effects (Zeithaml *et al.*, 2001). The first effect is adaptation, whereby the elements within a system adapt to one another to preserve the basic character of the system. The system must maintain a favourable balance of input and output transactions with the environment in order to survive (Nadler *et al.*, 1982). Organisations must adapt to the changing environment in order for them to continue to operate or fail to adapt and face extinction (Burnes, 2005). This is so because adaptive organisations as Levchuk *et al.* (2001) point out, are capable of modifying their structures and processing strategies in order to maintain high performance. Secondly, in equifinality, the same results can be achieved from different starting points and by using a variety of paths (Zeithaml *et al.*, 2001). Nadler *et al.* (1982:37) indicate that equifinality characteristic of an open system means that different system configurations can lead to the same end or to the same input-output conversion. The implication of this is that there is no universal or one best way to organise. As such organisations must not be depicted as timeless entities but rather as adaptable tools for which change is intrinsic (Davis, 2006).

Unlike understanding organisations in terms of structure and the “actors”, which is prevalent in the classical and neo-classical approaches to organisations, the contingency approach contends that the environment in which organisations exist plays an equally important role. The central themes in this school of thought include the notions that “organisational design decisions must be based on environmental conditions”; “an environment in which the organisation operates determines the best way for it to organise” (Betts, 2011:123) and that “the best way to organise depend on the nature of the environment to which the organisation relates” (Scott, 1992:89). Thus organisations whose design and internal arrangements match the challenges they meet in the environment are most likely to succeed (Scott, 1987). The contingency perspective posits that there is “no one best way” to structure and manage organisations (Zeithaml *et al.*, 2001; Webber *et al.*, 2009). This is so because the structuring and management of organisations are contingent on the nature of the environment in which they are situated.

By depending on the contingencies of the situation, the practices in this approach have been branded “it all depends” (Crandall & Crandall, 2010; Hanson & Brown, 1977). In this regard when managers make decisions they must take into consideration the current situation and act on those aspects that are key to the situation at hand (Olum, 2004). Furthermore, the approach conceives that all organisations are different, characterised by different internal and external environments and therefore they experience different problems, challenges. Proponents of this approach are of the view that management principles depend on circumstances and that there

is no one best way to manage (Thornhill & van Dijk, 2010:102). This therefore calls for management to be flexible in order to respond and act accordingly.

Indeed, people come together in organisations for a common goal and to achieve this goal it is important that those involved should operate within the bounds of rules, management should make decisions and that programmes must be developed. The institutional arguments in organisational theory do not only rely on aggregations of individual action nor by patterned interaction games between individuals, but it relies on institutions that structure action (Clemens & Cook, 1999:442). The increasing acknowledgement of the role of institutions in social life involves the recognition that much of human interaction and activity is structured in terms of overt or implicit rules (Hodgson, 2006). With the conceptualisation of organisations and the different theories of organisations established, the next section presents the sociological analyses of organisations with the focus on the factors that shape behaviour of actors in organisations, institution and institutional theories.

2.4 SOCIOLOGICAL ANALYSES OF ORGANISATIONS: A FOCUS ON INSTITUTIONS AND INSTITUTIONAL THEORY

Failure of the dominant organisational and economic models in conjunction with the non-conformity to rational or efficient expectations in the past few decades has brought a resurgence of the consideration of institutions (Baba *et al.*, 2013). As such, institutional approaches to the study of organisations provide an active and fruitful line of organisational research (Strang & Sine, 2000). Lawrence and Shadnam (2008) point out that, institutions are important in explaining the social world as they are built into the social order and directs the flow of social life. Defined by Lawrence and Shadnam (2008:2288), “institutional theory is a theoretical framework for analysing social phenomena particularly organisations, which views the social world as significantly comprised of institutions that set conditions of actions”. It is important to note that despite the long history in social thought, institutions remain difficult to conceptualise (Baba *et al.*, 2013) as they manifest within specific social context and conditions action within those context (Lawrence & Shadnam, 2008). The next subsection presents the different ways in which institutions are conceptualised in the literature.

2.4.1 Definitional conceptualisation of institutions

The term *institution* has been widely used recently in social sciences reflecting growth in institutional economics (Hodgson, 2006). This includes the use in such disciplines as political science, sociology, economics and geography (Powel & Bromley, 2013). However, Baba *et al.* (2013) note that these disciplines have different points of view on the nature and significance of

institutions and as such their theoretical trajectories have tended to diverge, resulting in literatures that are difficult to synthesise. As a result of usage in different disciplines, there is no unified body of thought on the concepts of institutions and institutionalism and thus there is a vast array of definitions. The lack of unanimity in the definition of the term *institution* has rendered contextualisation of term quite complex. The challenge of defining the term institution is exacerbated by the fact that the word, as Strang (1994) observed, is abstract rather than denotative. Consequently, the diverse meanings of the term institutions impede the adoption of a central position in institutional theory of organisations. The lack of a universally accepted definition of the term 'institution' in the institutional school of thought makes it necessary to present the definitions from some of the leading scholars in the field in this section.

An institution, the outcome or end state of an institutionalisation process (Tolbert & Zucker, 1996) is used to refer to "an enduring collection of rules and organised practices, embedded in structures of meaning and resources that are relatively invariant in the face of turnover of individuals and changing external circumstances" (Olsen, 2007:3). As Dovers and Hezri (2010) posit, institutions are the means whereby transactions between individuals, groups and states are mediated and made tolerably predictable, i.e. institutions are rules by which societies organise their interactions. Similar definitions include that of Chavance (2012:27) who defines institutions as "going concerns and working rules of collective action restraining and expanding individual action" and Gupta *et al.* (2009:3) who define institutions as "systems of established and prevalent social rules that structure social interactions" and formalised patterns of rules and decision making. Institution is defined by the Institutional Dimensions of Global Environmental Change (IDGEC), 1999:14) as a "system of rules, decision making procedures, and programmes that give rise to social practices, assign roles and guide interactions among occupant of the relevant roles."

Searle (2005:21) defines an institution as any collectively accepted system of rules (procedures and practices) that enables the creation of institutional facts. Hodgson (2006), defines institution as systems of established and prevalent social rules that structure social interactions. North (2008:22) conceptualises institutions as formal and informal rules and their enforcement characteristics that define the way the game is played by organisations. Indeed, institutions define and constrain sets of choices of individuals (Raschky, 2008). They assign individuals to well-defined roles in which their anticipated range of actions turns out to be consistent with the actions of other individuals (David, 1994:210). Institutions enable ordered thought, expectations and action by imposing form and consistency on human activities (Hodgson, 2006). They constitute the very basis of human interactions (Immergut, 2010), as they constrain and enable behaviour (Hodgson, 2006). They (institutions) are the basis upon which social life is ordered

and collective action is made possible and as such they are simultaneously created by, permeate and shape social organisation (Rayner & Malone, 1998).

What is important, though, is to note that institutions shape but do not determine social, economic and political behaviour (Leftwich & Sen, 2011). The increasing acknowledgment of the role of institutions in social life involves the recognition that much of human interactions and activity is structured in terms of overt or implicit rules (Hodgson, 2006). According to Menard and Shirley (2008), institutions are written and unwritten rules, norms and constraints that humans devise to reduce uncertainty and control their environment. They are characterised as regularised patterns of social behaviour, which are socially constructed in both formal and informal terms and are relatively stable (Bakker *et al.*, 1999). Bakker *et al.* (1999) further indicate that institutions are categorised as rules and codes (formal with or without sanctions), standards (formal with sanctions), or norms (informal with no sanctions) or strategies (informal and limited). These formal rules and informal norms and their enforcement characteristic are considered to structure societies (North, 2003). As such, it is both the formal and informal institutions that enable and constrain behaviour, operate at multiple levels and have a degree of permanence (Bakker *et al.*, 1999).

Formal institutions involve the writing and enforcing of constitutions, laws, contracts, and regulations (Research Programme Consortium on Improving Institutions for Pro-Poor Growth (IPPG), 2010; Zenger 2001). Formal institutions define the normative system or blueprint of behaviour (Zenger *et al.*, 2001). Olsen (2007) shares similar views and indicates that formal rules are important because they are perceived to be adequate for the task at hand and to have normative validity. However, North (2003) argues that formal rules occupy a very small portion of guides to everyday behaviour and action, as it is the informal norms that shape the way of doing things and are thus are very important. Informal institutions involve the structuring and inculcating of norms of conduct, beliefs, habits of thought and behaviour (Menard & Shirley, 2008). Therefore, it is the informal institutions that define the actual behaviour of actors (Zenger *et al.*, 2001). Furthermore, informal institutions play a pivotal role in the identification of and response to risk or any threat to societal order (Rayner & Malone, 1998). Unlike the formal rules, informal rules provide a channel for flexibility and responsiveness to changing conditions (Zenger *et al.*, 2001).

Whereas there are divergent views, complementary or substitutive in terms of the relationship between formal and informal institutions, this study adopts the complementary view. In this regard formal rules complement and increase the effectiveness of informal rule constraints (North, 1990). Baker *et al.* (1997:17) are of the opinion that the substitution or complementary

effects of formal and informal institutions are not mutually exclusive as their interaction is too complex to accommodate a unique pattern. As Rayner and Malone (1998) indicate, institutions are not homogeneous, the degree of formality, aggregation, geographical scale and procedural level are all variables used to categorise institutions. What is important, though, is that effective institutions provide for predictable and stable patterns of interactions in all walks of life (Leftwich & Sen, 2011).

In the analogy of a game, as conceptualised by North, (1990), institutions are rules of the game while organisations are the players. In this sense, as sets of rules, institutions are not self-sustaining, self-enforcing and they achieve little on their own (Leftwich & Sen, 2011). DFID (2010) shares similar views and highlights that institutional arrangements on their own or in isolation from their relations with other institutions and the respective roles played by organisations and actors they are supposed to regulate, seldom achieve anything. Taken from this perspective the statement by Margaret Levi (2006:10) that “institutions are empty boxes without the organised human agency that makes them work” holds true. Institutions are effective in situations where they are invested with legitimacy, sustained by political support and backed by associated organised political and bureaucratic capacity (DFID, 2010:24). Leftwich and Sen (2011) share similar views and indicate that for institutions to be effective and sustained, they require legitimacy, consistency, maintenance and review. This is where institutions are important in organisational settings. Therefore, institutions matter (Leftwich, 2006) as much as organisations do, for it is the organisations that forge, maintain, implement and change institutions.

The literature points to three different approaches for analysing the relationship between organisations and institutions as identified by Chavance (2012). Firstly, in the inclusive approach, organisations are viewed as a sub-group of institutions. Most commonly, people emphasise the institutional aspects of organisations and thus equate the two. This perspective forms the basis of the scholars and authors who subscribe to the notion of institutions as synonymous with organisations (see Christensen *et al.*, 2007; Etzioni, 1964; Gupta, 2009; Nutt-Powel *et al.*, 1978). Whereas this approach views organisations as institutions, it must be noted as indicated elsewhere in this chapter that not all institutions are organisations. Secondly, in the distinctive approach, organisations and institutions constitute two clearly different but interactive categories. According to North, (1993:12) “this separation of institutions from organisations is crucial ...”. Insofar as the distinctive view goes, institutions are considered the rules of the game whilst organisations are the players (North, 1990, 1993). In this regard, institutions prescribe how authority and power are constituted, exercised, legitimated and redistributed (Olsen, 2007). Finally, the assimilation perspective views organisations and institutions as two facets of one

and the same phenomenon (Chavance, 2012:27). Chavance (2012:30) summarised the assimilation view in the equation: institutions equals “going concern” plus its working rules.” Where “going concern” is an organisation (Commons, 1950:34), which is characterised by legitimate authority, durations, transactions, working rules and sanction (Chavance, 2012). “Working rules” are rules of action or working rules of collective action of which the most common is custom (Chavance, 2012). According to McLaughlin (2010), John Commons’ theoretical framework of collective action exercised within organisations, or as unorganised custom, is expressed as working rules that govern what the individual can, cannot, must, must not, may, or may not do. These rules control, liberate and expand on the actions of individuals engaged in transactions within organisations (McLaughlin 2010).

Institutional forces shape individual interests and desires, framing the possibilities for action and influencing whether behaviours result in persistence or change (Powell & Colyvas, 2008). They condition action because departures from them are automatically counteracted by social controls that make deviation from the social order costly (Lawrence & Sadnam, 2008). According to Nutt-Powel *et al.* (1978:6) institutions are manifested through functions and actions that further the function. Thus the three defining dimensions of an institution are function, activity and role. In this sense goals and responsibilities are set to have a function, activities are carried out to realise a function and the roles are strategic actions chosen as a style and means for implementing functional activities (Nutt-Powell *et al.*, 1978). The importance of institutions lies in the fact that they affect individuals and organisations within a society (Meyer, 2007). They are foundational elements of the social contexts in which formal organisations are embedded (Baba *et al.*, 2013). From this perspective, studying institutions is crucial to the understanding of organisations, and this is the focus of the next section.

2.4.2 Institutional theories of organisations

The multiple understanding of the term *institution* as reflected above and the consideration of other factors that shape behaviour within institutions pose serious problems for institutional analysis (Peters, 2000). Peters (2000) further indicates that the most important impediment to a more central position for institutionalism is that the term means so many things to different scholars and that some of the alternative approaches are also contradictory. This together with different views on the origin of institutional analysis led to the assertion by DiMaggio and Powell (1991) that institutional theory presents a paradox. The paradox embedded within the idea of institutions is highlighted in the notion that institutions comprise regulatory, normative and cultural-cognitive elements that together with associated activities and resources provide stability and meaning to social life (Baba *et al.*, 2013; Scott, 2008). Besides, institutional theory has become one of the dominant perspectives in macro-organisation theory (Suddaby, 2010).

Suddaby *et al.* (2010) share similar views and point out that institutional theory has made a distinct impression on organisational research with the central contribution of institutional theory to the understanding of organisations as, largely, a foil to economic rationality.

Institutional analysis can be traced back to Durkheim's exhortation to study social factors as things (DiMaggio & Powell, 1991); Durkheim's symbolic systems and Weber's notion of cultural rules (Lawrence & Sadnam, 2008). Viewed in this way, Lawrence and Sadnam (2008) associate the history of institutional theory with the history of social theory. In the contemporary era, the institutional analysis of organisations is cited to have begun with the publication of the paper by John Meyer and Brian Rowan in 1977 called "Institutionalised organisation: Formal structure as myth and ceremony" (Lawrence & Sadnam, 2008; Tolbert & Zucker, 1996). However, an earlier line of thinking on institutional approaches is identified with Selznick's work of 1949 (Baba *et al.*, 2013; Strang, 1994). According to Peters (2000), the early 1980s through the work of March and Olsen in 1984 saw the reassertion of institutional theories in the social sciences and especially political science.

Lawrence and Sadnam (2008:2290) assert that "the study of institutions and their origins and effects continued gradually until the foundations for dramatic progress in institutional theory were laid down by two academic movements, phenomenology and ethnomethodology". In phenomenology, institutions are regarded to be constituted by reciprocal typification of habitualised action, and thus are essentially cognitive constructions that control social action independent of any form of sanction (Lawrence & Sadnam, 2008:2290). Pro-ethnomethodology scholars argue that norms are cognitive guidance systems, and actors employ them flexibly with a great capacity for negotiation and innovation (Atkinson, 1988; Clayman & Maynard 1995; Garfinkel 1996; Maynard & Clayman, 1991; Rawls 2008). Together, phenomenology and ethnomethodology paved the way for institutional researchers to theorise how action is influenced by institutional context (Lawrence & Sadnam, 2008:2290).

Institutional theories, as they emerged in the 1970s, received much attention in the social sciences, along with other lines of thought emphasising the dependence of modern organisations on their environments (Meyer, 2007). As such, institutional theory can be viewed as an extension of open systems theory (Bjorck, 2004). To this end open systems theory focuses on the inputs, outputs and transformations of organisations, insisting on the importance of the environment, and emphasising its impact on the organisation. Not all institutionalised organisations import resources from the environment though but are also hypothesised to have effective gatekeepers to control the transactions (Peters, 2000). In this regard institutional theory fills the gap created by open systems theory by arguing that much of that environment

consists of social and cultural forces and not merely production resources and task-related information (Bjorck, 2004). To this end culture is viewed as representing a toolkit from which people select both institutionalised ends and strategies for their pursuit (DiMaggio & Powell, 1991). Thus cultural frames establish approved means and define desired outcomes, leading business people to pursue profits, bureaucrats seeking budgetary growth and scholars striving for publication (DiMaggio & Powell, 1991).

As reflected in the preceding discussion, institutional theory has been employed in many areas with a variety of methodological and epistemological approaches. Thus institutional theory is associated with intense, unresolved debates around key constructs and issues because of its wide acceptance (Lawrence & Sadnam, 2008). However, it has been argued that every theory contains within it implicit assumptions and goals that define its parameters of application (Suddaby, 2010). DiMaggio and Powell (1991:3) postulate that approaches to institutions rooted in different soils cannot be expected to converge on a single set of assumptions and goals. Moreover, Peters (2000:11) suggests that each of the different approaches in institutional analysis implies different forms of measurement. It is therefore for this reason that there are different strands of institutional theories. Peters (1999) identified seven versions of institutionalism. In this study, the three major schools of thought of new institutionalism that stand out in the literature, the historical institutionalism, rational choice institutionalism and sociological institutionalism are briefly reviewed, compared and discussed. This is important because new institutionalism has become influential throughout the social sciences, particularly in political science.

Specifically, new institutionalism is used to study institutions and how they interact with organisational arrangements (Menard & Shirley, 2008). Similarly, neo-institutionalism is interested in how and why specific formal and informal mechanisms and the involvement of specific configurations of actors emerge and become appropriate over time (Lim, 2011). Importantly, an interest in institutions treated as clusters of rights, rules, and decision-making procedures constitute the glue that holds together those who work in this realm together and give this movement a distinctive personality that is well-known not only to practitioners of the new institutionalism but also to the movement's critics (Young, 2007). Hall and Taylor (1996) argue that there are considerable problems about the conceptualisation of new institutionalism, how it differs from other approaches and what sort of promise or problems it displays. Some of the ambiguities surrounding the new institutionalism can be dispelled by recognising that the perspective does not constitute a unified body of thought and that at least three different analytical approaches have appeared over the past fifteen years (Hall & Taylor, 1996).

Firstly, historical institutionalism was developed in response to the group of theories of politics and structural-functionalism prominent in political science during the 1960s and 1970s (Hall & Taylor, 1996). Amenta and Ramsey (2010) share similar views and indicate that historical institutionalism was developed in response to the rational choice theory in political science. The theory holds that institutions are created for functional reasons and therefore historical research must trace the processes behind the creation and persistence of institutions and policies (Amenta & Ramsey, 2010). Applied to Public Administration, historical institutionalism postulates that politics and policies shape institutions and thus public institutions provide infrastructure for collective action (Thoenig, 2011). The central argument of historical institutionalism is that policy and structural choices made at the inception of the institution will have a persistent influence over its behaviour for the remainder of its existence (Peters, 2000).

Whereas historical institutionalists are interested in the ideas that shape and sustain the direction of policy, path dependency is the central explanatory principle (Peters, 2000). Peters (2000:11) further indicates that historical institutionalists are responsible for identifying what are the existing institutional arrangements, whether in policy or structural terms. Furthermore, historical institutionalists accept the contention that conflict among rival groups for scarce resources lies at the heart of politics, but they sought better explanations for the distinctiveness of national political outcomes and for the inequalities that mark these outcomes (Hall & Taylor, 1996). Hall and Taylor (1996) further indicate that historical institutionalism define institutions as the formal or informal procedures, routines, norms and conventions embedded in the organisational structure of the polity or political economy. These can range from the rules of a constitutional order or the standard operating procedures of a bureaucracy to the conventions governing trade union behaviour or bank-firm relations. In general, historical institutionalists associate institutions with organisations and the rules or conventions promulgated by formal organisation (Hall & Taylor, 1996).

Secondly, rational institutionalism was developed at the same time but in parallel with the historical institutionalism (Hall & Taylor, 1996). The rational choice institutionalism in political science drew fruitful analytical tools from the 'new economics of organisation', which emphasise the importance of property rights, rent-seeking, and transaction costs to the operation and development of institutions (Hall & Taylor, 1996). As Shepsle (2006) puts it, rational institutionalism began as pure "theft", lifting analytical tools from mathematics, operations research, and economics. In its focus on institutions in politics, economics, and society, it developed boundaries, a canon, and an identity (Shepsle, 2006). Weyland (2002:58) asserts that rational choice institutionalism starts from the general rational-choice assumption that instrumental rationality drives political action.

Accordingly, political actors are said to rank order their goals in a transitive fashion and use the best available means for pursuing their ends, thus maximising their utility (Weyland, 2002:58). Thus individuals, information, feasible options, and preferences constitute rational choice model of human actions (Katznelson & Weingast, 2005). Whether the theory takes the form of social choice or non-cooperative games, choices are understood to echo or reveal preferences held by persons, either alone or in collectives (Katznelson & Weingast, 2005). The process of institutional creation in rational choice institutionalism usually revolves around voluntary agreement by the relevant actors and if the institution is subject to a process of competitive selection, it survives primarily because it provides more benefits to the relevant actors than alternative institutional forms (Hall & Taylor, 1996). Rational choice is an intentionalist approach that explains behaviour by reference to individual interest and not external causes or systemic function (Weyland 2002:58).

Thirdly, sociological institutionalism is a response in part to views such as the resource dependence model, and the world systems theory, that neglects cultural structures and processes in their explanations (Amenta & Ramsey 2010). Particularly in the study of policy, sociological institutionalism focuses on quests for legitimation in political organisations and tends to focus on processes of policy imitation and diffusion and especially on surprising convergences in forms of institutions and policies (Amenta & Ramsey 2010). Central to sociological institutionalism perspective is the idea that action is tightly bound up with interpretation (Hall & Taylor, 1996). Value forms the core of this approach and as Thoenig, (2011) pointed out “no organisation is free from values”. Proponents of this view are of the opinion that organisations that are institutionalised become valued (Selzenick, 1957; Scott, 1987). Considered important in this perspective are the formal rules, symbols, moral models, and cognitive schemes (Thoenig, 2011). Hall and Taylor (1996) share similar views and point out that sociological institutionalists define institutions to include formal rules, procedures or norms, the symbol systems, cognitive scripts, and moral templates that provide the ‘frames of meaning’ guiding human action. Thus in this school of thought institutions provide frames of meaning which guide human action and hence they are equated to cultural systems.

The rationalist, structuralist and the culturalist or interpretivist approaches as reflected in the above discussion shed light on different aspects of a very complex reality, which cannot be understood from one theoretical vantage point (Weyland, 2002:79). However, some authors such as Hall and Taylor (1996) argue that it is striking that the different institutional schools of thought have remained apart from each other with each one assiduously burnishing its own paradigm. Conversely a number of scholars support the plurality and paradigmatic diversity in

institutionalisms (Ementa & Ramsey, 2010; Weyland, 2002). Ementa and Ramsey (2010) posit that the basic similarity in all institutional theoretical claims is important. They all focus on the identification of something at the higher level, which is used to explain processes and outcomes at a lower level. Similarly, all these approaches developed in reaction to the behavioural perspectives that were influential during the 1960s and 1970s and all seek to elucidate the role that institutions play in the determination of social and political outcomes (Hall & Taylor, 1996). When applied in politics, institutional theories can exert two sets of distinct forms of influence over policy and political actions (Gupta *et al.*, 2009:3). Institutions can either limit some actions or facilitate others and thus they can either be constraining or superimposing conditions for mobilising, access and influence (Gupta *et al.*, 2009).

It is imperative that institutions are properly arranged in order to translate any vision into effective policy priorities (World Bank, 1997). This is so because by and large, institutionalisation has crucial and distinctive effect on what those involved do (Strang 1994). According to Powell and Colyvas (2008), institutions have a direct bearing on individual interests and desires and thereby frame possibilities for action and influences behaviour. Although there are different versions of institutional theory, the majority, especially those based on social sciences, stress that institutional structures arise out of the interactions between individual agents (Klijn, 2008). The interactions of actors are conceptualised as a social phenomenon (Baba, *et al.*, 2013) in which actors shape and reshape institutional structures with their actions as they use as well as interpret existing institutional rules (Giddens, 1984 in Klijn, 2008). These institutions and the interactions among organisations create a complex, non-linear relationship between actions and outcomes (Anderson, 1999). This characteristic resembles that of complex systems thus necessitating some discussion of complex systems and perspectives on complexity. To this end the next section presents and discusses the concept of complexity and the different theoretical perspectives of complexity as applied to organisations.

2.5 COMPLEXITY THEORIES AND THE ORGANISATION

The preceding section portrayed institutions as rules that govern social interactions, constraining the behaviour of and options open to actors (Carey, 2000). Moreover, the section portrayed institutions as the driving force of social systems. A social system is defined “as a collective of heterogeneous agents (i.e. individuals, organisations, etc.), whose state influences and is influenced by the state of others and whose interactions give rise to global properties that are more than the sum of individual behaviour” (Furtado *et al.*, 2015:12). This definition of a social system carries similar characteristics with those of a complex system, which includes large number of elements, interactions between the elements and that in complex systems the whole is more than the sum of the parts. Thus as Furtado *et al.* (2015:12) indicate, complex

systems approaches and methodologies emphasise interactions, diversity and dynamics. Homer-Dixon (2010) reflects on the point that most complex systems have many components with a high degree of connectivity between the components. As such the conceptualisation of social systems in this way equates them to complex systems.

In this section, complex system views and methodologies or frameworks are used to provide a tool for the analysis of organisations. As Smith (2005) indicates, complexity and its principles as a metaphor, provide a lens through which organisational activity can be observed. This is so because many of the ideas and concepts of complexity theory are a good fit with modern ideas of complex decision-making and complex strategies (Klijn, 2008). As such, if organisations are seen as complex evolving systems, co-evolving within a social-ecosystem, then the thinking about management and strategy should change (Mitleton-Kelly, 2003). Before delving into the discussion on organisations as complex systems, the section will open by demarcating complex systems, complexity and the different complexity perspective. Drawing from Smith (2004), it is anticipated that the definition of complexity and the associated properties or characteristics will help in identifying complex behaviour in organisations.

2.5.1 Defining complex systems

The elucidation of the meaning and implications of the concept of complexity is important due to its common and frequent usage in the last two or so decades. As such Manson (2007:10) defines complexity as the measure of heterogeneity or diversity in internal and environmental factors. Complexity results from the interactions between components of a system and therefore complexity is manifested at the level of the system itself (Cilliers, 1998). Cilliers (1998) further highlights the point that complexity is not located at a specific identifiable site in a system. Furtado *et al.* (2015) draw attention to the point that in complex systems, interactions have effects in time, meaning that actions in a given moment reflect opportunities and constraints in the following moment. This view supports Haynes' (2008) argument that human interactions in social systems are subject to the same fundamental limitations of object-based systems: the determinants of time and space (Haynes, 2008). In this respect, complexity puts the interpretative nature of human actors into the structural constraints of time and spaces (Haynes, 2008).

One of the greatest challenges in conceptualising complexity is that in a common usage language, the term is viewed to be synonymous with complicated (Hatch & Cunliffe, 2006). According to Reitsma (2005:14), the difficulty with the term complexity is that it suffers a "semantic hangover" from its well-accepted dictionary definition wherein complex simply means made of many related parts. Cilliers (1998) draws attention to the fact that there should be a

distinction between simple and complex, and complicated and complex. He contends that the distinction between simple and complex is not as sharp as human intuitively thinks as the concepts often masks each other. On the distinction between complex and complicated, Eppel *et al.* (2011:48) argue that complexity means much more than something that is complicated because it has lots of components. The Organisation for Economic Cooperation and Development (OECD) (2009) and Reitsma (2005) share similar views and as a result go to great lengths in clarifying the definitional meaning of complexity and its synonymy to complication.

Reitsma (2005:14) points out that a system is complicated if it can be given a complete and accurate description in terms of its individual constituents no matter how many. In Cilliers' (1998) conceptualisation, a system is said to be complicated when it has large number of components and performs sophisticated tasks in a way that can be analysed accurately. A system is said to be complex when the whole cannot be fully understood by analysing its components (Reitsma, 2005). According to Cilliers (1998), systems are complex when they are constituted by intricate sets of non-linear relationships and feedback loops such that only certain aspects of them can be analysed at a time but with distortions resulting from the analysis. While the concept of complexity remains elusive at both qualitative and quantitative levels, providing the characteristics of a complex system is the best way to develop a general description that is not constrained by a specific priori definition (Cilliers, 1998).

Milton-Kelly (2003) identifies ten principles of complexity based on the generic characteristics of all complex systems. These include self-organisation, emergence, connectivity, interdependence, feedback, far from equilibrium, space of possibilities, co-evolution, history and time, and path dependence. In contrast, Cilliers (1998) identifies six main characteristics of a complex system: large numbers of elements, which alone are not sufficient; interactions of the elements, which must be dynamic, non-linear and have a fairly short range; complex systems are open interacting with the environment; operate under conditions far from equilibrium; complex system have a history; and that elements on the system are ignorant of the behaviour of the system as a whole. Of importance is to note that complex behaviours arise from the interrelationships and interconnectivity of elements within a system and between a system and its environment. Furthermore, hierarchy is one of the central structural schemes that the architect of complexity uses (Simon, 1962). In this sense, a hierarchic system is a system composed of interrelated sub-systems (Simon, 1962).

Complex systems are systems comprising numerous interacting identities or parts, each of which behaves in its local context according to some rules, laws and forces (McGuire &

McKelvey, 1999). Simon (1962:468) shares similar views and indicates that complex systems are made up of a large number of parts that interact in a non-simple way. An important characteristic of these complex systems is that interactions among parts can lead to self-organisation of the system without an elaborate need for central control (Furtado, *et al.*, 2015). However, Amagoh (2008) argues that since there is no control unit in complex systems, it is difficult to determine the contribution of any part to the performance of the whole. This as each part in a complex system acts according to its own best interest but collectively causing the system to move in a certain direction, which may be hard to predict (Amagoh, 2008). As such, complex systems can create behaviour that is neither definitively predictable nor unpredictable (Smith, 2004). Simon (1962) posits that many complex systems that have a nearly decomposable hierarchical structure is a major facilitating factor enabling the understanding, describing, and seeing such systems and their parts. With a brief understanding of complexity and complex systems provided, the next section focuses on complexity theories.

2.5.2 Complexity theoretical perspectives

Complexity theory has been developed and applied in a variety of fields including geology, biology (cells and the brain), engineering (traffic systems), and organisation science (Pirson & Turnbull, 2012:7). This makes complexity theory an interdisciplinary area of enquiry. For this reason, complexity theory is not a unified body of knowledge. Complexity theory is used as an umbrella term for a number of theories (Burnes, 2005; Klijn, 2008; Manson, 2001; Pollack & Sankaran, 2014; Walton, 2014). Although there are many different strands of complexity theory, they each attempt to understand change and the dynamics of systems as a result of interactions of the parts of those systems (Klijn, 2008). The purpose here is not to explain and discuss complexity theory in its entirety in terms of the different strands of the theory but rather to highlight and acknowledge its importance in organisational interactions.

Complexity theory starts from the assumption that there are large parts of reality in which changes do not occur in a linear fashion (Duit & Galaz, 2008). Burnes (2005:77) indicates that complexity theories are concerned with the emergence of order in dynamic, non-linear systems operating at the edge of chaos. According to Klijn (2008) complexity theory stresses that systems tend to develop non-linearly and are subject to various feedback mechanisms. Behaviour in complex systems is non-linear (Homer-Dixon, 2010; Manson, 2001; Walton, 2014), in the sense that an increase in one incentive does not necessarily lead to an increase in another (Walton, 2014). For instance, in non-linear systems small changes can have a big effect or big changes might not have an effect at all. Therefore, complex systems change inputs to outputs in a non-linear way because their components interact with one another through a web of feedback loops (Anderson, 1999).

Acknowledging that there are many competing ideas and theories on complexity, Burnes (2005:78) identified three key complexity theories: chaos theory, dissipative structures theory and the theory of complex adaptive systems. Anderson (1999) proposes non-linear dynamics, chaos theory and adaptation and evolution as the three interrelated building blocks of complexity theory. Mitleton-Kelly (2003) distinguishes five different areas of complexity theory: complex adaptive systems, dissipative structures, autopoiesis theory, chaos theory and increasing returns, and path dependency theory. Whereas there is no unified body of theory on complexity, there is significant overlap in the various disciplines and perspectives (Pirson & Turnbull, 2012). The commonality between the different theories is that they share an idea that the whole system is more than the sum of the parts of individual agents while the development of the whole arises from the interactions of the parts (Boje, 2000; Furtado *et al.*, 2015:12; Klijn, 2008; Smith, 2005). Smith (2005) notes that reducing a system to its elements is not helpful in understanding all phenomena a complex system produces.

It is important to acknowledge that each strand of work has its own character and sometimes differs significantly from others (see Mitleton-Kelly, 2003 and MacIntosh *et al.*, 2006 for the major differences). Advocates of complexity theory see it as a means of simplifying seemingly complex systems (Manson, 2001). Mitleton-Kelly (2003:4) argues that complexity is not a methodology or a set of tools, but rather theories of complexity provides a conceptual framework, a way of thinking and a way of seeing the world. Complexity theory is used to make sense of complex situations and resolve complex problems many of which typify contemporary life (Hassan, 2014). Thus Geyer and Rihani (2010) indicate that adopting a complexity frame of reference enables decision-makers to interpret what goes on in the social, economic and political arenas in a new way that recognises the limits of knowledge and prediction and the subsequent need to adjust actions accordingly. Burnes (2005) draws attention to the point that academics and practitioners are increasingly seeing complexity theory as a way of understanding organisations and promoting organisational change. The next sub-section focuses on complexity theory as it is applied to organisations.

2.5.3 Principles of complexity theory as applied to organisations

Complexity emerged as a central construct in the study of organisations in the 1960s as a result of the spreading of interest in the open system view of organisations (Anderson, 1999). As Nadler *et al.* (1982:37) point out, systems theory provides a way of thinking about organisations in a more complex and dynamic terms. The 1966 Organisation Sciences Winter Conference is heralded as the catalyst that led to the dramatic growth in the interest in complexity of organisations (Lewin, 1999). Complexity theory builds and enriches systems theory by

articulating additional characteristics of complex systems and by emphasising their inter-relationship and their interdependence (Mittleton-Kelly, 2003). An understanding of systems and complexity theories provides an enhanced appreciation of how each of the subsystems of the organisation interconnects and interacts and the nature of interplay between components. As Smith (2005) indicates, complexity as applied to organisations has developed as a result of the perception of the growing uncertainty and turbulence in the environment in which organisations operate. Drawing from Anderson *et al.* (1999), the importance of complexity theory in this study lies in the fact that complexity theory is a rich perspective for viewing many different aspects of organisations.

As Lewin *et al.* (1998) point out, complexity theory offers an appealing metaphor for analysing organisational behaviour. Smith (2004:103) draws attention to the fact that in organisations, complexity is a metaphor to explain unexpected outcomes as well as those that are inherently unpredictable. Proponents of complexity theory as it is applied to organisations argue that, like complex systems in nature, organisations are dynamic, non-linear systems and that the outcomes of their interactions are unpredictable and are governed by a set of simple order generating rules (Burnes, 2005). McIntosh and MacLean (2001) argue that organisations can only survive and prosper if there are new and appropriate sets of order generating rules established. Thus, in order to survive there must be rules to keep organisations operating on the edge of chaos (Burnes, 2005). Edge of chaos is described as a situation wherein systems are constantly changing and where the laws of cause and effect appear not to apply (Burnes, 2005). Hatch and Cunliffe (2006) indicate that organisation theorists who use complexity theory suggest that organisations are complex adaptive systems existing on the edge of chaos.

Thus, Anderson (1999:230) posits that modern organisations are complex adaptive systems par excellence. This is so because when all organisations are interconnected with one another, either decay results or chaos ensues (Anderson, 1999). In this regard complex adaptive systems are systems that absorb information from their environment and create stores of knowledge that can aid action (Manson, 2007). They (complex adaptive systems) consist of a large number of agents, each of which behaves according to its own principles of local interaction, requiring of each agent to adjust its behaviour to that of other agents (Staces, 2003 in Burnes 2005:79). This is so because in complex adaptive systems, agents only act on information available in their immediate environments from the few agents connected to them in a feedback loop (Anderson, 1999). As such complexity theory stresses that systems tend to develop non-linearly and subject to various feedback mechanisms (Klijn, 2008; Levy, 2000).

These feedback processes crucially shape how change happens within complex systems

(Ramalingam *et al.*, 2008). As Eppel *et al.* (2011) indicate, feedback loops can keep a system in a stable pattern called an attractor. Klijn (2008) shares similar views and indicates that the feedback loops sustain equilibrium in dynamic systems, which can be suddenly disturbed by unexpected events. This is so because feedbacks can either be positive or negative. Positive feedback is responsible for driving change while negative feedback maintains stability in a system (Mitleton-Kelly, 2003). Thus as a result of disturbance, feedback loops may result in the emergence of entirely new phenomenon or pattern as complex systems adapt to each other, self-organise and co-evolve with each other (Eppel *et al.*, 2011). Eppel *et al.* (2011) further indicate that sometimes the desired change might not occur because the feedback loops between the action of one component and the reaction of others cancel each other out.

Organisations are dynamic systems of adaptation and evolution that contain multiple parts, which interact with one another (inter-organisational relations) and the environment (Amagoh, 2008). As the environment in which organisations operate is complex and ever-changing (Hatch & Cunliffe, 2006), organisations must transform themselves continuously just as with complex systems (Burnes, 2005). Thus, given the rapidly changing environment in which organisations operate, it is important that organisations emulate complex systems. This as organisations are strongly embedded in their environment and the environmental influences penetrate the organisations in many ways (Aldrich, 1999). In this regard, organisation theory treats complexity as a structural variable that characterises both the organisations and their environment (Anderson, 1999:216). Therefore, organisation design must match the complexity of an organisation's structure with the complexity of its environment and technology (Anderson, 1999 citing Gailbratith, 1982).

Complexity in terms of the environment is equated to the number of different elements that the organisation must deal with simultaneously (Anderson, 1999). For organisations, Daft (1992) in Anderson (1999) equates complexity with the number of activities within the organisations, which can be measured along three dimensions. Firstly, the vertical dimension has to do with the number of levels in an organisation hierarchy. Secondly, horizontal complexity has to do with the number of departments across the organisation. Lastly, spatial complexity deals with the number of geographic locations of the organisation (Anderson, 1999). Thus in addressing complex issues, actions are required across traditional organisational boundaries and between government and non-government organisations (Walton, 2014).

A growing complexity of organisations results in collaboration among multiple stakeholders (Yoo *et al.*, 2012). Klijn (2008) is of the opinion that complexity is an important concept for understanding government and governance processes. Klijn (2008:301) further indicates that

understanding changes and complex dynamics is one of the central research themes in much of governance literature. Moreover, Koppenjan and Klijn (2013) draw attention to the point that given the in-depth approach to complexities and complex systems, complexity theory does not only address in new ways and provide an interesting and promising new perspective in organisations but also in governance networks. With the background on complexity theory as it is applied to organisations provided and its relevance in governance networks established, the next section outlines the concept of governance in relation to complexity, institutions and organisations.

2.6 INSTITUTIONS AND ORGANISATIONS: THE TWO MAJOR INTERACTING COMPONENTS OF A GOVERNANCE SYSTEM

The previous section presented, in brief, complexity theory and specifically its relation to organisations. However, as Klijn (2008) argues, many elements of the theories that stress complexity emanating from actors and their choices are prevalent in governance theories. This is so because within complex policy systems, multiple actors and multiple relationships are involved. These actors are interconnected and they depend on the same resources and this develops and sustains their relationships (Klijn, 2008). Complexity in governance is brought about by the number of actors involved, which represent different interpretations, problem perceptions and solutions (Verweij *et al.*, 2013). This involvement of many actors results in divergence in values and assumptions, which gives primacy to the different methodologies, interpretations and outcomes (Walton, 2014).

In most cases, governance takes place more or less in fluid networks (Keskitalo, 2013). The use of networks easily leads to a blending of public sector and private sector resources (Peters & Pierre, 1998). Network governance arrangements are identified as consistent with a complexity frame of reference by emphasising interactions and relationships amongst members of the network leading to emergent outcomes (Walton, 2014). Klijn (2008:305) indicates that most network theories focus on complex interactions that arise out of the dependencies, the resulting policy outcome and the limitations and possibilities for guiding and governing the interaction processes. Walton (2014:4) defines network governance as “public policy making and implementation through a web of relationships between government, business and civil society to solve complex problems that cannot be solved by a single actor”. Thus governance allows the conceptualisation of complex arrangements of relationships and rules needed to manage and distribute resources in situations where the hierarchical, top down structure of command and control may no longer suffice (Hill, 2013).

Moreover, complex systems contain both the vertical and the horizontal interactions, and

therefore the emergent network governance group should consist of cross agency as well as cross system levels (Walton, 2014). For this reason, governance literature focuses on the interdependence between government organisations and a wide variety of non- government organisations both horizontally and vertically. Thus increasingly, governance decisions are made in complex networks encompassing supranational, national and local actors, public to semi-public and private (Van Kersbergen & Van Waarden, 2004). The level of interdependence that government shares with implementing organisations leads to self-organising networks (Cairney, 2012). In social systems, self-organisation is described as a process in which the components of a system spontaneously communicate with each other and abruptly cooperate in coordinated and concerted common behaviour (Stacey, 2003 in Bovaird, 2008). In governance network theory, complexity is largely attributed to the actors (organisations) and their institutions (Koppenjan & Klijn, 2013).

Dutra *et al.* (2015:64) highlight institutions and organisations as the two main interacting components of a governance system. As Hodgson (2006) argues, it would prove difficult to carry out any empirical and theoretical analysis of governance without having some conception of what is an institution and how it influences behaviour and interactions in organisations. Hill (2013) points out that in definitional terms, institutions and governance are interlinked and are often viewed as synonymous although in a narrower sense institutions are often viewed to be synonymous with formal bodies and organisations. Governance is formally institutionalised or expressed through subtle norms of interactions of and directly by influencing the agendas and shaping the context in which actors contest decisions and determine access to resources (Lebel *et al.*, 2006). A key mechanism for this governance network to produce solutions to complex problems lies in the ability to bring multiple perspectives and knowledge together into a deliberative decision-making process (Klijn & Edelenbos, 2013). Moreover, governance network theory addresses complexity by providing a conceptual framework to analyse problem solving and policy making in complex network settings (Koppenjan & Klijn, 2013).

Klijn (2008) indicates that governance addresses complexity by stepping into the complex systems and designing governing mechanisms and strategies that are specifically targeted at the situation and the characteristics of the process. The “catch-all” phrase of governance is considered to describe who makes decisions, has powers and responsibilities (actors) and how these decisions, powers and responsibilities are exercised (institutions) (Hodgson, 2006). The term *governance* has been broadly defined in the social sciences as the formal and informal processes and institutions that guide and restrain the collective activities of a group (Keohane & Nye, 2000 in Ren *et al.*, 2011). It embodies a non-hierarchical organised structure of state and non-state actors bringing about collectivity binding policies without superior authority (Lidskog,

2008 in Renn *et al.*, 2011). Governance has been cited to refer to actors, structures and processes by which societies share power and make collectively binding decisions (Van Asselt & Renn, 2011). Drawing from Rhodes (1997) and Torfing (2005), Boholm *et al.* (2012) conceptualised governance as the role and function of contemporary state government, the development of multi-level modes of public steering, or the increasing importance of inter-organisational interactions such as public-private partnerships or task-based modes of organising public projects and the provision of public services.

Governance reflects the negotiations between society and government in effectively implementing socially acceptable allocations and regulations by mediating behaviour through values, norms and laws (Hill, 2013). UNESCAP, (2009) views governance as the process of decision-making and the process by which decisions are implemented or not implemented. Drawing from the different conceptualisation of governance as discussed above, an analysis of governance should focus on the formal and informal actions involved in decision-making and implementation and formal and informal structures that are set in place to arrive at and implement the decision. Adopting a governance perspective entails giving attention to the distribution of power both internal and external to the state (Jones *et al.*, 2014). In an endeavour to bring clarity to the concept of governance through classification of different forms of governance, scholars have used dimensions of politics, polity and policy (Treib *et al.*, 2007). Politics represents the process of how collective actors translate different preferences into policy choices and different interest into unified action (Treib *et al.*, 2007).

Polity is the framework of formal and informal rules of the game that direct the behaviour of actors in the society (Treib *et al.*, 2007). On the other hand, policy denotes that political steering and decisions made for and implemented in a society (Treib *et al.*, 2007). Some authors (Duit & Galaz 2008; Kooiman 2003; Pierre & Peters 2005) see governance as an umbrella term to describe the practice and structure of today's policy-making. The actors in these structures are usually individuals who represent governmental, non-governmental, civic and private organisations (Lubell, 2015). Governance involves processes through which collective goals are defined and pursued in which the state is not the only or most important actors (Betsill & Bulkeley, 2006:144). Thus the essence of governance is its focus on governing mechanisms, which do not rest on recourse to the authority and sanctions of government alone (Stoker, 1998:17). As Betsill and Bulkeley (2006) point out, the development of a governance perspectives involves recognising the roles of supranational and sub-national states and non-state actors and their complex interactions in the process of governing. Stoker (1998) indicates that the governance concept points to the creation of a structure or an order which cannot be externally imposed but is a result of the interaction of a multiplicity of governing and actors

influencing each other.

Whereas there are many different perspectives and interpretations of the term governance, the baseline agreement is that governance refers to the development of governing styles in which boundaries between and within public and private sector has become blurred (Stoker, 1999). It is important to view governance as the art of steering societies and organisations to achieve certain goals for the common good. Not only that, but also understanding who should be involved and in what capacity. Graham *et al.* (2003) point out that governance is about the more strategic aspects of steering in the sense of directions and roles. What is important though is to note that governance can have both positive and negative consequences, and that not all governance is “good” governance (van Niekerk, van der Waldt & Jonker, 2001). Good governance has rather been associated with democracy and the protection of the rule of law, basic human right and civil liberties, effective and efficient public administration and management, transparency, openness, accountability and participation by the electorate.

Van Kersbergen and van Waarden (2004) distinguish nine different versions of governance: good governance, governing without government I – international relations, governing without government II – self-governance, economic governance, corporate governance, new public management of good governance in the public sector, governance in and by networks I, governance in and by networks II – multi-level governance, governance in and by networks III – private. Although the meanings of governance in the nine versions differ, certain common characteristics stand out, such as plural or polycentric as opposed to unicentric and the importance of networks in decision-making. To this end the governance perspective focuses on improving inter-organisational coordination to improve policy proposals and their implementation and to the actors and the policy process (Klijn, 2008). Therefore, as Shannon and Schmidt (2002) indicate, governance is a concept that necessarily relies on both the actors and structural elements. The structural elements of governance and the institutional arrangement are produced and maintained over time by the actors who engage in cooperative, supportive, learning and adaptive behaviour (Shannon & Schmidt, 2002).

Therefore, organisational structures, mechanisms and processes, strategies, laws and regulation, resources and procedures, which form the basis of institutional and legal systems at all levels of administration, constitute the basis of a country’s governance framework (Lebel, *et al.*, 2006; UNDP, 2007a). All these variables are important to facilitate the implantation and enforcement of public policies and regulation relevant for risk reduction. As Raschky (2008) argues, if the principles of institutions apply to economic activities in general as conceptualised by North (1990) and subsequent proponents, they should also apply to decisions related to

protection against natural disasters. Drawing from Frey (1990), Raschky (2008) points out that the formal and informal rules that influence behaviour in natural hazard settings could include general legal systems regulating preventative measures, financial support and setting of behaviour standards to prepare for and respond to disasters. With this background in place, the next two chapters, chapter 3 and chapter 4 present the governance mechanisms aimed at reducing disaster risk through disaster risk reduction and climate change adaptation respectively.

2.7 CONCLUSIONS

This chapter raised a number of issues pertaining to organisations, including the evolution and definitions, the major theories of organisation, the sociological analysis of organisations through institutions, the applicability of complexity theory in organisations and the importance of organisations and institutions in governance. Tracking the different ways in which organisations have been analysed enables those managing organisations to be better prepared to understand an organisation and how best to deal with circumstances organisations are challenged with in order to achieve better results. It has come out clearly in this chapter that the concepts of institutions and organisations are commonly used interchangeably in everyday language to denote one and the same thing. This chapter has demonstrated that the terms *organisation* and *institution* are different but interrelated and therefore must be properly conceptualised. Institutions are conceptualised as rules of the game that regulate the game that organisations play. They are important in shaping behaviour and driving action in organisations. In a broader sense, institutions are more than the laws, rules, and regulations as they include norms, beliefs, cultural aspects and values.

It has also been clearly indicated in this chapter that the environment in which contemporary organisations operate is complex thus necessitating that those addressing them to interact within networks and policy arenas to discuss the problem and the solutions with other affected and interest groups (at different levels of governance). As such novel governance approaches that emphasise group decision-making, accommodate diverse views, and shared learning as opposed to hierarchical governance become relevant. Building on this foundation, the next two chapters (chapter 3 and chapter 4) track the governance of disaster risk reduction and climate change adaptation respectively. Whereas the two fields of practice both aim at reducing disaster risk, they are affiliated to different organisations and use different institutions, thus necessitating an analysis of their governance separately. As indicated in the introduction of this chapter, together with chapters 3, 4, and 5 of this study, this chapter addressed the first objective of the study. This chapter addressed this objective by delineating the concept of organisations and theoretical perspectives behind organisations. Moreover, the chapter provided a clear distinction

between organisations and institutions. The chapter also identifies the changing environment in which organisations operate to have an effect on how organisations must be arranged.

CHAPTER 3

REDUCING DISASTER RISK: A FOCUS ON INSTITUTIONAL AND GOVERNANCE ARRANGEMENTS ACROSS SCALES

3.1 INTRODUCTION

The last section of the preceding chapter introduced the concept of governance, highlighting its importance in addressing complex issues. The discussion of governance was made necessary because the diversity, dynamism and complexity of social systems are easily confronted through governance (Forino *et al.*, 2015). Governance structures hold authoritative positions and are authorised to make decisions on policies, regulations and laws (Heijmans, 2013) on behalf of society. This chapter considers the importance of institutional and governance mechanisms in addressing disaster risk and therefore aims to illuminate ways in which institutions, organisations and governance structures should be framed to reduce disaster risk. The central argument here is that nations are failing to reduce disaster risk substantially owing to institutional and governance factors. According to UNISDR (2013) institutional and governance mechanisms contribute a great deal to the continual increase in disaster risk in many parts of the world. This is so because the lack of appropriate institutional and governance frameworks to deal with risk leaves vulnerable communities unprepared (Seng, 2013). Moreover, Williams (2011) argues that shortcomings in disaster risk reduction is a consequence of weak governance systems that combine political and social factors.

As a result of different particularities of countries, the conceptualisation of institutions and governance for risk reduction in this chapter is very abstract and in general terms. The chapter is structured as follows: Having introduced the chapter in the first section, the second section presents governance of disaster risk across the different levels from global to local and between governmental, private sector and non-governmental sectors. The section opens by tracking the different disaster risk reduction paradigms and the impacts of disasters in order to provide the basis and justification for the consideration of governance for risk reduction. In this section the concept of multi-level governance is introduced to analyse the location of actors for disaster risk reduction and their respective roles. Section three of the chapter focuses attention on the concepts of the quality of institutions and good governance and their influence on the level of disaster risk and risk reduction initiatives. The section identifies politics within the concept of political economy to have a major influence in establishing institutions and facilitation of good governance. Furthermore, a framework depicting governance dimensions to aid disaster risk reduction is presented in section three. The chapter is concluded with a summary of the discussions in section four of the chapter.

3.2 THEORISING DISASTER RISK REDUCTION: A FOCUS ON DISASTER RISK GOVERNANCE ACROSS SCALES

The conceptualisation of disasters and ways to address them has taken different paths over the course of time. As Gregory *et al.* (2011) indicate, this has been and continues to be shaped by disaster paradigms characterised by constellation of values, assumptions, methods and exemplars. These paradigms have gone through three important phases: acts of God; acts of nature and acts of man (Furedi, 2007). A fourth phase, an extension of the structural paradigm has emerged over a decade or so ago and is continuing to develop. This paradigm is characterised by the dominance of the importance of institutional and governance dimensions in risk reduction. The emergence of the concept of resilience has given impetus to the importance of governance and institutions in the management of disaster risk. Manyena *et al.* (2013) indicate that a lack of resilience to disasters can be viewed as a consequence or manifestation of weak institutional and governance mechanisms. This is so because disaster risk reduction initiatives include all the actions that seek to make individuals, households, communities or societies resilient to disasters (Pelling & Wisner, 2009).

Whereas there is an encyclopaedia of techniques, frameworks and measures to reduce disaster risk (Pelling & Wisner, 2009), effectuating these from rhetoric to practice will require proper mechanisms for implementation. Drawing from Ahrens and Ruddolf (2006), it is thus argued here that operationalising these measures will require effective institutional and governance mechanisms. Ahrens and Ruddolf (2006) argue that substantial reduction of disaster risk is contingent on institutional and governance structures to implement measures to reduce disaster risk. Therefore, the ability of the institutional and governance mechanisms to facilitate the implementation of disaster risk reduction measures will contribute substantially to reduction of lives lost, number of people affected by disasters and reduce economic losses as a result of disasters.

The importance of institutional and governance issues in risk reduction has only gained momentum in the last five or so years in the academic arena, despite the UNISDR (2005) highlighting their importance a decade ago. Disaster governance is enshrined in principle 1 of the Hyogo Framework for Action (UNISDR, 2005). The importance of disaster risk governance to manage risk is further highlighted in principle 2 of the Sendai Framework of Action adopted in 2015. Amongst other things principle 2 states that “strengthening disaster risk governance for prevention, mitigation, preparedness, response, recovery, and rehabilitation is necessary and fosters collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to disaster risk reduction....” (UN, 2015). Risk governance (and in this regard disaster risk governance) represents both the institutional structure and the policy

process that guide and constrain collective activities of a group, society or international community to regulate, reduce or control disaster risk (Renn *et al.*, 2011).

UNISDR (2011a) observed that existing risk governance capacities and arrangements are failing to achieve their aim of regulating, reducing or controlling disaster risk. Such failures, coupled with increased vulnerability and exposure, point to the need to reflect on the range of available institutions, policy and administrative and regulatory mechanism for managing risks (Ahrens & Rudolf, 2006; Gall *et al.*, 2014). Laas (2010) argues that an institutional failure to address the underlying risk drivers may result in dramatic increase in disaster risk. Statistics on the impacts of disasters suggest that disasters are continuing to cause considerable damage with severe social and economic consequences. Over the past 20 years, disasters have resulted in 1.3 million fatalities with 4.4 billion people affected (Kellet & Mitchell, 2014). During the same period economic losses amounted to an estimated US\$2 trillion, 64% of which was in high-income countries (and which are mostly insured losses) (Kellet & Mitchell, 2014).

However, the full impacts of disasters are probably even higher than the published figures considering that the majority of small, localised and unreported disasters can account for as much as additional 50% losses (Kellet & Mitchell, 2014). Arguments have been presented that as many as 93% (Kellet & Mitchell, 2014) of lives lost and people affected by disasters occur in developing countries, suggesting a direct correlation. The basis for this argument is that developing countries have poor administrative, organisational, financial and political capacities to effectively prepare for and cope with disasters thus leaving their poor communities vulnerable (Ahrens & Rudolph, 2006; Ishiwatari, 2013). Moreover, it is assumed that countries with well-established institutions and governance mechanisms will be able to decrease numbers of people affected by disasters and reduce economic losses (Ishiwatari, 2013). Whereas the growth in disaster risk is mainly driven by the underlying development processes and the changing climate (Kellet & Mitchell, 2014), and the impacts of disasters are a result of the combination of society's vulnerability, exposure to the hazards and the lack of coping capacity (cite), institutional and governance mechanisms are equally important in driving the impacts of disasters (Seng, 2013; Williams, 2011).

As such, the impacts of disasters are partly contingent on weak legislative frameworks in setting standards and objectives as well as assigning mandates and responsibilities for risk reduction to different actors (UNDP, 2007a). In this sense addressing complex social problems such as disaster risk requires a diverse group of stakeholders at different scales to undertake many and varied disaster risk reduction functions (Kellet & Mitchell, 2014). Twigg (2004) is of the opinion that risk reduction initiatives must be a multi-disciplinary partnership involving a range of

stakeholders. The involvement of a range of stakeholders will require clear articulation and division of responsibilities across government, the private sector and civil society (Kellet & Mitchell, 2014). These efforts must be supported by bilateral, regional and international cooperation and partnerships (Kellet & Mitchell, 2014). Thus, a country's complete governance structure should consist of institutional arrangements and the political processes of formulating and implementing policies, applying appropriate instruments, thereby relying on coordination of diverse actors from government, private sector, civil society and external actors such as regional and international bodies (Ahrens *et al.*, 2011). With the justification on the importance of institutions and governance in risk reduction provided, the next section focuses on the concept of multi-level governance for disaster risk reduction.

3.2.1 Multi-level governance for effective disaster risk reduction

The preceding section made a call for the consideration of governance in addressing risk emanating from disasters. Governance is about power, relationships, and accountability: who has influence, who decides, and how decision-makers are held accountable (Hodgson, 2006). Governance is influenced by the multiple and contextual actions, norms and behaviour of groups or individuals, which simultaneously operates following formal and informal pathways (Forino *et al.*, 2015). In the same vein, governance occurs through interactions among structures, processes, role-players and traditions that determine how power is exercised, how decisions are taken, and how citizens or other stakeholders have their say (or not). The provision of risk reduction in terms of goods and services is widely recognised as a multi-level governance challenge because the impacts and respective measures cut across government levels, sectors and societal domains. The concept of multi-level governance (also see chapter 4 for further clarification of the concept) extends its focus at multiple level interactions specifically at jurisdictional and spatial scales where government tasks are allocated to different levels with the involvement of civil society and/or private actors, who needs to coordinate their actions (Tai, 2015). In this sense, multi-level is used to denote the presence of more than one level (Cash, 2006). For risk reduction, a focus on governance and particularly multi-level governance is important because disasters and disaster risk present collective action problems whereby the delivery of disaster risk reduction measures and initiatives requires contributions from multiple actors at different levels (Wilkinson, 2013).

Collective action to reduce disaster risk differs substantially from interventions in sectoral issues such as health and education (Wilkinson, 2013). This is so because events that produce disaster risk are multi-dimensional and dynamic as well as spatially and temporally contingent (Wilkinson, 2013). Therefore, as decisions linked to protection measures and natural hazard mitigation strategies take place in complex environments, such problems cannot be addressed

through linear policy-making nor fit into hierarchical decision-making (Raschky, 2008:629). As such, addressing disasters risk requires coordination at local, regional, national and global levels (Pelling, 2003; UN 2015). Wilkinson (2015) concurs and indicates that effective risk reduction depends on the cooperation of international (global and regional), national and local institutions across temporal, jurisdictional and geographical scales. Using a multi-level risk governance framework draws attention away from an understanding of the state as a single actor to better characterise the relationship between different levels of governance and between different types of actors within each of these levels (Corfee-Morlot *et al.*, 2011).

Moreover, multi-level distributed governance involves a greater attention to linkages both horizontal and vertical (Armitage, 2008:11; Betsil & Bulkeley, 2004). The importance of a multi-level framework lies in the fact that decision-making processes from different levels influence one another and institutions and knowledge produced at one level influences processes at another level (Wilkinson, 2015). In this sense partnerships to address disaster risk should be both vertical between international, national and local role players and horizontal between government, private sector and civil society organisation (Twigg, 2004:61). As Pelling *et al.* (2004) put it, the reduction of disaster risk will require institutional and governance arrangements that link public, private and civil society sectors and building vertical ties between global, national, district and local scale actors. The following sections clearly demarcate the different levels and respective roles and responsibilities of different actors for effective disaster risk reduction.

3.2.1.1 Governance of disaster risk reduction on an international scale

Statistics reflecting the number of people affected by disasters in terms of lives lost, livelihoods destroyed and economic losses incurred should serve as key motivators for national as well as global action on disaster risk reduction (Mitchell *et al.*, 2014). With the highest numbers of lives lost through disasters during the 1980s to the 1990s, the tone for reducing disaster risk at international level was set in 1989 with the adoption of declaration 44/236 by the United Nations (SELA, 2011). The declaration establishes disaster risk reduction as a global goal that requires international coordination so as to reduce loss of lives, damage to property and economic and social problems caused by disasters (UN, 1989). This led to the declaration of the International Decade for Natural Disaster Reduction, 1990–1999 by the UN General Assembly, in which the international community would pay special attention to natural disasters reduction (UN, 1989). Subsequently, the International Strategy for Disaster Risk Reduction was established by the UN to coordinate and support the reduction of disaster risk. Thus at international level, the United Nations is playing a leading role in placing disaster risk reduction on the global arena through agencies and programmes such as ISDR.

Such organisations and related frameworks are seen as new forms of international governance for dealing with typical transnational problems (Van Kersbergen & Van Waarden, 2004). The United Nations International Strategy for Disaster Risk Reduction (UNISDR) in conjunction with 169 countries adopted, in 2005, the Hyogo Frame of Action (HFA) 2005–2015, which sought to respond to the need for a comprehensive, integrated, and multi-disciplinary approach to identifying and implementing disaster risk reduction measures (UNISDR, 2013). Drawing from the HFA it is assumed that strong disaster risk institutions, mechanisms, and capacities at all levels can systematically contribute to building resilience to hazards (UNISDR, 2005). Thus the Hyogo Frame of Action (HFA) 2005–2015 and the subsequent Sendai Framework for Disaster Risk Reduction 2015-2030 are conceived to give impetus to the global work on disaster risk reduction. Priority 2 of the Sendai Framework for disaster risk reduction 2015–2030 emphasises the need for the strengthening of disaster risk governance to manage disaster risk (UN, 2015).

Central to the principles entrenched in these frameworks is the establishment of global, regional national and local platforms for risk reduction. These platforms bring together stakeholders both governmental and non-governmental involved in disaster risk reduction to share knowledge, experiences and expertise (Jones *et al.*, 2014). This is so because effective and meaningful global partnership and further strengthening of international cooperation are essential for effective disaster risk management (UN, 2015). Mitchell *et al.* (2014) argue that it is vital to establish targets at the global level, which must be registered within an international reporting framework in order to guide progress at national level supported by national differentiation and agreed parameters for establishing national commitments. Whereas the HFA fell short of setting international target for risk reduction, Jones *et al.* (2014) observe that this disaster management framework and related strategies such as the Yokohama Strategy played and continue to play an important role in advancing the agenda for disaster risk reduction.

However, the subsequent Sendai Framework for Disaster Risk Reduction 2015–2030 has set seven targets that will be measured at global level. Contributions towards this will come from national target and indicators for the achievement of these targets and goals of the framework (UN, 2015). Of equal importance are the key activities listed under each of the four key priority areas of the Sendai Framework that must be taken into consideration and implemented by international, regional, national and local organisations and other relevant stakeholders. This includes fostering collaboration across global and regional mechanisms and institutions for the implementation and coherence of instrument and tools relevant to disaster risk reduction; promoting transboundary cooperation to enable policy and planning for the implementation of ecosystem based approaches in order to build resilience and reduce disaster risk; and guiding

actions at the regional level through agreed regional and sub-regional strategies and mechanisms for cooperation in terms of disaster risk reduction (UN, 2015).

Disasters are shared events as they cross-national boundaries and affect the whole region (Twigg, 2004: 76) (see chapter 6 on the conceptualisation of regions and regional integration). Therefore, regional efforts to improve capacity for reducing risk and managing disasters are of critical importance in a world characterised by rising numbers of disasters and changes in the quality of hazards linked to climate change (Petz, 2014). Regions serve as effective bridges between the international and national systems (Ferris & Petz, 2013). The regional capacity implies that disaster response will be faster and cheaper and more culturally acceptable (Petz, 2014). These regional and sub-regional institutional arrangements provide distinct advantages to motivate and sustain interest amongst countries that share a combination of cultural, historical, and geo-political affinities (UNISDR, 2004). As such institutionalised mechanisms provide and encourage dialogue around common problems and issues, provide opportunities for information exchange and training resources and greater coherence and opportunities to benefit from sharing resources (UNISDR, 2004).

Petz (2014) points out that regional mechanisms improve regional relationships and strengthen cooperation. According to Twigg (2004) regions provide a platform for national governments to collaborate with each other especially in sharing forecasting and warning data. Regional institutions contribute towards improving governance through defining and shaping common regional risk level management, and advocacy of regional initiatives at global forums (UNISDR, 2004). Most importantly they support the development of national capacities through training, programme support, technical assistance and resource mobilisation to maintain national level impetus in development and disaster risk reduction (UNISDR, 2004). Over and above this, regional platforms assist in addressing transboundary risks in areas where multiple countries are frequently affected by the same type of hazard.

As UNISDR (2004) indicates, regional platforms provide a framework for interaction of scientific and technical professionals with government and non-governmental structures. In most regions, disaster risk management platforms involve a wide array of actors ranging from national disaster management organisations and ministries, regional organisations, national and regional universities and civil society organisations, international organisations, UN agencies, regional and international banks, military forces and the private sector (Ferris & Petz, 2013). The regional roles these stakeholders play are highly useful in facilitating international and national level dialogue or negotiations as well as being instrumental in maintaining momentum throughout the region. Whereas international support and intervention constitute an important

aspect of governance for disaster risk reduction, the relationships between the international and regional mechanisms are dynamic (Ferris & Petz, 2013). This in turn complicates particular roles of regional organisation in the complex network of organisations.

Thus of key importance at international levels relating to governance and disaster risk reduction is the creation of an international economic and political environment for effective implementation of disaster risk reduction strategies (UNISDR, 2004). In this regard the UN through the ISDR mobilises the political will and resources to support and strengthen structures at national and regional levels. Thus as UN (2015) observes, international, regional, sub-regional and transboundary forms of cooperation are important in supporting the efforts of states, their national and local authorities as well as communities and business to reduce disaster risk. With the importance of risk reduction governance at international level established, the next section focuses on governance of disaster risk reduction at national level.

3.2.1.2 Governance of disaster risk reduction at National level

Whereas international organisations and frameworks are important in disaster risk reduction, the state still holds ultimate responsibility due to its considerable political power and legal mandates to protect its citizens (Jones *et al.*, 2014). Government has traditionally been seen as the locus of governing in terms of defining and orchestrating collective goals and actions within society. As such, the state is the main and most powerful actor in reducing the risk of disaster emanating from both climate change and other natural hazards, due to its coercive power and its capacities for institution building and enforcement (Ahrens *et al.*, 2011). States have the moral and legal duty to protect their citizens thus making disaster risk reduction a government responsibility albeit the involvement of private sector and civil society organisations (Kellet & Mitchell, 2014; Wilkinson, 2013) (see sections 3.2.1.4 and 3.2.1.5 below on the roles of private sector and civil society organisation in disaster risk reduction). Kellet and Mitchell (2014) further state that states have a primary responsibility for taking effective measures to reduce disaster risk including protection of people, infrastructure and other natural assets from impacts of disasters.

One of the main duties of government at national level is to create an enabling environment by developing and implementing disaster risk reduction legislation, policies and regulations (Hill, 2013). Moreover, governments have a duty to directly provide disaster risk reduction goods and services such as early warning systems, as regulators of private sector activity and as promoters of collective action and coordinators of multi-stakeholder activity (Kellet & Mitchell, 2014). Over and above this, risk reduction must be built into national development strategies, programmes and projects to protect these developments and to make certain that new

developments do not exacerbate disaster risk (Ishiwatari, 2013). Particularly in developing countries, disaster risk reduction must be centrally placed within the structure of government in order to mainstream risk reduction into development policies and operations. Ishiwatari (2013) advocates for the creation of focal point agencies at national level to play a leading role to promote disaster risk reduction. The agency should have the authority to formulate the vision, develop national policies, allocate budgets for government organisations demand compliance and define actions for government organisations (Ishiwatari, 2013).

According to UNISDR (2011a), in central government, disaster risk reduction must be anchored in a ministry or office with adequate political authority to ensure policy coherence across development sectors. However, a state is not a monolithic entity (Ahrens *et al.*, 2011; Twigg, 2004) as government is divided by functions, hierarchy and politics, all of which have an effect on sustained risk reduction initiatives (Twigg, (2004). Ahrens *et al.* (2011) point out that government is a complex multi-faceted organisation (see section 2.5.3), the internal structure of which represents a complicated nexus of institutions. These institutions provide incentives or disincentives for political decision makers to formulate and implement public policy (Ahrens *et al.*, 2011). In this regard substantial reduction in loss of life, infrastructure and economic loss is contingent on the adoption and implementation of disaster risk reduction laws, regulations and policies at different levels (Williams, 2011). Manyena *et al.* (2013) are of the opinion that governments should develop policies, legislative and institutional frameworks for disaster risk reduction that put people at the centre in order to increase their capacity to manage risk.

In most countries, governments have developed national management systems, frameworks, policies and specialised organisations to protect their citizens from harm caused by hazards (Wilkinson, 2012). Unfortunately, as Manyena *et al.* (2013) observe in their study, most of these systems, frameworks, legislation and policies are still response and emergency based. In the disaster risk reduction era, governments must make risk reduction a priority in their policies, develop legislation on disaster risk reduction, promote risk reduction as a responsibility for many different sectors, allocate human and financial resources for work related to disaster risk reduction, encourage the use of disaster risk reduction principles and practices at all levels and facilitate participation by civil society and private sector in work related to disaster risk reduction (La Trobe & Faleiro, 2007).

Wilkinson (2012) identifies five critical roles of government in disaster risk reduction: government as a provider of goods and services for disaster risk reduction such as early warning systems; government as risk avoiders where government must refrain from actions that generate risk. In this regard the infrastructure that government provides must minimise

exposure and vulnerability to hazards. Government must also regulate the private sector activities for example by providing building standards and codes. Government must also promote collective action thereby facilitating stakeholder engagements. Lastly, government must coordinate and provide leadership in multi-stakeholder activity.

The Sendai Framework for Disaster Risk Reduction 2015–2030, identifies eleven major activities that must be carried out at national level of governments. These, amongst others, include mainstreaming and integrating disaster risk reduction within and across all sectors; adopting and implementing national and local disaster risk reduction strategies and plans across different time scales with targets, indicators and time frames; carrying out assessments of technical, financial and administrative disaster risk management capacities; and assigning appropriate, clear roles and tasks to community representatives within disaster risk management institutions and processes and decision making (UN, 2015). Of particular importance, national governments are expected to establish and strengthen government coordination forums such as national and local platforms for disaster risk reduction (Ishiwatari, 2013; UN, 2015). These coordinating mechanisms are needed to properly design and implement risk reduction strategies. Therefore, national institutions and legislative framework must support the creation and strengthening national integrated disaster risk reduction mechanisms such as multi-stakeholder national platforms (Kellet & Mitchell, 2014).

UNISDR, (2007) defines national platforms as nationally owned and led fora or committees of multiple stakeholders. According to La Trobe and Faleiro (2007), national platforms for disaster risk reduction encourage dialogue and the development of common interest and facilitate coordination across the sectors. At national level, a disaster risk reduction platform should be utilised as a leading structure to entrench regional cooperation and provide the nations' capacity for reducing disaster risk (Cheng Seng, 2013). In this regard the important role of government is to coordinate the various aspects of disaster risk reduction and to ensure concerted action between participants, across sectors and geographical areas (Williams, 2011). However, UNISDR (2006) indicates that disaster risk reduction efforts using top-down government and institutional interventions at national level alone are often inadequate as they tend to have a lower understanding of community dynamics, perceptions and needs and thus ignore the potential of local knowledge and capacities. As the UN (2015) states, disaster risk reduction requires responsibility to be shared by central government and relevant national authorities, sector and stakeholders as appropriate to their national circumstances and system of governance.

As such, national policy responsibilities for disaster risk reduction must be complemented by adequately decentralised and layered risk management function, capacities and corresponding budgets (UNISDR, 2011a). This decentralisation of national platforms to lower levels of governance is important as it would enhance community participation, transparency, accountability and predictability (Argawal & Ribot, 1999), which determines the quality of governance as indicated in section 3.3.2 of this chapter. It is therefore important that, national government should strengthen linkages with local government to guide and support local government in preparedness and response to disasters (Ishiwatari, 2013). With the need for the involvement of local level structures in disaster risk reduction identified, the next sub-section focuses on governance of disaster risk reduction at local level.

3.2.1.3 Governance of disaster risk reduction at sub-national level

The previous section highlighted the importance and roles of disaster risk reduction at national level. However, decentralised systems in which local actors have roles to play in reducing disaster risk are pivotal. Through decentralisation most responsibilities for disaster risk reduction in many countries are transferred to local government (Kellet & Mitchell, 2014). Drawing from Scott and Tarazona (2011:12) decentralisation is conceptualised here to refer to the restructuring of authority so that there is a system of co-responsibility between institutions of governance at the central, regional and lower levels according to the principle of subsidiarity and devolution. The principle of subsidiarity holds the idea that responsibilities and resources must be channelled down to the lowest level necessary to effectively perform the task at hand (Scott & Tarazona, 2011:12). Particularly for risk reduction this is so because of the realisation that most disasters are localised and therefore solutions to these disasters are to be found at local level (Kellet & Mitchell, 2014). As Scott and Tarazona (2011) posit, disaster risk reduction has always been a local issue, with communities adapting programmes to reduce their disaster risk for hundreds of years.

Moreover, disaster risks have local and specific characteristics that must be understood for the determination of measures to reduce disaster risk (UN, 2015) in which case local government is in a better position than national government to develop and experiment with various new tools and techniques applying then to unique settings and policy priorities (UNISDR, ITC AND UNDP, 2010). According to Hoffmann and Oliver-Smith (2001) disasters, no matter how large, are experienced first at local level. Therefore, the impacts of disasters are felt first at local level thus putting the local level of government in the frontline to respond when a disaster strikes (Ishiwatari, 2013; Kellet & Mitchell, 2014). UNISDR (2013) shares the same sentiments and states that local governments, mayors and community organisations are in the frontline and centre of disasters and knowledge of resilience building. Local people and organisations are the

main actors in disaster risk reduction and disaster response (UNISDR, 2006). Thus, putting more emphasis on their views and capabilities is critical for the success of reducing disaster risk and building resilience. DFID (2005) recommends that disaster risk reduction should be incorporated into development policies, strategies and investments at local level in order to strengthen the ability of communities to better respond and cope with disaster events.

Local government's role in disaster risk reduction is essential in building resilient communities and nations (Bang, 2013). Bang (2013) further argues that the conceptualisation of the term local government differs considerably in different countries in terms of duties, structure, composition, size, level and functional responsibility between central and sub-national government. These responsibilities can be along fiscal, administrative and political lines (Col, 2007) and the size and levels of community may be divided into different categories such as region, provinces, cities, municipalities and towns (The Incheon Declaration, 2009; Whalen, 1970). Despite the different conceptualisation of local government, for disaster risk reduction, local government has a central role in coordinating and sustaining multi-level, multi-stakeholder platforms to promote disaster risk reduction in the region or for a specific hazard (York, 2007). They have the crucial roles of engaging local communities and citizens in risk reduction activities and to link their concerns with government priorities. Active commitment and leadership of local government are essential for implementing any local government risk reduction measures (UNISDR, ITC AND UNDP, 2010). This will assist in keeping political momentum and support from external stakeholders.

Local government has a pivotal role to play in community education and training on disaster risk reduction. Engaging citizens through advocacy and public awareness is critical in stimulating social demand and signalling priorities to elected officials (UNISDR, 2013). Whereas local government is expected to play a leading role in risk reduction, they face considerable challenges ranging from inadequate human, material to financial resources (Bang, 2013). It has been indicated for instance by UNISDR (2011a) that effective local action requires these resources. In addition to addressing this resource challenges, the focus on local governance issues should be directed at addressing such issues as lack of interest and capacities, lack of understanding of local risks and vulnerabilities. They must also be assisted to invest to make critical infrastructure resilient to disasters and with long-term political commitment to successfully implement disaster risk reduction programmes over time despite the fact that political terms are short to medium terms (UNISDR, ITC AND UNDP, 2010). Therefore, disaster risk management at local level should be viewed as a key element of any viable national disaster risk reduction strategy and must be built on community networks and effective municipal and local government institutions (UNISDR, 2004).

As Ahrens and Rudolf (2006) indicate, empowering local government through decentralisation of disaster risk reduction has been shown to be beneficial to local communities including marginalised groups and to provide more autonomy to local authorities to ensure effective implementation of disaster risk reduction measures. Although the local level of government must retain its autonomy from central government in order to define their own priorities and implement disaster risk reduction measures without much interference (Wilkinson, 2015), actions to reduce disaster risk on this scale must be supported by the enabling environment created at national level (Van Niekerk, 2014). From an institutional perspective, understanding and acting to manage risk are ultimately embedded in a multi-governance context where decisions at local level are enabled or constrained by policy decisions and institutions at regional and national levels (Betsil & Bulkeley, 2004). The national policy framework that a particular country adopts constitutes a fundamental condition determining whether local government will fail or succeed in risk reduction (Bolin *et al.*, 2003).

Local actors are essential elements within their respective national systems as they contribute to risk reduction and managing disaster aftermaths in their own territories (Bolin *et al.*, 2003). They depend on the existence of appropriate national, political, legal, budgetary and institutional frameworks in decentralised settings. In addition, national governments must provide financial and technical support in promoting disaster risk reduction at local level (Ishiwatari 2013). Any study on local governance must consider the national context in its relationship to local context within an environment of decentralised functions and authority. As indicated earlier in this section disaster risk is always experienced locally, making good local governance of disaster risk reduction key to strong overall governance (Scott & Tarazona 2011:12). The study by Bolin *et al.* (2003) provided evidence that local risk management is more successful in countries where each sector, public and private entities and civil society are responsible for the risks they generate. As Watson *et al.* (2015) indicate, a strong disaster risk reduction framework sets the right policy and regulatory regimes to ensure that risk is reduced both in public and private investments.

Corfee-Morlot *et al.* (2011) point out that the authority of government on issues of public concern is considerably weaker in modern days than in the past, giving rise to the influence of non-state actors and institutions. As such the scale has tilted towards balancing the interest of public, private and civil society to create legitimate, public order and generates policy coherence for equitable progress (Dahal, 2005). As Walker *et al.* (2013: 2208) indicate, risks are always managed within the broader context of the relationship between government, citizens, civil society and private business, the relationship that evolves over time with changing political and economic conditions. With the roles of government at different levels demarcated in the

preceding sections, the next two subsections focus on the importance and the role of private sector organisations and non-governmental organisations in disaster risk reduction respectively.

3.2.2 The role of private sector in disaster risk reduction

The report by UNISDR and PriceWaterhouseCoopers (PWC) (2013) notes that the focus on disaster risk reduction initiatives at country and local level has been on government, international and non-governmental organisations without meaningful private sector involvement. As a result, opportunities for the private and public sectors to collaborate on risk reduction and resilience remains untapped. The private sector has an important role to play in disaster risk reduction (Hori, 2015) as it has the ability to create risk, reduce risk and transfer risk through various mechanisms (Van Niekerk *et al.*, 2015). This important role to be played by the private sector has been acknowledged in Priority Action 4 of the HFA, which advocates for the promotion and establishment of public private partnerships in order to better engage the private sector in disaster risk reduction activities. It encourages the private sector to foster a culture of disaster preparedness and therefore the need to put a greater emphasis on and allocating resources to disaster preparedness activities such as risk assessments and early warning systems (UNISDR, 2008).

According to Izumi and Shaw (2015), the importance of the private sector in risk reduction has been recognised and acknowledged for several years now. However, it is noted that the private sector has only been involved in the response and relief phases of disaster risk management (Izumi & Shaw, 2015; Lal, *et al.*, 2012; Roeth, 2009). This is because their roles in response and relief are much clearer with the business case for them to be involved in risk reduction still unclear thus hampering their engagement (Lal *et al.*, 2012). However, efforts to encourage private sector involvement in disaster risk reduction have been stepped up only recently. For instance, UNISDR in 2011 created the Disaster Risk Reduction Private Sector Partnership Working Group in order to involve the private sector in disaster risk reduction. The main purpose of this partnership is to mobilise resources, through core business arrangements for joint actions, sustainability, corporate social responsibility, philanthropy and knowledge transfer (Izumi & Shaw, 2015).

Similarly, the Global Assessment Report on disaster risk reduction for 2013 (UNISDR, 2013) focuses on business investments in disaster risk reduction. All these efforts to bring the private sector on board in addressing disaster risk are happening against the backdrop of increased economic damage from disasters. These disasters destroy factories, offices and other facilities and resources important for business operations (Izumi & Shaw, 2015). According to Watson *et al.* (2015), private sector involvement, whether from small-holder farmers or multinationals face

damage to infrastructure and production interruptions as a result of disasters. According to the UNISDR and PWC (2013), mounting losses from catastrophic events are an increasing burden for large-scale multinationals and the international dependencies inherent in global markets and supply chain means that businesses of all sizes from local to global have to deal with systematic and related risks more frequently.

Therefore, the impacts of disasters make a business case for the private sector to get involved in disaster risk reduction. Similarly, private sector actors are involved in reducing disaster risk motivated by cost saving, reputational and brand value and comparative advantage or new business opportunities (Watson *et al.*, 2015). Izumi and Shaw (2015) are of the opinion that the primary incentive for private sector involvement in disaster risk reduction is to ensure business continuity during and after disasters and preparations for a wide range of disruptions before they happen. In addition to addressing the economic impacts of disasters, business is expected to be responsible for helping reduce disaster risk, which they may have contributed and for improving business and community resilience (Izumi & Shaw, 2015). According to Roeth (2009), the intentions of business involvement in disaster risk reduction should not only be to minimise disaster risk to business but also to reduce the vulnerabilities of communities in which they operate or where their goods and services are consumed.

This is so because of the realisation that in addition to damaged communication and transport infrastructure and the disturbance in supply chain, the absence of workers from work after disasters significantly affects operations of the private sector entities and thus their profitability (Roeth, 2009). UNISDR and PWC (2013) indicate that the risk posed by disasters goes beyond the boundaries of a company's operations, extending along the entire value chain, resulting in supply disruptions, network failure, workforce dislocation or the collapse of the entire distribution system. Therefore, for business continuity planning to be successful, it must consider the vulnerability of infrastructure, utility services, employees and customers (Roeth, 2009). This necessitates mutual interest for the public and private sectors to work together, as the private sector relies on the resilience of public infrastructure and services to conduct their businesses, and governments and communities depend on resilient business practices for a stable and sustainable economy (UNISDR, 2015a). Moreover, businesses must take up insurance to transfer the risk of facing uncertain loss (Surminski, 2013). As such public-private partnerships must encourage investment in protective measures prior to a disaster, deal with affordability problems and provide coverage for catastrophic risks (Kunreither, 2015).

Margareta Wahlström (2015) (the former Head of UNISDR) postulates that the private sector is the perfect advocate for resilient thinking because of its direct relationship with consumers,

customers and suppliers and can steer public demand towards risk-sensitive products and services. To make their support for safer communities tangible, the private sector must invest in setting standards and quality assurance for safer structures in urban areas, provide expertise to help with administration, internal business processes and external disaster risk assessment and act as a wellspring for socially responsible volunteers and funding. As most companies are not sure of their role in disaster risk reduction (Hori, 2015), an easy entry would be in creating disaster risk awareness (Roeth, 2009; UNISDR, 2008; Van Niekerk *et al.*, 2015), thus enhancing response readiness by educating and communications campaigns for their employees and the communities where they operate (Roeth, 2009). Watson *et al.* (2015) suggest that the private sector must invest in risk analysis and assessments, development of early warning system, cost benefit analysis and support to national risk reduction initiatives. Lal *et al.* (2012) identified three avenues for private sector engagement in disaster risk management: corporate social responsibility, public private partnerships and business model approaches.

Moreover, the major contributions of the private sector in disaster risk management must be in the form of resources, expertise and capacities (Izumi & Shaw, 2015). According to UNISDR (2008), the private sector can play an important role in disaster prevention, mitigation and preparedness by investing more on disaster risk reduction both for business continuity, and the local communities where their workforce resides. Twigg (2001) indicates that business has an important role to play in contingency planning and continuity initiatives and insurance and financial mechanisms in disaster preparedness. Van Niekerk *et al.* (2015) indicate that “a private sector committed to disaster risk reduction can steer public demands towards materials, systems and technological solutions to build and run resilient communities”.

Whereas the business model approaches are still largely unexplored in the area of disaster risk reduction, they mainly pursue the integration and alignment of disaster risk reduction with operational and strategic goals of the private entity (Roeth, 2009). Corporate social investment is a vehicle for voluntary advocacy and awareness raising as well as funding support and the contribution of volunteers and expertise to implement risk management measure (Lal *et al.*, 2012). Through corporate social responsibility initiatives, companies should seize upon disaster risk reduction as an increasingly important development and humanitarian issue (UNISDR, 2008). This is so because corporate social responsibility provides a good basis for which to encourage business to participate in disaster risk reduction (La Trobe & Faleiro, 2007).

The Global Compact of the UN launched in the year 2000 suggests that business must integrate disaster prevention into their decision-making throughout the value chain. Hori (2015),

in his study, concluded that the easiest path to enhance private sector engagement in disaster risk reduction would be through the incorporation of disaster risk reduction into their daily production activities. In a similar line of thinking, Van Niekerk *et al.* (2015) recommend that companies should start moving towards embracing the creation of disaster risk management departments in their entities.

Of particular importance for private sector engagement in disaster risk reduction is that success in all the activities that the private sector can be involved in will be achieved through effective collaboration and partnerships with government and other stakeholders such as civil society. In this regard UNISDR (2008) summarised three main activities to be of importance for the public private partnerships depending on the reach of the company and how the leadership perceives the risk from disasters. Firstly, all the stakeholders should jointly engage in advocacy and raising awareness in risk reduction measures. Secondly, private sector must demonstrate its commitment to areas such as risk transfer, corporate social responsibility in reducing the vulnerabilities of communities, better risk assessment and the overall reduction of the potential impacts of disasters on their own business. Lastly, business must provide financial support, contribute volunteers or expertise or make in-kind contributions such as social investments and philanthropy.

According to Izumi and Shaw (2015) the private sector can further contribute by developing innovative products that can contribute to disaster risk reduction and development. Lal *et al.* (2012) indicate that public private partnerships are important in enhancing the provision of public goods for disaster risk reduction in joint undertakings between public and private sector players. UNISDR (2015a) states that a strong public private partnership enhances disaster risk reduction and resilience at local and national level. Johnson and Abe (2015) provided a number of case studies on public private partnership that serves to demonstrate that working collaboratively is essential, possible and collectively beneficial. As Roeth (2009) indicates, this collaboration with government, international and civil society organisation provides the opportunity for business to find innovative ways in which their long-term interest will be served while fostering resilient communities and economies.

This makes the relationship between the public and private sectors to be of a mutual beneficial nature. In this regard the private sector relies on the public sector regulatory frameworks and the resilience of public infrastructure and services whereas government and communities depends on resilient business practices for stable and sustainable economy (UNISDR, 2015a). Furthermore, government can play a role in providing information and incentives that can help business focus on critical elements of disaster risk management and resilience-building based

on local knowledge, conditions and behaviours (Johnson & Abe, 2015). As a result, constructive engagements between government and the private sector with the view of crafting policy for active involvement of the private sector in disaster risk reduction interventions should also be pursued (Van Niekerk *et al.*, 2015:100).

As a starting point where business is not involved in disaster risk reduction, government must invite private companies to become members of national platforms (Izumi & Shaw, 2015). This should take advantage of the fact that in most countries, disaster risk reduction platforms are still in the initial stages of establishment. Over and above the important role played by the private sector in disaster risk reduction, effective risk management requires action from a variety of actors at local, national, regional and global scales as well as civic organisations (Corfee-Morlot *et al.*, 2011). The next section focusses the discussion on the roles of civic society organisations in disaster risk reduction.

3.2.3 Civil society engagement in disaster risk reduction

Civil society organisations are recognised as a third sector, which has a positive influence on the state and the market (Ghaus-Pasha, 2004). Ghaus-Pasha (2004) further indicates that civil society is a broader concept encompassing all organisations and associations that exist outside the state and the market. Membership of civil society is diverse, ranging from individuals to religious and academic institutions to issue focused groups such as not-for-profit or non-governmental organisation (Gemmill & Bamidele-Izu, 2002). According to Ghaus-Pasha (2004), the sector embraces entities as diverse as village associations, grassroots development organisations, self-help cooperatives, religious institutions, schools, hospitals and human rights organisations. Drawing from the conceptualisation of Lassa *et al.* (2013), the term *civil society* is used in this study to denote both the general society at large and the civil society organisations such as Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs).

NGOs have been increasingly advocated as a means through which the gulf between citizens' needs and existing services by government can be bridged (Banks & Hulme, 2010). Similarly, Behera (2002) indicates that the growing importance of NGOs can be attributed to the realisation that neither the state nor the market can fully address the enormous problems facing the world today. Therefore, NGOs supplement government initiatives by acting as conduits between development programmes and beneficiaries, informing and sensitising people about their rights and entitlements (Behera, 2002). On the other hand, because CBOs are rooted in the society and the culture of the area, they enable people to express their real needs and priorities allowing problems to be correctly defined and corrective measures to be designed and

implemented (Shaw & Goda, 2004). Acknowledging that NGOs are the most formalised and prominent within the civil society movement, the discussion here will focus on the importance and the role of civil society organisations in general.

Civil society organisations are important in terms of responding to the various needs of affected people at the grass roots level (Ishiwatari, 2013; Scott & Tarazona, 2011). The main benefit of civil society organisations operating at grassroots level is that they are able to partner with communities and other community organisations (UNISDR, 2006). Their ability to mobilise people and understanding of people's concerns enables civil society organisations to better articulate problems encountered by people (Behera, 2002). As Maskrey (1989) argues, top-down programmes in which communities are not involved tend not to reach those who are worst affected by disasters, which might render them even more vulnerable. Therefore, by virtue of operating at grassroots level, civil society organisations respond better to people's priorities and to build on local capacity in implementing disaster-risk reduction measures. Thus civil society organisations and community-based organisations are able to develop initiatives to respond to disasters, and the reduction of disaster risk thereof (Lal *et al.*, 2012).

As Shaw and Goda (2004) note, civil society organisations together with formal and non-formal volunteers have recently started to take centre stage by playing roles in pre-, during and post disaster scenarios. Unlike government organisations, civil society organisations are not characterised by bureaucratic structures and system and thus enjoy higher flexibility putting them in a better position to respond and adapt quickly and easily (UNISDR, 2006). Similarly, their organisational flexibility, informal working style and the close engagement with grassroots communities enable them to deliver services to people at lower cost (Behera, 2002). Where they have the ability and opportunity to voice and organise their positions, civil society organisations can reduce local risk while building political and economic imperatives for disaster risk reduction (UNISDR, 2011a). They can do so by building community capacity, knowledge transfer and public awareness in communities at risk (UNISDR, 2006).

Gemmill and Bamidele-Izu (2002) indicate that civil society should play a major role in five key areas: information collection and dissemination, policy development consultations, policy implementation, assessment and monitoring, and advocacy. Particularly on policy issues, civil society organisations are crucial in engaging in political debates in order to influence policy on behalf of the poorest members of the community (La Trobe & Faleiro, 2007) thus shaping practices on policy implementation and outcomes (Corfee-Morlot *et al.*, 2011). Ghaus-Pasha (2004) identified three main roles of civil society organisations in governance, participation in the design of strategies, as service providers through community organisations and national

NGOs and as watchdogs to ensure government fulfilment of its commitments. According to Corfee-Morlot *et al.* (2011), the watchdog role played by civil society organisations pertains to assessment of how well policies are performing with respect to stated goals.

A strong civil society can play a critical role in creating social demand for disaster risk reduction by ensuring political responsibility and accountability mainly at local level (UNISDR, 2010a). As Ghaus-Pasha (2004) indicates, civil society organisations further good governance by providing policy analysis and advocacy, regulating and monitoring state performance and the actions and behaviour of public officials, building social capital and enabling citizens to identify and articulate their values, beliefs, civic norms and democratic practices. They also mobilise particular constituencies particularly the vulnerable and marginalised to participate fully in public affairs and provide development work to improve the wellbeing of communities.

However, partnerships between government and civil society organisation are often characterised by mistrust (Barnes, 2006). As a result, civil society organisations mostly work independently of government, in parallel or competing with the public providers (Batley & Rose, 2011). However, in order to attain long-lasting outcomes, civil society organisations need to work in partnership and in collaboration with government and other role players. Particularly for disaster risk, collaboration between government, civil society and all affected stakeholders enable the combination of knowledge, technology, expertise, institutional capacities, management skills and practical skills for the successful implementation off disaster risk reduction strategies (Behera, 2002).

However, some authors (Barnes, 2006; Batley & Rose, 2011; Batley, 2011; WEF, 2013) have thrown a word of caution to civil society organisations intending to collaborate with government. For instance, Batley and Rose (2011) posited that in collaborating with government civil society organisations and particularly NGOs should be wary of the potential to lose their autonomy and capacity for independent public action. According to Barnes (2006), partnership with government may lead some civil society organisation to lose their critical edge and become more like outsourcing agencies to deliver government services. Similarly, WEF (2013), states that civil society organisations must strive to not give up their core mission, integrity and purposefulness in acting for the common good. As Batley (2011) argues, this is because where they enter into collaboration the very structure of the relationship establishes rules of the game that are likely to favour the influence of one side as opposed to being equitable.

It should, however, be noted that in recent years, the boundaries between the state and civil society have been blurred in most countries resulting in institutionalised access to the state by

civil society organisations and as a result they receive bulk of their funding from government (Barnes, 2006:13; WEF, 2013). However, OECD (2014) indicates that this flow of funding is not only from government to civil society organisation, they flow in several directions among foundations, civil society organisations, multilateral organisations and government. This has led to the breaking down the traditional barriers and silos such that business activity does not take place parallel to civil society engagements alongside separate government processes (WEF, 2013).

As the WEF (2013) notes, government, civil society organisations and business were acting within their own spheres with a limited degree of interaction to influence each other in the old paradigm. However, the new paradigm has witnessed more integration across the shared space, with new frameworks for collaboration, partnerships and innovation resulting from increased intersections (WEF, 2013). This has resulted in hybrid organisations where business engages in social issues and civil society as market actors. This is happening against the backdrop of the recognition that there is no single sector that can deal with the world's major societal challenges alone and therefore the identified roles must be carried out through engagement in partnership and collaborative frameworks with business, government and international organisations (WEF, 2013). This is so because each group of stakeholders has different but complementary roles to play.

The making and unmaking of disaster risk reduction are heavily dependent on institutional regimes or enforcement of existing formal and informal rules (Laas, 2010). These institutions are considered important as they play a critical role in creating, managing and distributing risk in a society (Lim, 2011:11). Therefore, without consideration of institutions, institutional quality and specific governance arrangements for disaster risk reduction at macro-, meso- and micro-scales, risk reduction efforts are bound to fail (Laas, 2010). The next section focuses on quality of institutions and the dimensions of governance as they are considered to have an influence on risk reduction.

3.3 QUALITY OF INSTITUTIONS, GOOD GOVERNANCE AND THEIR INFLUENCE ON LEVELS OF DISASTER RISK AND RISK REDUCTION INITIATIVES

The preceding section reflected on the need for multi-level and polycentric cooperation and coordination for effective management of disaster risk. However, Powel and Bromley (2013) indicate that it is the institutional forces that shape individual and group interest and desires thus framing the possibility for action and influencing whether behaviour results in persistence or change. Anderson (1995) draws attention to the fact that weak national and local institutions for addressing disaster risk are a major source of implementation deficit in reducing society's

vulnerability to natural hazards. Studies on disasters and disaster risk reduction have thus far focused on the types of measures and the appropriateness of these measures to manage disaster risk at the expense of institutional and governance arrangements governing these choices. Laas (2011), argues that there has been little effort in the literature to understand how institution and governance issue affect disaster risk and its impacts. Jones *et al.* (2014) are of the opinion that in the past, little attention has been given to the process of disaster risk reduction governance such as the formulation of policy and the role of different stakeholders. These institutional and governance factors that shape collective action are of critical importance in managing disaster risk.

Institutional configurations that vary across socio-political contexts shape various activities carried out to manage disaster risk at different scales of governance (Wilkinson, 2013). Institutional and governance mechanisms are important in that they assist in framing and conceptualising knowledge and provide a platform through which, interactions, responses and feedback occurs. Ahrens and Ruddolf (2006) interpret susceptibility to disasters as a consequence of institutional failure. This institutional failure together with collective action failures often result from the inability of public and private organisations to coordinate their efforts (Ahrens & Ruddolf, 2006). According to Jones *et al.* (2014), the shortcomings in disaster risk reduction are regarded as a consequence of weak governance and lack of political will. As indicated elsewhere in this study, Williams (2011) shares similar views and points out that shortcomings in disaster risk reduction are increasingly regarded as a consequence of weak governance that combines political and economic factors. With this background in mind, the next section presents the political economy of disaster risk reduction.

3.3.1 Political economy of disaster risk reduction

The framing of solutions to disasters has thus far been mainly technical and devoid of administrative and political issues (Lebel *et al.*, 2006). There is a tendency to treat disasters and disaster preparedness and response as essentially non-political in nature (Hannigan, 2012). However, sustaining effective disaster risk preparedness requires political commitment and durable institutional capacities (Seng, 2013). Whereas disasters are not driven by politics nor are they immune to politics, they occur in a political space (Cohen, 2008). Thus, Heijmans (2013:224) argues that disasters are events to which political systems must respond. Van Aalst *et al.* (2014) share similar views and indicate that the impetus for initiating disaster risk reduction programmes is within the political sphere. The UNDP (2012) states that there is currently an increasing recognition among development practitioners that no matter how ably formulated, technical solutions alone are not enough to achieve intended results. In this regard

political processes, institutions and power relations, play a pivotal role in the success or failure of development initiatives (UNDP, 2012).

Heijmans (2013) describes the political arena as the broader institutional context in which governance structures frame disaster risk solutions. In this sense, institutions capture and sustain political commitment to capitalise on and apply scientific knowledge, assess risk and manage investments in a system and to provide guidance and allocate resources (Seng, 2013). Furthermore, market failures, social protection and the coordination problems inherent in disaster risk reduction draw policy and political economy issues into disaster risk governance (Williams, 2011). Wilkinson, (2012) share similar views and argue that disaster risk reduction frameworks are more normative, emphasising particular approaches and measures, thus necessitating attention to the political economy perspectives of disasters and policy-making. It is therefore important and necessary to view disaster governance through the lens of political economy. However, Pelling and Dill (2006) posit that the relationship between political regime form and disaster risk is quite complex. As such, initiatives for disaster mitigation and preparedness demand a better understanding of how relationships between different actors are shaped in the political economy of a particular country (Ferris & Petz, 2013).

Political economy analysis focuses on the interactions of political and economic processes in a society (Williams, 2011). In this study, the concept of political economy is adopted as a sociological approach where the level of analysis is institutional (Weingast & Wihman, 2006). Political economy focuses on the institutions through which policies are developed and on the understanding of the links between politics and the economy with the focus on power relations, incentives and influences within formal and informal processes (Williams, 2011). Political and economic factors play a crucial role in explaining how policy decisions are generated through the political system and whether they will be adequately implemented (Williams, 2011). The political economy approach offers the potential to look beyond disaster risk reduction as a repertoire of potential *quasi*-technocratic adjustments and development, and instead as a more sophisticated theory of policy response to disasters (Tierney, 1989). Weingast and Wihman (2006:3) define political economy “as the methodology of economics applied to the analysis of political behaviour and institutions”. It is a tool to examine incentives, interest, institutions and the power relations facing key stakeholders (Williams, 2011).

The importance of political economy is that it is used to analyse how structural and behavioural factors influence the quality of service delivery (Wilkinson, 2013). Thus, when setting out to improve the effectiveness of a country's governance structure, particular attention needs to be paid to political and economic institutions as well as factors related to the capacity of relevant

individual actors and organisations (Ahrens & Rudolf, 2006). This capacity of relevant individuals and organisations comes into play when policies both at national and local level are to be implemented. Ahrens (2011) draws attention to the fact that political and administrative institutions of a governance structure are critical because they determine how different actors are involved in the political processes. Politics and economy in any particular location provides the contextual drivers for decisions (Corfee-Morlot *et al.*, 2011). In turn these drivers determine how particular communities of actors and sectors to be eventually engaged (Corfee-Morlot *et al.*, 2011). Despite the clearer need for disaster risk reduction programmes to deliver expected benefits they fail to do so due to a lack of political will, which is mainly reflected in the low prioritisation of resources for disaster risk reduction (Williams, 2011).

Political processes describe the games within rules and are the strategies used by individuals and/or groups to advance their interest in the framework of structures and institutions (Williams, 2011). Political interest has been indicated as depending on the strategies used by those who hold powers to win, use and remain in their positions and their calculation as to whether disaster risk reduction will contribute to these aims (Williams, 2011). Williams (2011) further indicates that there is evidence to show that political competition and the quality of a country's institutions play a key role in determining the effectiveness of disaster risk reduction. Politicians are reluctant to spend limited resources on public goods that do not have visible returns (van Aalst *et al.*, 2014). The study by Healy and Mahotra (2009) reveals that high levels of preventative measures do not shift perceptions of political responsibility like disaster relief does. In this sense politicians bolster their own positions by directing good disaster response padded with high levels of humanitarian funding (van Aalst *et al.*, 2014:10).

The main challenge is that disaster investments play out over a long term while political calculations are based on election cycles (van Aalst *et al.*, 2014; Williams, 2011), which are short term. Besides, the actual and potential for reducing disaster risk substantially depends on political leadership and the ability to implement and enforce policies and regulations (Ahrens & Rudolf, 2006). Rao (2013) argues for parliamentarians to facilitate and improvement in the governance of disaster risk reduction. The adoption of disaster risk reduction policies is an outcome of novelty of political processes involving the interactions of different stakeholders in the context of institutions and structural factors (Williams, 2011:30). Institutions, policies and laws are important because they regulate people's behaviour and create power relations (Heijmans 2013). Williams (2011) provides robust evidence that varied performance of different countries in implementing policies for disaster risk reduction is closely linked to political and institutional factors.

Lassa (2009) hypothesised that countries with strong and better institutions tend to have more resources, which translate into more productive and better disaster risk governance. Ultimately these countries tend to have better systems with more effective disaster mitigation, early warning, and better disaster preparedness and response. Having identified the importance of institutions in driving political processes and decision-making in a governance system, the next section focuses on the quality of institutions and dimensions of governance for effective disaster risk reduction.

3.3.2 Quality of institutions and the dimensions of good governance

The discussion in the previous section briefly touched on the importance and the role of politics in disaster risk reduction. However, as indicated the introduction of this chapter, failure to implement disaster risk reduction policies is partly blamed on institutional and governance factor (Williams, 2011). Therefore, identifying distinct characteristics that reflects the quality of a country's institutions is of importance for reducing the complexity of governance structures thus systematically finding basic governance dimensions (Ahrens & Rudolf, 2006; Ahrens, 2011). Lassa (2009) acknowledges it as an institutional vulnerability context and process where formal and informal institutions are either too weak to provide protection against disaster risk or they are ignorant of their duty to provide safety and human security. Governance relates to institutions associated with governability, and accounts for institutional variety as well as the importance for state capacity (Ahrens, 2011). Governance structures are based on countless formal and informal mechanisms that guide policy formulation and implementation (Ahrens, 2011:8).

As such, a country's governance structure should consist of institutional arrangements and the political processes of formulating and implementing policy goals, applying appropriate instruments thereby relying on coordination of diverse actors (Ahrens, 2011). Ahrens (2011) further argues that the quality of the country's governance structure is a key determinant of its ability to pursue its goals. It should be noted that the ways in which policies are formulated largely influence their quality, which may in turn have important consequences either positive or negative on disaster risk reduction (Ahrens & Rudolf, 2006). Lassa (2009) suggests that there is a strong association between overall selected governance and institutional quality indicators and disaster risk reduction policy. In a similar line of thinking, Ahrens (2011) indicates that the quality of institutions and their interplay as well as the interrelations between state and private actors would prove to be a determinant of risk reduction. Thus as Lassa (2011) indicates, greater institutional quality should equate to better governance of disaster risk, which will lead to higher levels of disaster resilience.

It is therefore important to build institutions with the aim of improving the quality of governance to reduce disaster risk (Ahrens & Rudolph, 2006). Ahrens and Rudolf (2006) further argue that the rules to enhance the quality of policy-making and implementation should show four main characteristics. The rules must be clearly defined and those involved must be confident that they will be properly enforced; political and economic actors must know and understand the rules so as to monitor their enforcement; the rules must be flexible to allow for institutional change if preferences, technological and environmental conditions or specific societal needs change over time. Lastly institutional safeguards must be in place to hinder powerful political and economic actors from arbitrarily circumventing or changing existing rules at the expense of the society (Ahrens & Rudolph, 2006). As a result, participation, consensus oriented, accountable, transparency, responsiveness, effective and efficient, equitable and inclusive, and rule of law have been identified as the main characteristics that determines the quality of policy implementation through governance structures (Ahrens & Rudolph, 2006; UNESCAP, 2009).

Ahrens (2011) reduced these characteristics into four major dimensions of governance: predictability, transparency, participation and accountability. As they are frequently considered part of good governance, these attributes determine the quality of institutions and governance systems (Lebel *et al.*, 2006). These dimensions, characteristics or fundamental principles can be used to characterise institutions, which guide strategic interaction for stakeholders. As Ahrens and Rudolf (2006) argue, the better these principles are realised in a country's governance structure, the better the government is prepared to ensure sound management of public resources and creating enabling environment. Particularly for risk reduction, UNDP (2004), argues that governance sometimes turns out to be simply the application of governance features. These dimensions of governance are legitimate factors that influence the making/unmaking as well as enforcement or lack thereof or action/inaction in reducing disaster risk (Lassa, 2009). The relationship between these dimensions is depicted in figure 3.1 below adapted from Ahrens *et al.* (2011).

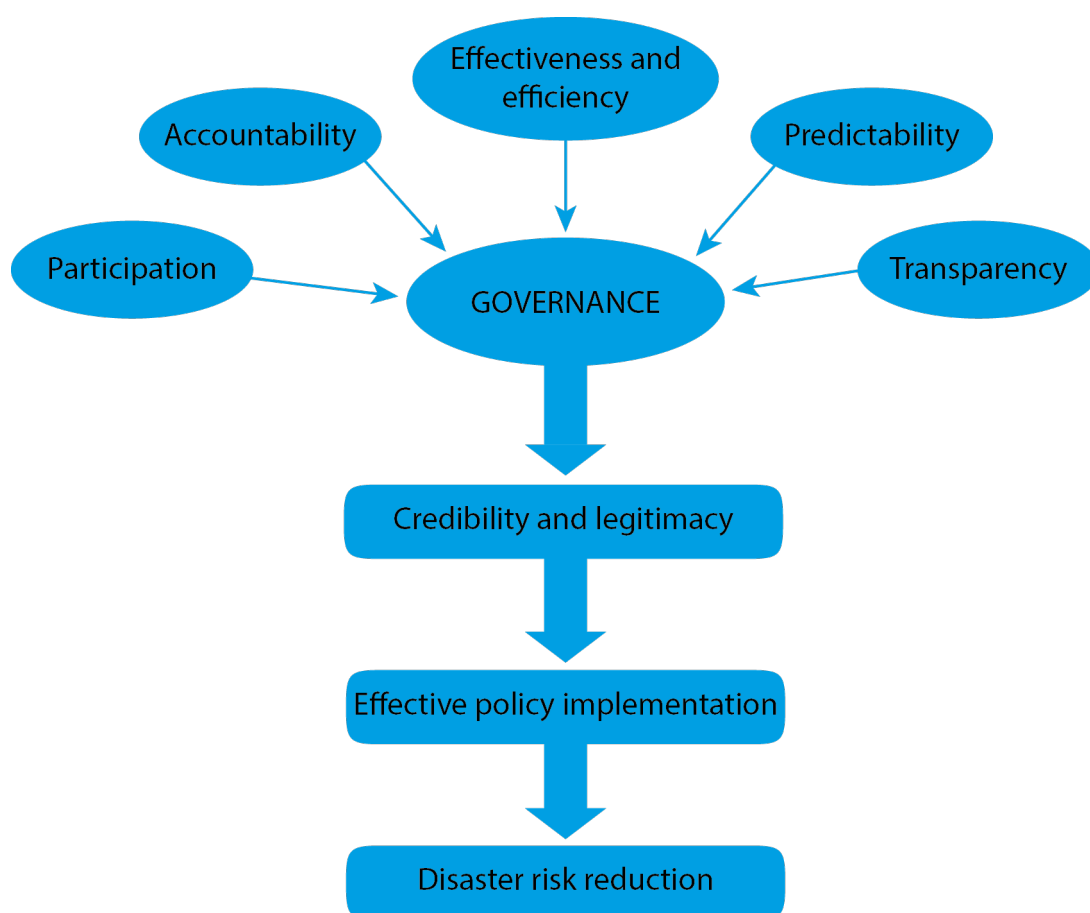


Figure. 3: Governance dimensions and disaster risk reduction (adapted from Ahrens *et al.*, 2011)

Disaster risk reduction governance structures must show comparatively high degrees of accountability, participation, transparency, predictability, and effective and efficiency resulting from mutually reinforcing institutional and organisational arrangements. These should be considered the key to unlock the door to risk reduction. Accountability means that the governance structures must account to those who will be affected by decisions or actions (UNESCAP, 2009). It has been indicated that countries with democracies are better suited to achieve political accountability to their communities (Kahn, 2005). This is because in democratic settings, politicians who want to be re-elected and know that their constituencies are informed about their activities have a greater incentive to take action that protects their constituencies (Besley & Burgess, 2002). The assumption is that countries with democratic governments will take proactive steps to adapt to shocks and to mitigate their impacts when they occur. In this framework, accountability ensures that politicians are held accountable for their actions and this is reinforced through participation using formal and informal channels for citizens to influence policy-makers (Ahrens & Rudolf, 2006). Similarly, accountability is enforced through transparency, the separation of powers and the rule of law (UNESCAP, 2009).

Public participation often broadens the range of interest and issues to be considered as different stakeholders assign different values to the risk faced (Lebel *et al.*, 2006). Particularly for risk reduction, participation is of importance because it entails the application and adaptation of local indigenous knowledge and practices into risk reduction strategies (Manyena *et al.*, 2013). Similarly, determining public priorities in risk reduction will benefit from extensive stakeholder participation in national and local planning and budgetary processes (UNESCAP, 2013). Participation can either be direct or through legitimate, intermediate institutions or representatives (UNESCAP, 2009) and it needs to be informed and organised. The amount of public participation by non-state actors in decision exploring process through the implementation, monitoring and sanctioning varies from the provision of information by various authorities to various levels of consultation, collaboration and empowerment (Lebel *et al.*, 2006).

According to Ahrens and Rudolf (2006), a governance structure that fosters transparent decision-making processes involving all affected by the outcomes and bring about enduring decisions for which policy-makers are held accountable is of importance. Transparency involves the publication of reliable information in a timely manner, which reduces the opportunities for corrupt behaviour, improves the analysis and articulation of public policy and enhance their acceptance (Ahrens & Rudolf, 2006; UNESCAP, 2009). This information must be provided in easily understandable forms. Similarly, good governance requires fair legal frameworks that are enforced impartially (UNESCAP, 2009), which brings the notion of predictability into the discussion.

Predictability in this regard defines the laws and policies regulating society at large and the disaster risk reduction function and their constituent and partial application and enforcement, which complement accountability (Ahrens & Rudolf, 2006). According to the UN (2006) the establishment of institutional structures and mechanisms and clear accountability norms in government is the first step in establishing the rule of law. An effective legal system is necessary to respect property rights, enforce contractual obligations to foster investment, reduce risks to investors, and enforce effective exchanges among parties and cut down transaction costs (UN, 2006). Equally essential is protection from arbitrary government action, ranging from unpredictable, *ad hoc* and discriminatory regulation to outright corruption (UN, 2006).

In this framework, credibility is viewed as the overarching principle which constitutes effective governance (Ahrens & Rudolf, 2006). Credibility refers to whether an actor perceives information as meeting standards of scientific plausible and technical adequacy (Cash *et al.*, 2002). Cash *et al.* (2002) further reflect that credibility is often assessed by proxy and

participants judge credibility based on the scientific processes followed, who participates and which organisations are engaged. All the features of good governance must enable credible commitments of political decision-makers, a prerequisite for successful policies (Ahrens & Rudolf, 2006). Zenger *et al.* (2001) make the point that stakeholders must credibly commit to repeated interactions to avoid a switch to alternative partners at any moment. In order to have such commitments, Baker *et al.* (1997) suggested formal institutional arrangements such as memoranda of understanding as ways to lock parties into relationships for a sufficient duration of time.

Another concept that goes hand in hand with credibility is legitimacy, which describes whether actors perceive the process followed in a system as unbiased and meeting the standards of political and practical fairness (Cash *et al.*, 2002) - unbiased in the sense that the processes must be politically and procedurally correct and fair (Lassa *et al.*, 2013). Specifically, for disaster risk reduction policy-making, the principle of legitimacy refers to the extent to which the policy-making process is accepted as fair or unfair (Cash *et al.*, 2002; Lassa *et al.*, 2013). People judge legitimacy of the process based on who participated and who did not participate in the process of making choices (Cash *et al.*, 2002). Lack of credibility and legitimacy in the governance structure will render policy implementation ineffective (Ahrens & Rudolf, 2006). Effectiveness and efficiency mean that processes and institutions produce results that meet the needs of society while making the best use of resources at their disposal (UNESCAP, 2009). After all, a governance structure is effective if it ensures that government policies are properly implemented. For a full discussion of these dimensions and or characteristics, see Ahrens and Rudolf (2006), Ahrens *et al.* (2011) and UNESCAP (2009).

The dimensions as discussed above are key factors when implementing a governance structure aimed at risk reduction. As Ahrens *et al.* (2011) postulate, any disaster risk reduction structure must show a comparatively high degree of the dimensions as discussed above. Ahrens *et al.* (2011) further indicate that realising these dimensions by a country's governance structure will simplify the duty of any government in the endeavour to realise its goals. It should be noted that good governance or quality of governance is difficult to achieve in its totality due to these varied dimensions and other factors that are not discussed here. Particular attention should be given to the formulation and implementation of policies and the roles of different stakeholders thereof. In this regard a governance structure will be effective if it ensures that government policies are implemented, disaster risk is reduced through the legal and regulatory frameworks and that adaptive efficiency of polity and policy are enhanced (Ahrens *et al.*, 2011).

Whereas tremendous improvement in economic development can be achieved through the adoption of these dimensions (UN 2006), more empirical evidence is required to prove that the application of these dimensions can lead to substantial improvements in disaster risk reduction. Lassa (2009) argues that at the conceptual and hypothetical levels, it is clear that the prevailing institutional and governance quality plays a greater deal in disaster risk reduction policy and implementation. Ahrens and Rudolf (2006) are of the opinion that risk reduction is dependent on the interplay of economic, political, formal and informal institutions, which determines the policy-making and implementation processes. Thus for effective risk reduction, efforts should be made towards realising this ideal of good governance with the aim of making it a reality.

3.4 CONCLUSIONS

The quest for appropriate governance structures for disaster risk reduction is far from over at global, regional, national and local levels. The chapter has demonstrated that state actors must not only focus on managing public affairs but rather coordinate and join public and private resources towards the achievement of public goals. Furthermore, it has been demonstrated in this chapter that the institutional and governance mechanisms are of critical importance for driving disaster risk reduction perspectives from rhetoric to practice. In this regard, institutional and governance mechanisms for disaster risk reduction can be viewed as indispensable building blocks to reduce human, economic and environmental losses resulting from disasters. This chapter has considered the importance of institutional and governance mechanisms in addressing disaster risk and illuminated on ways in which institutions, organisations and governance structures are framed to reduce disaster risk. The central argument in this chapter is that nations are failing to reduce disaster risk substantially owing to institutional and governance factors.

The chapter addressed the first objective of the study by delineating the practices of disaster risk reduction, firstly by making use of the concept of multi-level governance, the chapter painted an important picture of the different location of actors for disaster risk reduction and their respective roles. The chapter also underlined the importance of the quality of institutions and good governance and their influence on the level of disaster risk and risk reduction initiatives. As such the chapter identifies politics within the concept of political economy to have a major influence in establishing institutions and facilitation of good governance. Subsequently, the chapter provided a framework of governance dimensions, the achievement of which will aid disaster risk reduction.

However, the conceptual framework presented in this chapter is by no means a panacea to address all governance issues in disaster risk. This is so because the risk of disasters is

exacerbated by climate change. However, the two main approaches to address disaster risk, emanating from climate risk and natural hazards, disaster risk reduction and climate change adaptation have largely developed in parallel, and as a result they mostly operate in isolation. Having demarcated the governance of disaster risk reduction in this chapter, the next chapter focuses on the governance of climate change adaptation.

CHAPTER 4

GOVERNANCE ARRANGEMENTS FOR EFFECTIVE ADAPTATION TO CLIMATE CHANGE: A FOCUS ON INSTITUTIONAL AND ORGANISATIONAL ASPECTS

4.1 INTRODUCTION

Chapter two of this study has gone to some length in discussing the concepts of organisations and institutions, the importance of institutions in ordering societal behaviour, complex systems and how they relate to governance. In chapter three, these concepts were applied to governance of disaster risk reduction. In this chapter, the concept of governance is extended to climate change adaptation. Whereas individual efforts are important for adaptation to climate change, it is important to note that the major central actors in societal adaptation to climate change and variability are in the form of organisations (Berkhout, 2012). Vallejo (2011) shares similar views and indicates that human organisation has played a pivotal role in adjusting to changes for centuries. Therefore, a better understanding of how organisations and institutions shape adaptation action is of importance (Naess *et al.*, 2003).

The purpose of this chapter is to highlight the institutional and organisational aspects of governance that will help facilitate effective adaptation to climate change. To achieve this objective, a number of frameworks, including adaptive co-management, multi-level governance, public goods theory, collaborative and network governance frameworks and adaptive capacity frameworks will be applied. Furthermore, the chapter also seeks to contribute to the explosion of literature on adaptation to the impacts of climate change that erupted in the last fifteen or so years. Of particular importance is the delineation of the diffuse mode of governing and authority as a result of the many actors involved in adaptation to climate change. Moreover, it is crucial to establish the inter-linkages and connections of actors between and across levels of governance for effective climate adaptation.

The chapter is structured as follows. With the chapter introduced in the first section of this chapter, section two provides a discussion on decision-making for adaptation, which appears crucial for implementing plans and measures for climate adaptation. This is followed in section three by a presentation on the governance arrangements for climate change adaptation in multi-level settings and across levels. Section four focuses on building institutional adaptive capacity as a means to facilitate effective adaptation to climate change. Lastly, section five provides concluding remarks for the chapter.

4.2 ADAPTATION DECISION MAKING TO EFFECTUATE ENHANCED ADAPTATION ACTION

The rise of new governance or network governance in the last two to three decades resulted in significant changes on how political decisions are made and implemented (Bauer & Steurer, 2014:122). To this effect government relies on the cooperation and mobilisation of non-state actors when making decisions (Borzel, 2011). Stokman *et al.* (2013) indicate that situations in which people wish to achieve goals with the contribution of others necessitate collective decision-making. As a result, decision-making contexts consist of patterns of relationships between actors, the rules and resources that structure their interactions (Klijn, 2013:3). Stokman *et al.* (2013:154) define collective decision-making “as a process in which stakeholders transform their different preferences into a single collective decision that binds all the actors within a social system”. As a result, decision-makers become mutually dependent in making the required decision.

This decision-making in one collective will result in what Stokman *et al.* (2013:154) call “interest alignment”, which implies coalition building. As a result of coalition formation, collaboration becomes the centre of any collective decision-making whether in small informal group, complex organisation or in political systems (Stokman *et al.*, 2013) (see chapter 5 for further clarity on and differences between cooperation, coordination and collaboration). This is necessitated by the unexpected behaviour of the involved agents and the unforeseen consequences of the agents’ interactions (Klijn, 2013). Iwanaga and Namatame (2000) share similar views and indicate that decision-making in a group is a dynamic process and actions of each member must be coordinated to achieve globally consistent and good solutions. Blanco (2006:140) draws attention to the point that traditional top-down decision-making processes have become inadequate, due to their inability to create appropriate solutions particularly for local communities.

Particularly for adaptation to climate change, decisions have to be taken about measures that anticipate inherent uncertain and unpredictable developments (Termeer *et al.*, 2012). The uncertain nature of the impacts of climate change coupled with the long-term nature of adaptation, which implies multiple policy cycles, makes decision-making over adaptation prone to controversies (Vink *et al.*, 2013). This is so because developing and realising adaptation options are not easy due to all kind of institutional and social complexities. This is so because of the number public and private actors involved in the development of the strategies who all have different norms and values, problem definitions, interests and power resources (Termeer *et al.*, 2012). Thus, applying the prescripts from complexity theory, Klijn (2013) indicates that the uncertain nature and the involvement of a number of actors at different levels in adaptation to

the impacts of climate change, renders decision-making to have a non-linear character.

In such cases collaborative decision-making holds great promise for addressing difficult public policy issues such as climate change and adaptation to its impacts (Siegal, 2009). The importance of collaborative decision-making lies in the fact that it provides a forum for broad participation by multiple stakeholders, facilitate cooperative learning among participants and result in best policy options (Siegal, 2009 citing Wiersema, 2008). Collaborative decision-making has been observed to foster innovative and efficient response to changing conditions and therefore provides the flexibility required to adapt to the changing circumstances (Siegal, 2009). Similarly, collaboration at multiple levels helps enable adaptive co-management systems, which allows for dynamic and flexible problem solving and response to change (Amaru & Chhetri, 2013:135). In this regard adaptive co-management is referred to as “an iterative process of acquiring knowledge, improving and revisiting management policies and practices by learning through monitoring” (Conrad & Raucher, 2013).

In relation to decision-making, Polasky *et al.* (2011:398) define adaptive management “as an iterative decision making process under conditions of uncertainty that is designed to learn and incorporate new information and thereby improve future decision making”. It promotes flexible decision-making that can be adjusted in the face of uncertainty as new outcomes from management actions and other events develop (Conrad & Raucher, 2013). Adaptive management is able to build knowledge and improve management, thus reducing the levels of uncertainty, because of its flexibility in decision-making. In this regard, adaptive management adopts a non-linear, cyclical system allowing feedback instead of a simplistic linear model of decision-making (Maani, 2013). The important characteristic for this cyclical system in adaptation to climate change is that decision-making does not yield optimum results and experimentation and learning forms the core of the decision making process (Maani, 2013).

According to Gardener (2013) adaptive management emphasises learning through experimentation and monitoring in order to adapt management decisions based on what have been learned in order to address uncertainty. Experimentation is used in this regard as opposed to “trial and error” or “ad hoc”, as it is structured and there are clear and measurable objectives (Arvi *et al.*, 2003; Gardener, 2013). As a result of the continuous planning and monitoring, learning becomes an inherent component of the decision making process. This learning as Conrad and Raucher (2013) put it, requires an organisation to recognise their inherent inability to control uncertainties and to find courage to acknowledge that they will not fully understand the outcome of every management action. Tompkins and Adger (2004) indicate that integrated learning and adaptive management are based on three related principles: agreeing upon and

fully understanding the consequences of decision making; agreeing upon the process of decision making in the context of deliberative democracy that offers pathways for vulnerable communities to develop response strategies and allow room for change in the strategies.

The adaptive management approach recognises that managed systems present moving targets influenced largely by human drivers and therefore it explicitly incorporates human factors into management experiments (Holling, 1993). In adaptive management, it is recognised that despite the complexities and uncertainties prevalent in any system, managers and policy makers must act (Arvai *et al.*, 2006:219; Higgason & Brown 2009). Specifically, in the climate change arena, these actions must be taken in the face of the difficulties in predicting the scope, severity and the rate of future climate changes and the consequences that will accompany these changes (Lim *et al.*, 2004). The appeal of adaptive management rests on its ability to inform the judgement of managers and policy decision makers faced with complex problems and high levels of uncertainty (Arvai *et al.*, 2003). Other important principles that can be deduced from the discussion on adaptive management include: willingness to change management approaches in light of new information; the newly-acquired information can be used for adjusting predetermined objectives; establishment of success measurements through experimentation; and planning is continuous resulting in the up to date plans.

Thus the entire process is based on the flexible process of action and monitoring. Even though the adaptive management approach looks to be a promising approach in the face of uncertain climate change, its successful implementation in climate change is not yet proven and will prove elusive in the near future (Gardener, 2013). At the same time, a number of challenges or barriers of implementing adaptive management measures are observable in the literature. This includes, but is not limited to, the absence of clear institutional (statutory and regulatory) standards which impede the development, implementation and review of adaptive management plans (Conrad & Raucher, 2013; Gardener, 2013); lack of uniform definition and approaches; transferring theory into practice and lack of funding for developing; and implementing plans. The main effect of the uncertainties on decision-making is that they complicate planning, response and adaptation.

Whereas the concept has been applied successfully in water systems (Boesch *et al.*, 2006; Engle *et al.*, 2011; Medema *et al.*, 2008), forest management (Olsson *et al.*, 2004; Plummer & Baird, 2013; Schroter *et al.*, 2014; Schultz *et al.*, 2015) and ecological systems (Carlsson & Berkes, 2005; Colfer 2005; Wollenberg *et al.*, 2000), a review of how these resource sectors implies that adaptive management should be able to provide valuable lessons on how to apply it in the face of uncertainties brought about by climate change (Conrad & Raucher, 2013).

However, the applicability of adaptive co-management to climate change adaptation still requires further investigation. Despite this need for further investigation, climate change adaptation decisions should continue in the midst of deep uncertainty about the severity, location and timing of climate change impacts (IPCC, 2014). These decisions will further be complicated and challenging given the necessary involvement of multiple sectors and scales, which includes the increasing activities of actors beyond the state such as NGOs and private organisations (Bowen *et al.*, 2013).

An understanding of how decisions are being made to adapt as well as who is involved in making these decisions is important for improving adaptation efforts (Bowen *et al.*, 2013). In this regard, Adger (2003) identifies individuals, groups, organisations and governments as the main actors to take climate adaptation decisions on behalf of the society. Fisher and Surminski (2012) point out that adaptation decisions are taken by private actors ranging from individuals to households, communities and firms, and that this will impact on society's exposure to risk. Therefore, an understanding of governance structures and decision-making processes helps to articulate pathways that leads to policy development and implementation within and between different sectors (Bowen *et al.*, 2013). The concept of multi-level governance has been adopted in addressing environmental problems as it helps highlight the interactions between the levels and demonstrating that the steering of decision-making is not a function of government only but a broad array of actors and levels (Hooghe & Marks, 2003). The following section discusses the governance arrangements for adaptation to climate change across different scales.

4.3 GOVERNANCE ARRANGEMENTS FOR CLIMATE CHANGE ADAPTATION AT DIFFERENT SCALES

The preceding section addressed the importance of decision-making in adaptation to the impacts of climate change and the ways in which adaptation decision can be made. This becomes important as mutually dependent actors from government, non-government and private sectors interact to address complex policy issues such as adaptation to climate change. Indeed, climate change adaptation is an issue that requires coordination across levels and sectors (Keskitalo, 2013). It has, however, been observed that human societies have always adapted to variations in climatic conditions even if they had to do so in uncoordinated ways (Dover & Hezri, 2010). Adaptation was made possible during the course of human history partly because of the relative stability of the climatic conditions, which were variable within certain expected boundaries (Prins *et al.*, 2009).

However, human influence on climate change is creating new challenges for individuals, communities and governments (Amundsen *et al.*, 2010). As such, the processes of adapting to

new conditions, stresses and extreme weather events, that result from human-induced climate change, will require additional interventions (Schipper *et al.*, 2010) or as Amundsen *et al.* (2010) put it, planned adaptation. To this end adaptation planning is emerging as a new area of policy across various geopolitical scales (Mees *et al.*, 2012). It should be noted that planned adaptation can take many forms and is driven by decision-makers and by policies at macro-scales as well as locally driven action (Schipper *et al.*, 2010). Osberghaus *et al.* (2010) used the term *collective adaptation* as a synonym for *planned* to emphasise the point that measures that are taken to adapt are in the interest of groups instead of individuals. With this background in mind, the next section focuses on the public goods characteristics of adaptation to climate change.

4.3.1 Public goods characteristic of adaptation to climate change

Coping with climate related risk requires coordination and regulation (Matczak *et al.*, 2007). This is true because many aspects of adaptation to climate change have public goods characteristics, thus requiring collective action at local, regional, and national and even global level (Termeer *et al.*, 2011). It is important to make it clear at this point that the problem structure of adaptation to climate change as a response to the challenge of climate change, is significantly different from that of mitigation of greenhouse gases (CEPS, 2008). This is so because the impacts of climate change do not affect everybody equally and therefore the response to the impacts cannot be universal (Mazmanian *et al.*, 2013). For instance, Adger *et al.* (2009) indicate that less resilient communities and vulnerable individuals will be severely affected by the impacts, thus further limiting their opportunities for adaptation.

In contrast to mitigation of greenhouse gases, the benefits of adaptation are excludable (Barrett, 2008). This is true because much of adaptation measures requires the supply of local public goods, the benefits of which will be internal to the regions and countries that supplies them (Barrett, 2008). Whereas individuals will satisfactorily carry out some adaptation activities, the potential externalities and spill over effects of the impacts of climate change will require a more collective public policy approach (Mazmanian *et al.*, 2013). Meijerink and Stiller (2011) share similar views and indicate that many of the proposed policy options for adaptation such as building and strengthening of dykes or creation of space for rivers are collective action problems that can be addressed through public policy, thus making them public goods. This will therefore require the participation of local, national, regional and international actors both governmental and non-governmental at different levels.

Notwithstanding the importance of government-led public policy on adaptation, Mees *et al.* (2012) argue that the adaptation action should be left with private actors (individuals and or

organisations) because the benefits of adaptation are relatively localised and private. However, a number of authors hold a different opinion. Mendelson (2006) indicates that markets do not necessarily achieve efficient adaptation in sectors dominated by public or jointly consumed goods. Osberghaus *et al.* (2010) are of the opinion that adjustments to the effects of a changing climate require both private and public resources. Similarly, the Intergovernmental Panel on Climate Change (IPCC) (2014) indicates that adaptation planning and implementation can be enhanced through complementary actions from individuals to government across levels. Cimato and Mullan (2010) are of the opinion that individuals and businesses will only take action to adapt when it is in their best interest and power to do so. Osberghaus *et al.* (2010) argue that government intervention into market activities is based on the failure of the market in the provision of public goods or due to information asymmetries.

As the consumption value of public goods is not limited to a single consumer, free riding leads to under-provision by private investors (Osberghaus *et al.*, 2010). In this regard the involvement of individuals, government and non-governmental organisation with central government tasked with establishing institutional frameworks of property rights is important for effective adaptation. It is argued that without functioning property rights systems, long-term investments crucial for adaptation strategies will not take effect thus endangering planned as well as autonomous adaptation (Osberghaus *et al.*, 2010). On the other hand, Tompkins and Eakin (2012), identify four domains of the interplay between public and private provision of adaptation goods: public provision for public benefit; public provision for private benefit; private provision for private benefit and private provision for public benefit. They further indicate that, each of the domains of action is a “fuzzy” category with a degree of public and private interactions and co-production (Tompkins & Eakin, 2012).

Treib *et al.* (2007:9) make the point that empirically there is no mode of governance that includes either only public or only private actor. At one particular time only one of these domains will dominate. Therefore, the ability of humanity to act collectively, whether as public or private actors, helps the society to adapt to changes including environmental changes such as climate change (Adger, 2003). However, collective adaptation is complex (Osberghaus *et al.* (2010:845) and therefore the enhancement of adaptation actions and support will require appropriate governance arrangements (UNFCCC, 2014). Adger (2001) points out that managing the consequences of the distribution of impacts and reinforcements of climate change requires responsive governance at appropriate subsidiary levels. The next section presents and discusses the different levels at which adaptation to climate change is governed.

4.3.2 Multi-level governance for climate change adaptation

The provision of adaptation goods is widely recognised as a multi-level governance challenge because these impacts and respective measures cut across government levels, sectors and societal domains (Bauer & Steurer, 2014). Indeed, as a complex environmental problem, adaptation to climate change necessitates the involvement of actors located at different spatial and geographic scales (Hovic *et al.*, 2014). According to Polten *et al.* (2010) adaptation practices can be differentiated along several dimensions including spatial scale, sectors and actors. Thus the institutional architecture for climate change adaptation should encompass both local through to national scale institutions as well as national to global scale institutions (Thompson *et al.*, 2006; Uddin *et al.*, 2006). According to Smithers and Smith (1997) climate adaptation should take place at different societal levels involving different actors and it can either be planned or autonomous, short-term or long-term and it can take technological, behavioural and/or institutional form.

Governance of climate change adaptation calls for the implementation of policies, programmes and strategies at international, national, regional and local levels of society (Storbjork, 2007). Amundsen *et al.* (2010) reflect that for effective adaptation, there is a need to build efficient multi-level governance structures. Thus the concept of multi-level governance with its emphasis on the connections between vertical and horizontal organised forms of governance provides a useful starting point for understanding the ways in which environmental problems are governed within and across scales (Betsill & Bulkeley, 2006). Kern and Alber (2008) indicate that effective multi-level arrangements depend on a fruitful combination of horizontal and vertical collaboration. This is so because governing climate change and its impacts calls for implementation of policies, programmes and strategies at international, national, regional and local levels of the society (Storbjork, 2007).

Indeed, multi-level systems and cross scale networks that link organisations and individuals are crucial for adaptation to climate change (Bowen *et al.* 2013). However, the challenge with multi-level governance is that there is no consensus on how it should be structured (Hooghe & Marks, 2003). In trying to address this challenge, Hooghe and Marks (2003:236) distinguish between two types of multi-level governance; Type I; and Type II. Type I multi-level governance emphasises the multiple tiers at which governance takes place (national, provincial and local levels) where governments are the central authority. In Type II multi-level governance, networks between public and private actors across levels of social organisation dominate. While the conceptual dichotomy between Type I and Type II governance is clear, it is less simple to devise concrete modes of boundary regulation and less easy to build institutions for their regulation and adjudication for the latter than for the former (Piattoni, 2009:171).

It is important though to note that in practice the two types of governance coexist or are more or less overlapping (Hooghe & Marks, 2003, Peters & Pierre, 2002). According to Betsill and Bulkeley (2006), the two types or approaches of multi-level governance are not mutually exclusive. Type I and Type II represent polar (ideal) types, yet they do not directly help to settle the epistemological question, as ideal-types are not observable in reality (Piattoni, 2009:170). Of particular importance is the notion that multi-level governance is essentially a challenge to an understanding of the changing nature and role of the state (Awesti, 2007). According to Peters and Pierre (2001:131), the emergence of multi-level governance challenges much of our traditional understanding of how the state operates, what determines its capacities, what its contingencies are, and ultimately of the organisation of democratic and accountable government. However, the multi-level governance model does not reject the view that state executives and state arenas are important (Marks *et al.*, 1996:346).

The emphasis is on decision-making competencies that are shared by actors at different levels rather than monopolised by state executives (Marks *et al.*, 1996:346). The justification is that dispersion of governance across multiple jurisdictions is more flexible than concentration of governance in one jurisdiction (Hooghe & Marks, 2003). Particularly for adaptation to the impacts of climate change, the involvement of multi-level and cross-scale stakeholders makes the governance structure within which decision and actions are made to be complex (Polten *et al.*, 2010). Similarly, Scheraga *et al.* (2003) indicate that adapting to the potential impacts of climate change is a complex and on-going process, requiring actions by individuals, communities, government and international agents. Thus as a multi-level endeavour, adaptation to climate change requires coordination of different level of government (Bauer and Steurer, 2014). As the IPCC, Working Group II in the Fifth Assessment Report of 2014 notes, “institutional weakness, lack of coordinated governance and conflicting objectives among different actors all have the potential to undermine adaptation efforts”.

Complementary actions across levels from individuals to government are important to enhance adaptation planning and implementation (IPCC, 2014). As much as it is important to determine which actors should engage in adaptive actions and at which scales (Adger *et al.*, 2005) in multi-level settings, multi-level governance system also requires that responsibility and authority be clearly demarcated so that the lower levels may gain sufficient guidance regarding the responsibilities and funding to carry out these responsibilities (Keskitalo, 2013). According to Mees *et al.* (2012) the involvement of many different actors at different levels makes demarcation of responsibilities for effective adaptation important. Vagueness of roles and responsibilities has been cited as a barrier to the governance of adaptation (Dovers & Hezri,

2010; Storbjork, 2010). The next section outlines the different levels at which adaptation action takes place as well as the respective roles of stakeholders at these levels.

4.3.2.1 Adaptation at international level

Many of the problems experienced today including climate change are transnational in nature, thus requiring some form of political collaboration both with governmental agencies from other state and non-governmental organisations of various kinds (Hajer & Versteeg, 2005). Whereas the impacts of climate change are felt locally, the challenge of climate change is global thus necessitating addressing the impacts with the involvement of the international community. In this regard, to make it easier for members to pursue shared interest and reap mutual gains it is important that international organisations and institutions cooperative to overcome their collective action problems through the provision of information, rules, and principles that reduce transaction costs, enhance decentralised enforcement and increase interaction (Sharma, 2011). As climate change increases and changes the profile of disaster risk in most countries, it creates an increased need of international cooperation in addressing the impacts of climate change (IFRC, 2009).

This is particularly important because most countries, especially those in the developing world, lack comprehensive laws and systems to address these impacts. In this regard, countries from the developing world and particularly, Africa and the Least Developed Countries (LDC) are demanding adaptation to be included in the new agreement in order to afford adaptation the same status as mitigation (Okereke *et al.*, 2014). It is anticipated that as a result of this inclusion, the global adaptation goal will help facilitate the implementation of National Adaptation Plans (NAPs) and National Adaptation Programmes of Action (NAPAs) through long-term, scaled-up, predictable, additional, and adequate finance from the developed countries (Okereke *et al.*, 2014). To this end the United Nations through the UNFCCC together with other international and regional organisations such as the IPCC, European Union, Association of the South Eastern Asian Nations, African Development Bank, the Organisation for Economic Cooperation and Development, and FAO, amongst others, is playing a critical role in promoting and facilitating adaptation to climate change.

The significance of adaptation within the UNFCCC climate regime has increased over the last decade (Okereke *et al.*, 2014, Van Aalst *et al.*, 2008). Article 4.1 (b) and (e) of the UNFCCC and reaffirmation in Article 10(b) of the Kyoto Protocol acknowledges the importance of adaptation in addressing climate change (United Nations, 1992; 1998). According to Helgeson and Ellis (2015) adaptation has become one of the pillars of the UNFCCC regime on climate change since the development and adoption of the Bali Action Plan (UNFCCC, 2008). Conversely, an

increase in attention to adaptation to climate change is being driven by an increase in climate related hazards and disasters in recent years, and due to lack of progress in mitigating greenhouse gases and lastly the consideration of loss and damage added to the adaptation policy (Khan & Roberts, 2013).

As a result, several adaptation-related or adaptation-focused frameworks, work streams and institutions have already been established under the UNFCCC, often focusing on adaptation in Least Developed Countries (LDC) or Small Island Developing States (SIDS) (Helgeson & Ellis, 2015). These include the establishment of such programmes as the Cancun Adaptation Framework, NAPAs, and Least Developed Countries Fund to mention but a few, to support adaptation following the Marrakesh Accord to the Kyoto Protocol. Helgeson and Ellis (2015) indicate the Marrakesh Accords, agreed at COP7 (2001) served as a landmark for adaptation within the UNFCCC. At the same time the Cancun Adaptation Framework agreed at COP 16 (Decision 1/CP.16) focuses on implementation, support and stakeholder engagement in adaptation measures and established the Adaptation Committee to promote implementation of enhanced action on adaptation (UNFCCC, 2010).

An important mechanism in the international institutional arrangements under the UNFCCC is the mobilisation of international climate finance, while at the same time recognising the importance of financial flows relating to climate that are not directly overseen by the Convention (Keto, *et al.*, 2014). The IPCC stresses the role of financial transfers for the sake of adaptation in the form of adaptation fund as policy tools that can be used to build political support for international climate action (IPCC, 2007). In this regard a variety of adaptation finance mechanisms have been established through the UNFCCC and/or the Kyoto Protocol and these include Global Environmental Facility Trust Fund, Special Climate Change Fund, the Least Developed Countries Fund and the Adaptation Fund amongst others (Kato, *et al.*, 2014; Khan & Roberts, 2013; Meashan *et al.*, 2011). A range of other multilateral arrangements for adaptation and finance complement these mechanisms. Thus multilateral institutions like the World Bank, regional development banks including the African Development Bank and Asian Development Bank, the United Nations Development Programme and the UNEP have been instrumental in providing climate funds (Boyle *et al.*, 2014).

This has rendered funding of adaptation activities a major theme of international climate negotiations and domestic climate policy, with increasing evidence that governments, industry, and NGOs are investing in adaptation (Ford *et al.*, 2013). However, as Khan and Roberts (2013) note, the architecture of climate finance is extremely fragmented and uncertain, with many multilateral and bilateral initiatives. Moreover, Khan and Roberts (2013) conclude that

inadequate and poorly defined rules on climate finance stand as a major obstacle in building trust between wealthy nations and the vulnerable poor countries. In a similar line of thinking, Cipler *et al.* (2013) indicate that the inadequacy in funding levels contributes to tensions between developing countries in terms of who should have priority to access scarce resources.

In addressing the deficit emanating from the challenges characterising the international finance for adaptation, funding for adaptation actions must be complemented by enhanced in-country enabling environments for further mobilising public and private climate finance in all the countries (Keto, *et al.*, 2014). Furthermore, Keto, *et al.* (2014) argue that two major factors will be critical: pull and push factors. In this regard, the pull factors are used here to mean that policies and regulations within a country help to attract investments and ensure successful implementation of programmes and projects. The push factors are used to mean that policies, regulations and instruments in contributing countries help to mobilise climate finance and investments for use in recipient countries (Keto *et al.*, 2014:18).

Beside the financial support role, the 2014 Thematic Report of the Adaptation Committee of UNFCCC identifies three main areas of support for national adaptation action by international institutions: advancement of the political agenda and policy recommendations; scientific information and guidance; and financial, technical and capacity building support. Of particular importance is the consideration of specific national and regional development priorities, objectives and circumstances. Amongst other things this will be achieved through strengthening of institutional capacities and providing an enabling environment for adaptation including for climate resilient development and vulnerability reduction (Adaptation Committee of UNFCCC, 2014).

Notwithstanding the importance of international support for adaptation, Adger (2003) and Zahran *et al.* (2008) argue that adaptation measures can be adequately addressed individually, selectively and can be based on the local capacity to respond without the need for elaborate coordination and cooperation at global level. Paragraph 32 of the Cancun Adaptation Framework calls for parties to strengthen and where necessary establish and or designate national level institutional arrangements with the view of enhancing work on the full range of adaptation action from planning to implementation (UNFCCC, 2011). The national institutional arrangements and the respective responsibilities in adaptation to climate change are presented and discussed in the next section.

4.3.2.2 Adaptation at national level

Complementary to the international efforts on adaptation to climate change, national

governments are important as they are central pivots for adaptation planning, determining policy priorities and distributing resources and support (Barrang-Ford *et al.*, 2014; Dixit *et al.*, 2012). According to Bulkeley and Kern (2006) governments have traditionally been seen as the locus of governing in terms of defining and orchestrating collective goals and actions within society. Whereas adaptation to climate change requires response at all levels of government, government at national level is mandated to give clear political directives through designing and facilitating adaptation policies (Amundsen *et al.*, 2010). According to the IFRC (2009) national government has a specific role to play in establishing the policy and regulatory environment to encourage adaptation by individuals, household and the private sector.

Of particular importance in the development and implementation of these policies is the involvement of related government departments and non-governmental actors (horizontal interactions) (Corfee-Morlo, 2008:82). In this regard as government relies on the resources of non-state actors, it is expected to facilitate and coordinate adaptation action amongst these actors (Bauer & Steurer, 2014). This is so because national coordination of climate change adaptation by hierarchical instruments is characterised as weak (Hanssen *et al.*, 2013). Drawing from Bouckaert *et al.* (2010:16), coordination is understood to refer to the instruments and mechanisms that aim to enhance the voluntary or forced alignment of tasks and efforts of organisations. To achieve this coordination national government must put incentives in place to nudge individuals and private sector to undertake actions that build climate resilience while avoiding actions that undermines it (Dixit *et al.*, 2012).

National policy may not only be a result of these horizontal interactions but must also result from the interactions of different scales (Keskitalo *et al.*, 2013). As such, initiatives at national levels may manifest as a result of state commitment to international obligations and conventions. Similarly, decisions may originate from subsidiary levels and be lifted to the national level (Keskitalo *et al.*, 2013). The involvement of non-governmental organisations including civil society organisations and the private sector in adaptation to climate change does not necessarily signal a weakening of the state but rather a redefinition of the scope and scale of the state activity (Betsill & Bulkeley, 2006). These shifts in the scale of state activity and authority should be viewed as a reorganisation of the social relations between actors, a reorganisation that in some cases reinforces the power of the state (Betsil & Bulkeley, 2006). This is so albeit the acknowledgement that the state often lacks the power to solve pressing problems on its own (Hajer & Versteeg, 2005).

Whereas adaptation to climate change requires responses at all levels of government, it is of importance for national government to coordinate adaptation efforts of local and subnational

governments for instance by providing policy and legal frameworks, providing information and financial support (IPCC, 2014). Amundsen *et al.* (2010) indicate that it is of importance that national authority gives clear political signals through designing and facilitating adaptation policies. Therefore, as the Adaptation Committee of UNFCCC (2014) indicates, the involvement in adaptation action of high-level government officials and clear mandates that distributes roles and responsibilities for different players at national and local levels is considered good practice if it is well coordinated. The lack of this clear authority will make it difficult for local government to develop and implement effective adaptation policies (Keskitalo, *et al.*, 2013). This is so because the way in which governance processes take place and the extent to which national, regional and local levels are able to gain influence largely depend on the characteristics of a given national system and the power it attributes to the different levels and actors (Keskitalo, 2013).

According to Osberghaus *et al.* (2010) the provision of the legal system is considered the most elementary and indispensable public service both in theory and in practice. The focus of these legal and policy frameworks in adaptation should be on risk reduction measures related to land use planning, health and other sectors (IFRC, 2009). For instance, Amundsen *et al.* (2010) indicate that national laws and regulations are needed together with day-to-day decisions on where to locate houses. Over and above the policy and regulatory role of national government, national government has an important role to play in strengthening climate risk assessments, early warning systems of climate trends, seasonal forecasts and weather alerts, and making sure that the infrastructure is climate resilient (IFRC, 2009). Fisher and Surminski (2012) indicate that the main role of government at national level in adaptation to climate change is to provide political leadership, provide and protect public goods and to provide local adaptation infrastructure.

Dixit *et al.*, (2012) point out that the major role of government at national level is to provide the much-needed resources and leadership to help communities adapt. Bauer and Steurer (2014) suggest that government at national level must focus on raising awareness, providing general frameworks and guidance on how to adapt and funding for adaptation projects. However, Wilson (2007) focuses on the planning role of central government and indicates that a planning system is a key public policy area to anticipate and prevent adverse impacts and to advantage of any opportunity. Thus building climate change considerations in planning processes and systems allow for early action (Wilson, 2007). Depending on the level of progression on adaptation and the classification of a particular country, information on institutional arrangements for adaptation is sourced through National Communications and National Adaptation Programme of Action (NAPA) (Adaptation Committee of UNFCCC, 2014).

Meashan *et al.* (2011) make the point that NAPAs and National Communications are the frameworks at national level for prioritising adaptation needs in developing countries including the LDCs. However, centralisation of adaptation policies at national level can be flawed as the impacts of climate change impacts are mainly felt and differentiated at local level (Keskitalo, 2013; Matczak *et al.*, 2007). Amaru and Chhetri (2013) share similar views and point out that macro-level adaptation policy may be disconnected from the needs of marginalised communities where local specific adaptation needs exist independently from national and international policies. Urwin and Jordan (2008) argue that policies at national level could constrain adaptation efforts at local level by limiting the ability of local government to respond to the challenges.

Inappropriate national policy and institutional arrangements can create barriers to adaptation or they can lead to maladaptation (Dixit *et al.*, 2012). Furthermore, Amundsen *et al.* (2010) argue that the lack of action at national level will result in inaction at local level. Wejs *et al.* (2014) point out that unclear expectations by government at national level as it is always the case with adaptation to climate change, makes the scope for local variation become wider. Thus government at national level has a major role of identifying adaptation priorities, which will be implemented by local government (Amundsen *et al.*, 2010). The IFRC (2009) indicates that no action taken at national, regional or international level will be effective if not accompanied by concomitant reduction in vulnerabilities of people and communities on the ground. In this regard local practices are important in the implementation of national policy (Wejs *et al.*, 2014). The next section presents and discusses the importance of local actors and their role in adaptation to climate change.

4.3.2.3 Adaptation at local level

The two preceding sections highlighted the importance and roles of international and national organisations in adaptation to the impacts of climate change. Whereas international organisations and national governments play an important role in creating an enabling environment and channelling resources, information and technical support, local decisions are critically important to the design and implementation of adaptation strategies to respond to climate change (Corfee-Morlot, 2008). To this effect, effective adaptation will take place through the dynamics of local governance (IFRC, 2009). These dynamics of local governance will involve engagement between civil society organisations, local authorities and private sector businesses. In this regard government and other actors help create an enabling structure around households and communities that structure local adaptation choices (Fisher & Surminski, 2012).

Particularly, planning systems have been identified as a key public policy area to anticipate and prevent adverse impacts of climate change, and to take advantage of any opportunities it might bring (Wilson, 2006). Meashan *et al.* (2011) share similar views and suggests that the most crucial policy tools available to local government for driving adaptation to climate change are planning powers, which ultimately guide the execution and delivery of statutory and non-statutory powers and services. In this regard, building climate change considerations into planning processes and systems allows for early action, which should be more cost-effective than responding to changes as they happen or after they have happened (Wilson, 2006). Whereas local actors have a key role to play in implementing adaptation actions, it should however be noted that planning related to climate change is still a new and emerging field in local administration and planning (Engle & Lemos, 2010: 490; Keskitalo *et al.*, 2013; Meashan *et al.*, 2011).

Baker *et al.* (2012) point out that local governments all over are ill-prepared for the complex challenges of climate change already evident and those waiting ahead. Besides, subnational entities such as provinces and municipalities are still key actors in detailed planning and implementation of adaptation measures (Bauer & Steurer, 2014). Government at sub-national level including both provinces and local government is at the coal face of adaptation in the context of place-based vulnerability where impacts are experienced in the forms of inundation, bushfires, heat waves and rising sea levels. Such impacts of climate change experienced at these levels make these levels suitable avenues for implementing adaptation measures (Meashan *et al.*, 2011). Agrawal (2008), points out that climate impacts affect disadvantaged social groups disproportionately, and that local institutions centrally influence how different social groups gain access to and are able to use assets and resources.

Whereas local government has an important role to play in adaptation, practical implementation of adaptation measures is dependent on other actors within the governance networks (Keskitalo 2013; Klijn & Skelcher 2005). In this regard local governance systems become relevant and legitimate entities to manage such impacts. According to Storbjork (2007) local authorities are key actors in coordinating and facilitating actions regarding climate change to a certain extent cooperating with private sector. For instance, one way of genuinely engaging these actors is through public participation programmes when developing adaptation plans (Baker *et al.*, 2012). This is so because public, civic and private institutions are all relevant to local adaptation to climate change (Berman *et al.*, 2012). In this regard the existing capacity of those taking action and the level of information available about the expected changes in climate and their effects at local level determines the level at which success in adaptation will be achieved (IFRC, 2009).

Adger *et al.* (2005) throw out a word of caution on the issue of success and indicates that the definition of success depends on both the spatial and temporal scales and therefore should not only be assessed through achievement of set objectives. In developing a framework for analysis of urban climate governance, Kern and Alber (2008) identify four modes of governing in the climate change adaptation arena. Firstly, they (Kern & Alber, 2008:174) defined self-governing as the capacity of local government to govern its own activities, such as improving energy efficiency in government offices and other municipality-owned buildings. Self-governing relies on reorganisation, institutional innovation and strategic investments (Kern & Alber, 2008). Secondly, governing through enabling refers to the role of local government in co-ordinating and facilitating partnerships with private entities and encouraging community engagement (Kern & Alber, 2008). Tools such as persuasion and (positive) incentives are most important for this mode of governing.

Thirdly, governing by provision implies shaping practice through the delivery of particular forms of services and resources. This is accomplished through infrastructure and financial policy. Fourthly, they (Kern & Alber, 2008:174) characterised governing by regulation as the use of traditional forms of authority, such as control and the use of sanctions. Granberg and Elander (2007) argue that the ability of local actors to address risk is connected to the institutional capacity of the specific local setting. In this regard, municipalities (also known as local government) represent core institutional units that are increasingly recognised as having a critical role to play in climate adaptation (Amundsen *et al.*, 2010; Baker *et al.*, 2012; Burch 2010; Foster *et al.*, 2011; Naess *et al.*, 2005; Measham *et al.*, 2011; Smith *et al.* 2009; Taylor *et al.*, 2014; Wilson, 2006; Wise *et al.*, 2014). They are frequently seen as both part of the problem and solutions to the impacts of climate change (Storbjork, 2007). Measham *et al.* (2011) argue that local governments operate in an institutional void where the complexity of governance poses challenges to clear definition of roles and responsibilities resulting in ineffectual policy development and implementation. Foster *et al.* (2011) indicate that local governments have the necessary skills, expertise, and experiences to manage climate impacts and increase resilience but they need additional information and technical assistance on understanding, applying, and incorporating new information into practice to improve planning and preparedness.

Local government is charged with a range of roles and responsibilities which have evolved over time with the evolution of the broader governance system (Measham *et al.*, 2011). To this end, Agrawal (2008) identifies three critical roles of local institutions in climate adaptation; structuring responses to local impacts, mediating between individual and collective responses to vulnerability and governing the delivery of resources to facilitate adaptation. Measham *et al.*

(2011) indicate that the functions and responsibilities of local government in relation to adaptation to the impacts of climate change are: regulatory and non-regulatory services. Local governments have responsibility, which is often shared with national governments for both identifying potential natural hazards, including those associated with climatic events, and for ensuring that consideration of such hazards is incorporated into statutory and non-statutory local government decision-making (Measham *et al.*, 2011:892).

Blanco (2006) carries a different view and indicates that local organisations face the impossible task of forecasting with precision what will happen in the future in terms of variations in climate. Besides, there is a 'duty-of-care' within local government to ensure that development decisions do not create the potential for significant, unmanaged exposure to hazards (Meashan *et al.*, 2011:892). A paper by the IFRC (2009) argues that proof of effective climate change adaptation strategies is in the improved resilience of the many people living in communities most vulnerable to the impacts of climate change. In this regard, adaptation responses must be able to help to improve the resilience of community livelihoods (Blanco, 2006).

However, a number of factors including availability or non-availability of inadequate information, institutional limitations, lack of resources and a culture of reactive management hamper local government from effectively carrying out adaptation measures (Measham *et al.*, 2011). Baker *et al.* (2012) found in their study that limitations and deficiencies in local adaptation (planning) are the results of structural, procedural, and contextual factors intrinsic to local governments, which challenge the wisdom of devolving climate change adaptation responsibility to local government. The devolution of the adaptation planning to local governments arise from the need for locality specific actions and the product of subsidiary principle which advocates for the lowest relevant scale to respond to a given challenge (Baker *et al.*, 2012).

Baker *et al.* (2012) further indicate that the assumption that policies and actions at local level are inherently more likely to produce outcomes than at other levels is challenged by the politics of scale literature which argues that the properties of scale have been latently implied rather than explicitly analysed. Adger *et al.*, (2005) contend that the dynamic nature of the linkages between levels of governance is not well understood and the politics of the construction of scale are often ignored. Keskitalo *et al.* (2013) point out that it is important to view local adaptation in the context of other levels. One of the critical influences on the uptake of a response to climate change is the existence of networks; national, local and international, which can provide the information, the understanding and the shared experience to both professional and politicians at the local level to push the issue within their authority (Wilson, 2006).

Moreover, the choice of specific adaptation practices is dependent on social and economic endowments of households and communities, and their ecological location, networks of social and institutional relationships, institutional articulation and access, and access to resources and power (Agrawal, 2008). Therefore, actors engaged at all levels and scales of governance must develop and implement adaptation policies, foster adaptive capacity and take adaptation action (Plummer, 2013). The next section focuses on collaborative and network governance for effective adaptation to climate change.

4.3.3 Collaborative and network governance for effective adaptation to climate change

The preceding sections reflected the reality that realising successful adaptation strategies depends on the involvement and collaborations of many actors within and across different policy domains due to the interdependencies between actors and the problems (Termeer *et al.*, 2011). An important aspect of governance is how governments/states engage with non-state actors in implementing their adaptation responsibilities and how they act to maintain their legitimacy (Christoplos, *et al.*, 2009) in providing public goods. Particularly for climate change, the adaptation process will involve the interdependence of agents through their relationship with each other, with the institutions in which they reside and with the resource base on which they depend (Adger, 2003:388), to prevent loss and exploit opportunities, thus making adaptation an active response to risk (Prins *et al.*, 2009). This is so because adaptation is place and context based, with no single approach for reducing the risk appropriate across all settings (IPCC, 2014).

It has been argued that effective adaptation to climate change requires new governance approaches that are able to bridge or even transcend governmental levels and societal domains (Bauer & Steurer, 2014). Bauer and Steurer (2014) further indicate that partnerships and networks denote such a new governance approach. When considering the implementation of adaptation measures across multiple scales, the challenge of policy coherence and integration becomes central (Polten *et al.*, 2010). To this end, Hajer and Versteeg (2005) drawing from Sachar (2001) asked an important question pertaining to coherence in network governance. They asked “how is coherence possible if it is assumed that network governance is multi-action, polycentric or multi-level and by necessity an intercultural affair?” (Hajer & Versteeg, 2005). As if he were answering this question, Lubel (2015) points out that collaborative partnerships or policy network are important to facilitate interactions between different types of actors.

These collaborative partnerships are potentially one centre of governance in a polycentric system (Lubel, 2015). Lubel (2015) is of the opinion that they emerge to coordinate among

existing institutions and resolve conflicts resulting from fragmentation. Similarly, a process framework for collaboration suggests that collaboration occurs over time as organisations interact formally and informally through repetitive sequences of negotiation, development of commitments, and the execution of those commitments (Thompson & Perry, 2006). Therefore, given the cross-sectoral nature of the climate change impacts, policy integration and coordination are widely considered to be integral to the success of measures to address these consequences (Juhola & Westerhoff, 2011). This integration can be horizontal across policy sectors, vertical across jurisdictional levels, and must involve non-state actors who are affected by climate change but lacks necessary capacity to adapt (Bauer *et al.* 2012).

Nunan (2012) shares similar views and indicates that as organisational actors proliferate in the policy sphere, it follows that both vertical and horizontal integration is required more especially for cross-cutting issues such as climate change. As more actors outside the state become involved, partnerships and networks of actors take part in designing and implementation of measures to adapt to climate change (Polten *et al.*, 2012). Bauer *et al.* (2012) argue that the ideal-typical cross-sectoral (horizontal) policy integration can be achieved by governance modes of hierarchies, markets and networks. Network governance, which is of particular interest in this study, relies mainly on collaboration among actors with common interests or complementary resources (Bauer *et al.*, 2012). The network concept draws attention to the interaction of many separate but interdependent organisations, which coordinate their actions through interdependencies of resources and interest (Borzel, 1998). As Leftwich (2006) indicates, all human societies, past and present, have been and are characterised by complex and overlapping social interactions. Such interactions and practices are inconceivable within a minimum agreed understanding, norms, conventions, procedures and rule, which shape and constrain behaviour and makes such interactions predictable and comprehensible to the people engaged (Leftwich, 2007).

The involvement of actors beyond the state in networks re-emphasises the importance of understanding social networks holistically and using the systems based approach (Bowen *et al.*, 2013). These networks are breeding grounds for exchanging experience and mutual learning (Gustavsson *et al.*, 2009). Gustavsson *et al.* (2009) further indicate that networks represent organisations trying to avoid territorial borders, bridging between the different levels and scales of operation and therefore have a potential to function as channels for disseminating information, best practices and knowledge. As Bowen *et al.* (2013) indicate, the importance of social networks in enhancing communities' adaptive capacity and in supporting governance mechanisms requires an appreciation of the influence of social capital. Social capital in this regard is viewed as the capacity of the population to work harmoniously as a self-organising unit

in which many individuals cooperate with no one controlling the activities (Bowen *et al.*, 2013). This is so because actors are able to make connections with others within a community through information exchange. As a result, social capital facilitates development of trust, shared norms, mutual obligations and identification as well as the ability to exploit weak ties between networks (Hatch & Cunliffe, 2006). In this regard, synergistic social capital and inclusive decision-making institutions promote the sustainability and legitimacy of adaptation strategies.

In multi-level governance, vertical coordination can be achieved through command and control in hierarchies, competition in markets and negotiations in networks, supplemented by the exchange of information, policy ideas and policy learning (Bauer *et al.*, 2012). As the adaptation pressures and responses cut across different jurisdictional levels from international to local level (Bauer *et al.*, 2012), cross-scale inter-dependencies must be matched by cross-scale linkages (Adger *et al.*, 2005). Furthermore, participation by non-state actors helps secure their commitment to implement adaptation measures (Bauer *et al.*, 2012 citing Beierle & Cayford, 2004; Newig, 2005). According to the OECD (2008), these actors have policy-relevant knowledge on and experience with local or sectoral particularities.

Specifically, successful adaptation planning and enactment must encompass public goods and services that include significant positive and negative externalities (Mazmanian *et al.*, 2013). Thus as Mazmanian *et al.* (2013) postulate, the scale and level of adaptation measures implemented must match the scale and level of authority in decision-making processes. An understanding of how institutions structure powers, rights and entitlements at these multiple levels of governance is integral to understanding the adaptive capacity of the society (Berman *et al.*, 2012:92). As Engle and Lemos (2010) indicate, this is so because governance and institutions are the critical determinants of adaptive capacity and resilience. Conversely, adaptive capacity plays a dominant role in driving adaptation action (Barreng-Ford *et al.*, 2014). The next section focuses on building adaptive capacity as a measure to effectuate adaptation to climate change.

4.4 MEASURES TO ENHANCE EFFECTIVE ADAPTATION TO CLIMATE CHANGE: BUILDING ADAPTIVE CAPACITY

The section above has highlighted the importance of networks in multi-actor, multi-level settings for adaptation to the impacts of climate change. However, the IFRC (2009) draws attention to the point that the level at which impact in adapting to climate change is achieved is dependent on the existing capacity of those taking action and the level of information available about the expected changes in climate and their effect at the local level. According to Matczak *et al.* (2007) adaptive capacity is considered to be the main determinant of the ability of the society to

adapt to climate change. In a similar line of thinking, Hill and Engle (2013:177) indicate that successful adaptation is reliant on the capacity to adapt. Successful adaptation in this regard should result in an equal or improved situation when compared with the initial condition whereas less successful responses would allow for short-term recovery but continued vulnerability (Lemos *et al.*, 2013).

Whereas public policies are supposed to either build adaptive capacity thereby increasing the ability of various actors to adapt or to improve adaptation directly by putting capacities into action (Steurer *et al.*, 2010), it is indicated that the capacity to adapt to climate change is dependent on a wide variety of social, political, economic, technological and institutional factors (IPCC, 2007; Vincent 2007). Specific interaction of these factors differs depending on the scale of analysis from the level of the country through to an individual (Adger *et al.*, 2005; Vincent, 2007). Therefore, the ability of a country to adapt to climate change is dependent on its adaptive capacity at different levels. For instance, at national level, adaptive capacity is determined by the availability of financial resources, degree of organisation and institutional capacity for targeting the resources to vulnerable areas and individuals (Vincent, 2007). Thus as Vincent (2007) further indicates, understanding different adaptive capacities is a prerequisite for targeting interventions to reduce the diverse impacts of climate change.

4.4.1 Conceptualisation and defining adaptive capacity

The two major components of adaptation include building adaptive capacity in order to increase the ability of individuals, groups and organisations to adapt to changes and secondly the implementation of adaptation decisions (Huntjens *et al.*, 2012). However, Schneiderbauer *et al.* (2011) consider the term *adaptive capacity* to have been fuzzily defined and very difficult to determine. This difficulty emanates from the fact that adaptive capacity as applied to climate change sits uniquely within two predominant paradigms in the research community: vulnerability and resilience even though it has its roots in organisational theory (Engle, 2011). To this end it is generally accepted that adaptive capacity refers to “the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences” (IPCC, 2007). Whereas this definition of the IPCC is widely accepted, it is important to note that there is no unanimity on the definition of adaptive capacity as different authors focuses on different aspects (Dixit *et al.*, 2012; Eisenack & Stecker, 2010; Vincent, 2007; Wall & Marzall, 2006).

Eisenack and Stecker (2010) define adaptive capacity “as the potential to reduce social vulnerability by realising adaptation”. Dixit *et al.* (2012:10) define adaptive capacity as “the ability to design and implement effective adaptation strategies or to react to the negative

climatic stresses". Vincent (2007:13) defines adaptive capacity as "a vector of resources and assets that represents the asset base from which adaptation actions and investments can be made". Dovers and Hezri (2010) highlight the different determinants of adaptive capacity and indicate that society's capacity to adapt is dynamic and is influenced by the society's productive base including natural and human-made capital assets, social networks and entitlements, human capital and institutions, governance, national income, health and technology. In simple terms enhancing adaptive capacity means providing people with the tools, information and support required for making timely and efficient adaptation decisions (Cimato & Mullan, 2010).

Understanding what influences adaptive capacity as Lemos *et al.* (2013) point out is rooted in the IPCC categorisation of the determinants of adaptive capacity including economic resources, technology, information and skills, infrastructure, institutions and equity. Whereas all these elements are crucial for adaptation to climate change, this chapter and particularly this section is aligned to the views that the ability to act collectively or the lack thereof advance or limits the capacity of the community to adapt and thus narrows the ability to adapt to climate change impacts to institutions, governance and management (Lemos *et al.*, 2013). This is so because of the growing recognition of the importance of institutions and governance in building adaptive capacity over the past five or so years. Therefore, the chapter subscribes to the definition of adaptive capacity as defined by Gupta *et al.* (2010) which is "the inherent characteristics of institutions that empowers social actors to respond to the short and long-term impacts either through planned measures or through allowing and encouraging creative responses from society both *ex ante* and *ex post*". This definition re-emphasises the views that institutions and organisations play a fundamental role in deploying adaptive capacity (Vincent, 2007).

4.4.2 Importance of institutions in shaping adaptive capacity

The uncertain nature of climate change and its impacts calls for institutions that enhance the adaptive capacity of society (Gupta *et al.*, 2010). This is important because institutional arrangements affect individuals' and communities' capacity to adapt (Ivey *et al.*, 2004). In this regard Gupta *et al.* (2010) indicate that adaptive capacity would encompass firstly, characteristics of institutions i.e. the formal and informal, rules, norms, and beliefs that enable society as in individuals, organisations and networks to cope with climate change. In this regard formal rules offer rigid enforcement thus helping to deal with collective action problems, spill over effects, and externalities (Matczak *et al.*, 2007). On the other hand, informal rules, norms and beliefs use locally rooted compliance based on traditions. Bakker *et al.* (1999) believe informal rules are important for the management of risks. They argue that the degree of shock caused by an extreme event is positively correlated with the degree of informal arrangements setup to mitigate the event (Bakker *et al.*, 1999).

Secondly, adaptive capacity encompasses the degree to which institutions allow and encourage actors to change the institutions in order to cope with climate change through learning from new insights and experiences in order to manage the expected and unexpected in a flexible and creative manner (Gupta *et al.*, 2010). Therefore, humans pursue common goals and reconcile differences, respond to threats and opportunities through institutions and policy processes that are enabled or constrained by institutions. Dixit *et al.* (2012) indicate that effective institutions are at the heart of the ability to respond to the growing climate risk. These institutions provide the political and administrative structure that can either enable or restrict adaptation (Ford & King, 2015). Engle and Lemos (2010) postulate that together with governance, institutions are the critical determinants of adaptive capacity and resilience. In a similar line of thinking Vincent (2007) is of the opinion that it is well accepted that good governance and institutional structures are important for adaptive capacity.

In this regard, institutional conditions supportive of adaptive capacity include widely-accepted attributes of good governance (Lockwood *et al.*, 2015). As Dutra *et al.* (2015) show, effective governance must support and encourage adaptive capacity to maintain or improve the conditions of socio-ecological systems. Hill and Engle (2013) conceptualise governance indicators that promote adaptive capacity to include, knowledge and information, experience and expertise, networks, transparency, trust, commitment, leadership, legitimacy, accountability, connectivity and collaboration, and iterative and flexible. Institutions, particularly for climate change adaptation provide an enabling environment for implementing adaptation action.

As Uddin *et al.* (2006) indicate, institutional facilitation for adaptation includes creating enabling policy environment, mainstreaming and coordination, partnership building, institutional arrangements and governance (continuity, transparency, handling political interferences, financing, and enabling implementation). The 2014 Thematic Report of the Adaptation Committee of the UNFCCC, interprets institutional arrangements for adaptation as the structures, approaches, practices or rules set in place by stakeholders at all levels to steer adaptation action including impact, vulnerability and risk assessments, planning for adaptation and implementation of adaptation measures and monitoring and evaluation of adaptation. Of particular importance is an understanding of how institutions structure power rights and entitlements at multiple levels of governance in order to understand adaptive capacity of the society (Berman *et al.*, 2012). Despite the important role that institutions play in adaptation to climate change, Dixit *et al.* (2012) are of the view that there are no practical approaches for understanding the institutional aspect of adaptive capacity at national level.

Termeer *et al.* (2011) note that developing and implementing adaptation strategies, approaches and policies is not an easy task due to all kinds of institutional complexities. This makes it important to understand how institutions structure power rights and entitlements at multiple levels of governance to understand adaptive capacity of the society (Berman *et al.*, 2012). To this end Lockwood *et al.* (2015) identify four dimensions of adaptive capacity, which include social capital (local networks, trust and reciprocity); human capital and physical capital (knowledge and information, labour and time, finance and infrastructure); management approaches (innovation, adaptive management, risk behaviour) and governance (legitimacy, accountability, inclusion and fairness, leadership and coordination and collaboration). A closer look at the literature reveals that these four dimensions include the six dimensions and their assessment criteria to assess the adaptive capacity of institutions as outlined by Gupta *et al.* (2010) and Termeer *et al.* (2012).

Institutions that promote adaptive capacity are those institutions that (1) encourage the involvement of a variety of perspectives, actors and solutions; (2) enable social actors to continuously learn and improve their institutions; (3) allow and motivate social actors to adjust their behaviour; (4) can mobilise leadership qualities; (5) can mobilise resources for implementing adaptation measures; and (6) support principles of fair governance (Gupta *et al.*, 2010:461).

Firstly, the concept of variety which implies that unstructured problems like climate change embed diverse interests and perspectives and as such can only be dealt with within a framework of multiple discourses and solution where various actors intervene at different levels (Gupta *et al.*, 2010). Similarly, Termeer *et al.* (2012) indicate that the climate issue consists of a variety of aspects, effects and uncertainties, an institutional setting to address the impacts of climate change must consist of a variety of problem frames, definitions and solutions, and that a variety of actors in diverse policy arenas and on different administrative levels to work together to adapt the institutional structure to climate change must be involved. Gupta *et al.* (2010:461) posit that institutions that promote adaptive capacity must encourage the involvement of a variety of perspectives, actors and solutions, enables social actors to continuously learn and improve their institutions, allow and motivate social actors to adjust their behaviours, can mobilise leadership qualities, can mobilise resources for implementing adaptation measures and support the principle of fair governance.

According to Termeer *et al.* (2012:4), “the extent to which institutions embed variety is indicated for instance by: the involvement of a variety of policy frames, problem definitions and solutions; the involvement of a variety of actors (multi- actor), levels (multi-level) and stakeholders (multi-

sector) during policy formulation and implementation processes; the space to promote differentiation of policy options and to develop tailor-made solutions and redundancy". Variety requires an institution to envisage future expected and unexpected climate impacts through having a range of proactive strategies, measures and instruments at its disposition "limiting lock-in into a development that precludes future adaptations" (Nooteboom, 2006).

The second dimension to assess adaptive institutions is the concept of learning capacity. "Managing climate change risks requires knowledge intensive policy making informed by research on impacts, adaptation and vulnerability for the purpose of assessing risk, examining the cost of action and prioritising needs, building support for taking action and increasing understanding of the concept of adaptation" (Ford & King, 2015:512). In this regard those who are involved must discover together how they should adapt to climate change (Termeer *et al.*, 2012). Learning capacity allows for changed understanding based on experiences (Gunderson & Holling, 2002). In this regard adaptation becomes an iterative process as climate changes over the long term (Dixit *et al.*, 2012). Thus adaptive institutions encourage actors to learn and allows society to question socially embedded ideologies, frames, assumptions, claims, roles, rules and procedures that dominate problem-solving (Gupta *et al.*, 2010). The degree to which institutions embed learning capacity is indicated by the possibility and willingness to learn from each other and across boundaries, double loop learning; a focus on listening and discussing doubts instead of defending views; mutual trust and institutional memory (Termeer *et al.*, 2012).

The third quality to assess adaptive institutions is the ability to adjust to gradual and sudden changes, thus making room for autonomous change. As conceptualised by Gupta *et al.* (2010), the third quality of adaptive capacity is the ability of an institution to permit social actors to autonomously adjust their behaviour in response to environmental change. Ford and King (2015) indicate that adaptation decisions are taken in the context of inherent uncertainties surrounding climate change, the hidden hazard nature of the problem and significant barriers to action. These problems can cause adaptation to be postponed, avoided, or prevent adaptation past the planning stage to full implementation (Ford & King, 2015). Addressing such challenges calls for institutions to enable social actors to anticipate possible futures and to take planned preventive measures against important threats, by providing them with the necessary means and information (Polsky *et al.*, 2007). The room for autonomous change is about the capability of actors to improvise during crisis at all levels of society, and to act as accommodating to and experimenting with the everyday contingencies, breakdowns, exceptions, opportunities and unintended consequences (Orlikowski, 1996).

Fourthly, leadership is important because it assists the society in responding to long-term, large-

scale challenges that affect humanity (Gupta *et al.*, 2010). According to Ford and King (2015) governance institutions particularly for complex problems like adaptation which cuts across jurisdiction by their very nature embed a degree of resistance with policy making constrained by inertia, culture of risk denial, bureaucratic resistance and turf battles. Similarly, they are highly politicised, involve responding to future unknown risk and where mandates, laws and demands for action, do not exist (Dovers & Hezri, 2010). To address these issues, Termeer (2007) argues that people in public domain that promote change actively and who face challenges by seeing opportunities, arranging connections and reinterpreting their own routines are crucial.

Smith *et al.* (2009) share similarly views and state that clear leadership from a chief executive (i.e. president, prime minister, mayor) is needed to overcome bureaucratic resistance, turf battles, and risk aversion, especially regarding complex policy problems that cut across conventional agency jurisdictions. According to Meijerink and Stiller (2011), leadership in climate adaptation must influence policy processes in order to get adaptation policies accepted and implemented, enhance connectivity across different policy making and implementation levels, sectors and actors, increase adaptive capacity of governance networks involved in climate change adaptation and enhance the capacity of society to learn in response to feedback from natural systems. To realise these sets of objectives, leaders must carry out functions such as political-administrative, adaptive, enabling, connective and dissemination functions (Meijerink & Stiller, 2011).

Ford and King (2015:510) suggest that “strong political leadership is critical for initiating the process of adaptation, providing strategic direction and sustaining momentum over time...”. This is important because differing missions and rivalries are considered potentials to inhibit the cross-department or cross-ministry coordination often needed to develop and implement sensible adaptation policies (Smith *et al.*, 2009). Meijerink and Stiller (2011) argue that adaptation to climate change requires change in existing policies, practices and institutions and in thus leadership is needed to devise and implement adaptation policies. Gupta *et al.* (2010:463) share similar views and points out that leadership is important because it is a driver for change, showing direction and motivating others to follow. Termeer *et al.* (2012) distinguish three types of leadership can be visionary leadership, entrepreneurial leadership, and collaborative leadership.

The fifth variable that influences and contributes to the adaptive capacity of institutions is the availability of resources. Institutions should be able to generate sufficient resources/incentives for actors to change norms and rules, implement those changed norms and rules and live up to them (Biermann, 2007). Termeer *et al.* (2012) indicate that without resources such as finances,

technical knowledge and expertise, human capital and authority, it will be very difficult to adapt our institutional framework to climate change. For instance, in an adaptation context, funding concerns the capital cost of interventions and their maintenance over time along with the cost of funding research projects and programmes (Ford & King, 2012). Ford and King (2015) further indicate that the lack of comprehensive, coordinated and sustained multi-year funding has been identified as limiting the ability to advance climate adaptation planning. Human resources are important to identify, implement, monitor and maintain adaptation efforts (Ford & King, 2015). As Gupta *et al.* (2010) indicate, the ability of the institutions to raise the necessary resources is mainly influenced by the context within which the institutions exist.

The sixth and last variable that influences and contributes to the adaptive capacity of institutions is the nature of governance within a society. It is indicated that adaptive institutions emerge from and promote systems of fair governance with the implications that institutions should promote legitimate policy processes, the protection of basic rights and equity, responsiveness and transparency, and accountability (Termeer *et al.*, 2012). According to Gupta *et al.* (2010) the main assumption is that institutions support adaptive capacity when they meet fair governance. Amongst other things fair governance is considered to include legitimate policy-making that is accepted by members of a society, equitable policy processes and outcomes that take account of unequal circumstances in society, responsive processes that show a high degree of transparency and are able to respond to different voices in society and clear accountability procedures that assign responsibilities to different parties (Gupta *et al.* 2010:464 citing Biermann, 2007; Botchway, 2001; Haddad, 2005). These dimensions together with their assessment criteria are depicted in figure 4.1 below

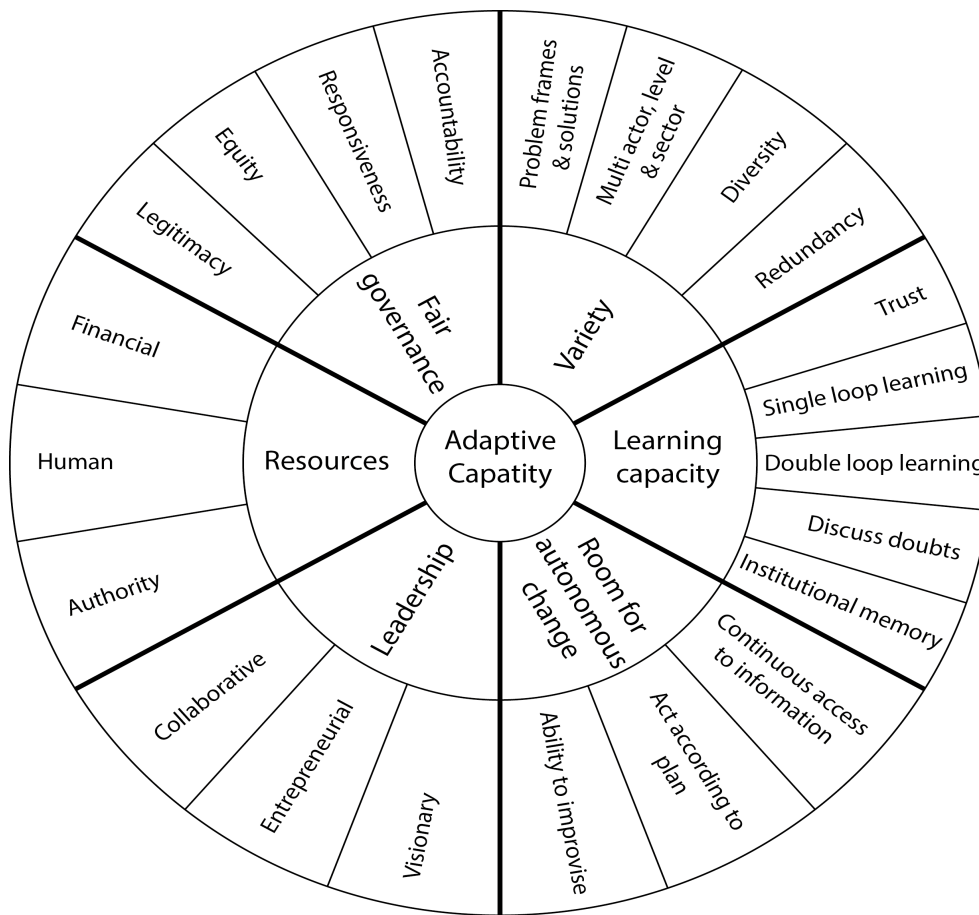


Figure. 4: The adaptive capacity wheel (adapted from Gupta *et al.*, 2010)

The inner circle of the wheel represents adaptive capacity as a whole, the middle circle encompassing the dimensions of adaptive capacity and the outer circle outlining the assessment criteria for the dimensions (Gupta *et al.*, 2010). Gupta *et al.* (2010) further indicate that the wheel may be used to both assess and inform social actors about how their institutions influence different aspects of adaptive capacity. The wheel must be seen as an analytical structuring tool to assist researchers as well as policy makers in their efforts to understand, assess and increase the ability of institutions to foster adaptive capacity of the society (Gupta *et al.*, 2010). As Hill and Engle (2013) indicate, the presence of adaptive capacity enables better management of climate risks and increases resilience. Lockwood *et al.* (2015) share similar views and maintain that high adaptive capacity imparts resilience to individuals, community or socio-ecological systems so that they are likely to be able to maintain a desired state or negotiate a favourable transformation when the current state is untenable or undesirable.

Engle (2011) characterises adaptive capacity as the precondition needed to enable adaptation, both proactive and reactive and the ability to mobilise those elements to anticipate or respond to perceived or current stresses. On the contrary, a number of authors hold a different view with a

reflection that the created adaptive capacity does not necessarily mean that society will use this capacity to adapt. According to Lesnikowski *et al.* (2013), higher adaptive capacity may not necessarily lead to actual adaptation action. Similarly, Ford and King (2015) indicate that having an understanding to adapt will not necessarily translate to actual implementation as the factors that determines implementation might be lacking. According to Gupta *et al.* (2010), adaptive capacity only indicates that institutions provide a higher likelihood of allowing for adaptation. In this regard, Lesnikowski *et al.* (2013) define adaptation action as “studies, policies programmes and projects implemented to better understand or reduce vulnerability to the impact of climate change”.

While acknowledging the complex relationship between actual adaptation taking place and adaptive capacity, it is worth noting that adaptive capacity only reflects the potential for adaptation since adaptation is neither inevitable nor autonomous even where adaptive capacity is high (Ford & King, 2015). Adaptive capacity is only hypothetical and does not capture the implementation of decision-making and governance processes, which determines the likelihood of capacity translating into actual adaptive action (Ford & King, 2015; Lesnikowski *et al.*, 2013; Moser & Eckstrom, 2010; Repetto, 2009; Westerhoff *et al.*, 2011). To this end Ford and King (2015) argue that the development of indices of adaptive capacity for the purpose of prioritising policy support and for monitoring and evaluating the success of interventions only provide partial insights for adaptation decision-making. In this regard they propose an alternative and a complementary concept of adaptive readiness to adaptive capacity.

Ford and King (2015) argue that adaptive readiness captures the strength and existence of governance structures and policy processes, which determines whether adaptation takes place or not. In essence adaptive readiness captures tangible actions that have already been taken to prepare for adaptation and which increases the chances that adaptation will take place and helping to inform if and when adaptive capacity is likely to translate to action (Ford and King, 2015:520). In this regard, in terms of adaptation action, Ford and King (2015) distinguish six factors that determines adaptation readiness: political leadership on adaptation, institutional organisation for adaptation, adaptation decision-making and stakeholder engagement, availability of usable science to inform decision-making, funding for adaptation planning, implementation and evaluation and finally, public support for adaptation.

Ford and King (2015) argue that these six factors are not meant to be exhaustive of all the conditions determining adaptation action but rather represent the most commonly cited in the scholarship. Indeed, building adaptive capacity is by no means a panacea for adaptation but a full understanding and investigation might increase the likelihood of achieving sustainable

outcomes in the face of climate change. This is so because gaps persist in understanding the complex dynamics that effect the stimulation of adaptive capacity at different scales, the role of governance regimes and the favourable conditions for mobilising reactive and proactive capacity (Hill & Engle, 2013).

4.5 CONCLUSION

This chapter aimed to contribute to addressing the first objective of the study, viz. to investigate, assess and discuss the theories/practices of disaster risk reduction and climate change adaptation and the integration thereof by unpacking the governance of climate change adaptation. Furthermore, the chapter aimed to contribute to the literature on the governance of adaptation to the impacts of climate change. The chapter achieved both these aims by highlighting the institutional and organisational aspects of governance that helps facilitate effective adaptation to climate change. While a number of studies on climate change adaptation focus on the types of adaptation and measures that must be put in place to facilitate adaptation, the concept of governance and particularly multi-level and network governance for adaptation has started to find its way into the literature. It has been demonstrated in this chapter that adaptation to the impacts of climate change is a complex endeavour, which cannot be address by a single individual, organisation or by applying a single framework.

In this regard a number of frameworks or approaches including adaptive co-management, multi-level governance, public goods theory, collaborative and network governance frameworks and adaptive capacity frameworks were highlighted. The concept of adaptive co-management has been applied in this chapter as a suitable decision-making tool in the face of uncertainty, which characterises adaptation to the impacts of climate change. It has been indicated that the importance of this approach lie in that it is iterative and promotes flexible decision-making that can be adjusted in the face of uncertainty as new outcomes from management actions and other policy outcomes develop. The complex nature of climate change requires coordination across sectors and between different levels. In this regard the chapter has illustrated the importance of both vertical and horizontal linkages in formulating and implementing adaptation actions. The use of multi-level and network frameworks has helped highlight the interactions between these levels. It has come out clearly that the demarcation or roles and responsibilities in such setting are of importance for adaptation.

It has also been argued here that the use of decision-making approaches and the application of multi-level and network frameworks must be complemented by the use of frameworks to build adaptive capacity. This is important because adaptive capacity is viewed as the potential for realising adaptation. Thus it has been demonstrated in this chapter that some authors have

started to move away from the normative and theoretical understanding of adaptive capacity by unpacking the theorised determinants of adaptive capacity. The application of the frameworks applied in this chapter holds certain implications for the success of adaptation initiatives. It should however be noted that adaptation as a response to climate change is in its infancy and still growing. The consideration of governance will definitely not solve all adaptation problems, but will rather contribute to the reduction of disaster risk. The central argument is this study is that disaster risk will be addressed most effectively and efficiently through the integration of organisations for disaster risk reduction and climate change adaptation. Having identified that the governance of disaster risk through disaster risk reduction and climate change adaptation operates in isolation the next chapter, chapter 5, provides an analytical framework for the integration of structures or organisations for disaster risk reduction and climate change adaptation.

CHAPTER 5

ANALYTICAL FRAMEWORK FOR INTEGRATING PARALLEL STRUCTURES FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

5.1 INTRODUCTION

The two preceding chapters, chapters 3 and 4 presented and discussed the governance of disaster risk reduction and climate change adaptation respectively. This was made necessary because governance of the two approaches have until now evolved in isolation from each other at international, national and sub-national levels. As a result, most of the initiatives to reduce disaster risk through disaster risk reduction and climate change adaptation at national level continue to function in parallel and in isolation. Whereas it is crucial and makes more sense to address integration in a multi-level system (Christensen *et al.*, 2010), this chapter provides an analytical framework for the integration of disaster risk reduction and climate change adaptation organisations at the same level and thus focuses on horizontal integration at national level of government. Despite an increasing weight of motivation on the inter-linkages and integration of disaster risk reduction and climate change adaptation, limited practical approaches have been developed thus far on how integration should take place. This chapter moves beyond the conceptual linkage of the disaster risk reduction and climate change adaptation by clarifying the concept of integration using concepts developed within organisational studies, specifically inter-organisational relations.

To this end, integration is viewed as a continuum which ranges from informal contacts, coordination, cooperation, collaboration and structural adjustment (mergers). Using these concepts, an analytical framework that will enable practical integration at the national level of government is developed. It is important to acknowledge at this point that public administration practices differ from country to country and therefore the analytical framework suggested here characterises integration in general terms. This framework offers suggestions of precise actions to be taken at organisational level and does not consider particularities for different countries and times. The chapter is structured as follows: the introduction in the first section introduces and sketches the structure of the chapter, while the second section presents an overview of organisational theories such as the division of labour, differentiation and government reforms such as New Public Management that has led to the fragmentation of government organisations. The third section provides the rationale for integrating disaster risk reduction and climate change adaptation initiatives. The fourth section clarifies the concept of integration drawing from the human services sector and ultimately the chapter presents an analytical

framework in the form of integration continuum of how integration should take place. The chapter closes by summarising the discussions and paves the way for the next chapter.

5.2 BUREAUCRACY, DIFFERENTIATION AND FRAGMENTATION – THE ROOT CAUSE OF PARALLEL STRUCTURES FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

The theoretical departure of this chapter is an organisational perspective mainly bureaucratic assumptions based on specialisations and differentiation. This perspective implies that the development of single purpose organisations results in more specialised and differentiated central administration (Fimreite & Laegreid, 2005). Aldrich (1999) postulates that the division of labour between activities in organisations leads to role differentiation and specialisation. This specialisation particularly at subsystem level creates a need for integration and coordination at system level (Hatch & Cunliffe, 2006:38). To this end the classical model of bureaucracy by Weber is regarded as an accurate description of the administrative arm of government (Steurer, 2007; Steurer & Berger, 2010). Functional division of labour, hierarchical operation, rule bound working environment and input oriented are the basic tenets of bureaucracy (Peng, 2005). Adopted from the private firm narratives, bureaucracy implies sectoral specialisation or departmentalisation rather than policy integration (Steurer & Berger, 2010). In this regard bureaucracy represents an unambiguous structure of departments, each headed by a minister who is responsible for all the actions of the departmental sub-units (Steurer, 2007; Steurer & Berger, 2010).

The division of labour coupled with the introduction of professionalism and specialisation in the public sector resulted in administrative “silos” that are constructed around policy domains ignoring related policy problems (Steurer, 2007; Steurer & Berger, 2010). These structural administrative silos have to be taken into account when dealing with strategies and initiatives to reduce disaster risk and policy integration. Organisational specialisation and differentiation have been the hallmark of all large organisations in the 21st century and the need to balance with integration (Barkvis & Juilett, 2004). Differentiation in this regard is understood as a state of segmentation of organisational systems into sub-systems, each of which tends to develop particular attributes in relation to the requirements posed by the relevant external environment (Lawrence & Lorsch, 1967). In considering the external environment, the contingency theory of Lawrence and Lorsch of 1976 played a vital role in the further development and understanding of the concepts of differentiation and integration. The contingency theory argues that organisations must respond to what is happening in the environment around them (see chapter 2 of this thesis).

In doing so they differentiate into different parts, each of which would develop particular attributes, which are predictably related to the characteristics of its external environment (Lawrence & Lorsch, 1967). This has led to functional and structural differentiation of departments and other organisational units (Axelsson & Axelsson, 2006 citing Galbraith, 1977). Whereas there are different dimensions of functional differentiation, this study finds solace in those who interpret Luhmann's work to equate functional differentiation to increased fragmentation and complexity. In this regard, functional differentiation implies that modern society is characterised by functional specialisation in structuring social relations (Albert & Buzan, 2011) and is a rational response to the increasing complexity of society (Zurn & Faude, 2013). It has been indicated for instance by Hagen (2001) that functional differentiation is the major characteristic of modern society as it consists of several sub-systems such as religion, education, arts and so forth. In this regard as Esmark (2009) observed, at the meso-level of organisation, government organisations adopt governance mediums, programmes and scripts from function system such as economy, science, law etc. at the macro-level.

Thus viewed from a systems perspective functional differentiation is defined by its historical emergence and stabilisation of a number of territoriality inclusive and communicative exclusive function system such as law, science, economy and so on (Esmark, 2009). Each of the systems is specialised to fulfil only one function for the society (Hagen, 2001). It is argued that all institutions whether public or private maintain primary functions defined by the relations to a particular function system (Esmark, 2009). In a similar line of thinking Buzan and Albert (2011) indicate that functional differentiation implies that modern societies are characterised by functional specification in structuring social relation. In this regard, politics, law, art, economy, science, etc. emerge as relatively autonomous realms of society (Buzan & Albert, 2011). It is for this reason that governments at different levels are divided into departments according to different functions. However, it has been indicated that the organisational structure with functional division is able to meet the needs of differentiation and division to improve efficiency whilst it brings fragmentation to public services and lays down the causes of fragmented government (Jinshan & Tou, 2012). See figure 5.1 below for the relationship between the environment, differentiation, fragmentation and the need for integration.

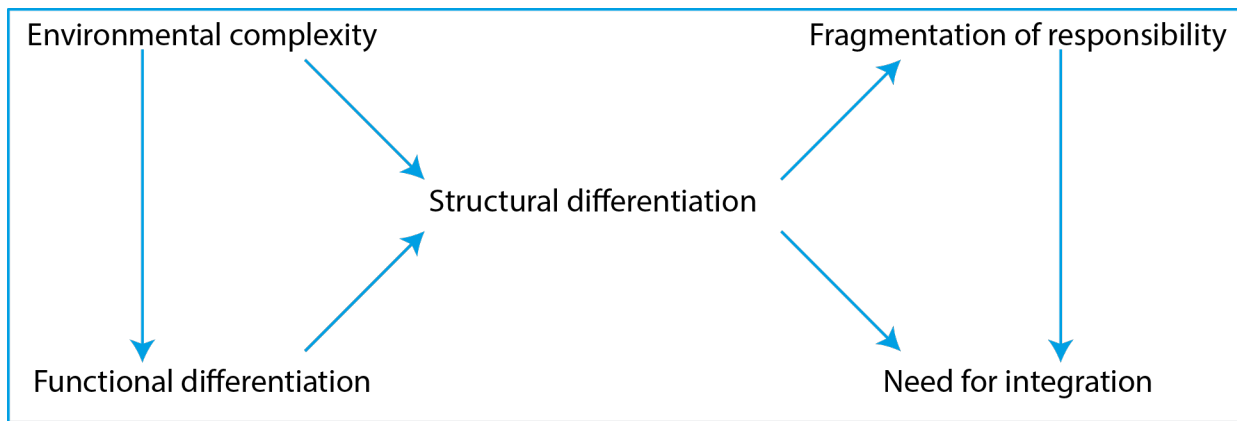


Figure. 5: Relationships between differentiation, fragmentation and need for integration (adapted from Axelsson & Axelsson, 2006)

If different functional departments face a common social problem, but lack coordination, communication and cooperation leading to uncompleted overall policy objectives, it leads to fragmented government (Perri 6, *et al.*, 2002). The problems of fragmentation arise from fragmentation of governance systems along sectoral lines (Zurn & Faude, 2013). In this regard each department makes policy agendas in its own field and optimises the utilisation of resources to achieve its policy objective (Jinshan & Tou, 2012). According to Peters (1998), from the time at which governing structures began to be differentiated into departments and ministries, there have been complaints that one organisation does not know what the other is doing and that their programmes are contradictory and redundant. Zurn and Faude (2013) identify three different types of fragmentation: segmentary fragmentation, which involves institutions performing similar tasks but in different territories, stratified fragmentation which highlights the hierarchical relationship between institutions and functional fragmentations which is a non-hierarchical division of labour between institutions.

Functional fragmentation in particular is of interest here. According to David Ashworth (who changed his name to Perri 6, 2002) the main reasons for organising the public sector on functional grounds which leads to functional fragmentation include improved management focus, better performance management and greater political control. Furthermore, Perri 6 *et al.* (2002) highlight a number of consequences for functionally fragmented governance. These include but are not limited to, lack or poor sequencing of appropriate interventions arising from failure to communicate, dumping of problems and costs on each other, and conflicting programmes. Zurn and Faude (2013) argue that it is not fragmentation that is the problem but rather the degree of fragmentation and the lack of coordination of fragmented or differentiated

institutions that become the most important issue. As Lawrence and Lorsch (1967) posit, a high degree of differentiation requires a higher degree of integration.

According to Peng (2005) governments have long sought to discover means of making policies adopted in one department correspond with or at least not conflict with those adopted in other departments with similar mandates. As a result, a new wave of reform is sweeping through the public sector in the 21st century. This is happening against the backdrop of the perceived failure of bureaucracy and New Public Management to address cross-sectoral issues. This includes such approaches as Holistic governance (Perri 6 *et al.*, 2002; Peng 2005; Steurer *et al.*, 2011), Joined Up government (Russell & Jordan, 2009), Whole-of-Government approach (Christenssen & Laegreid, 2006), Horizontal governance (Barkvis & Juillet 2004) and Integrated and collaborative service delivery (Vincent 1999; Axelsson & Axelsson, 2006; Gao *et al.*, 2013). Under these different names, countries such as the UK, Canada, Australia and New Zealand to mention but a few, are pursuing a holistic approach to governance that differs considerably from the traditional public administration of functionally divided departments. According to Jinshan and Tou (2012), this wave of government reform is meant to defragment government. This is so because governments of modern societies are expected to address a number of cross-cutting issues that do not fit into the departmental slots (Peng, 2005).

As Steurer and Berger (2010) argue, issues to be addressed by government are becoming increasingly cross-cutting and thus do not fit the ministerial boxes into which government has placed them. The main goal of post- New Public Management reforms is to gradually move the public sector back from the disintegration or fragmentation to situation of greater integration (Christensen & Laegreid (2007a). At the heart of the reform is the aim to achieve four main goals through coordination between departments and organisation. These includes “removal from the policy environment without any coordination or corrosion, the better use of scarce resources, coordination of specific policy fields by bringing stakeholders together, and establishment of seamless rather than fragmented public service” (Gao *et al.*, 2013). The concept of working across boundaries is becoming increasingly important in public administration and in public management theory and practice (Christensen *et al.*, 2010).

Drawing from Gregory (2003) and Pollit (2003), Christensen and Laegreid (2007b) argue that in the horizontal dimension, measures such as cross-sectoral bodies, programmes or projects are being used to modify siloisation of the central public administration. As indicated earlier, fragmentation brought by bureaucracy, differentiation and mainly functional differentiation and the New Public Management has been cited as the major government failure in tackling the so called “wicked” problems and cross-sectoral problems. Furthermore, it has been shown

elsewhere in this study that as a result of the traditional division of government responsibilities particularly at national level into discrete areas (Howes *et al.*, 2012), has contributed to the location of disaster risk reduction and climate change adaptation on different administrative units.

As a result of locating in different administrative units of government, disaster risk reduction and climate change adaptation have taken different evolutionary paths, have a different conceptualisation of terms and they use different methods, strategies and institutional frameworks to achieve their goals (Lavell, *et al.*, 2012:37; McBean & Ajibade, 2009:181; Schipper, 2009:17; UNISDR, 2008). Ultimately, disaster risk reduction and climate change adaptation are pitted against each in both policy and practice as discrete issues with no overlaps. However, it has been indicated that disaster risk reduction and climate change adaptation have much in common as they share the same objective, that of reducing disaster risk by addressing vulnerability and building resilience. As Liam and Bhular (2011) indicate the integration of organisations in these two fields of practice will improve policy coherence, enhance efficiency and effective use of resources, minimise duplication and contradictory policies and deal with trade-off effects. With this background in mind the next section provides the motivation for the integration of organisations for disaster risk reduction and climate change adaptation.

5.3 THE RATIONALE FOR INTEGRATING SEPARATE STRUCTURES FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

A growing body of evidence and lines of reasoning exist which suggest that climate change is exacerbating disaster risk through extreme and severe weather events in most parts of the world. It has been widely presented that the recent increase in disaster is as a result of anthropogenic climate change (Birkmann *et al.*, 2009; Bouwer, 2011; IPCC, 2001, 2007, 2012a; Oxfarm, 2007; Shamsuddoha *et al.*, 2013; UNISDR, 2008; Venton & La Trobe, 2008; World Bank, 2012). Dramatic events such as the November 2013 typhoon Haiyan in the Philippines is a stark reminder that humanity is vulnerable as it is exposed and vulnerable to the effects of disasters and extreme weather events. Oxfam (2007) points out that climate related disasters are on the increase as the earth warms up in line with scientific observations and computer simulations that model the future climate change.

Thus conclusive evidence is emerging of the influence of climate change on extreme weather events and ultimately the increased disaster risk. It has been observed that with climate change, extreme weather events have become intense, unprecedented and unpredictable. Similarly, it

has been observed that the number of climate related disasters in particular floods, storms and cyclones is increasing faster than the number of geological disasters such as earthquakes. According to the World Bank (2013) citing Munich Re (2013) weather-related or hydro-meteorological disasters accounts for over 87% of the total reported disaster losses and 61% of the total lives lost. In addition to loss of life and harsh impacts on communities and their livelihood, extreme events result in large economic losses.

Whereas arguments have been presented on the complexity and difficulty of qualifying the relationships between extreme weather events and disasters (see Bouwer, 2011; Huber, 2011; Lavell *et al.*, 2012; Seveviratne *et al.*, 2012), the devastating impacts of extreme weather events gives impetus to the discussion of the relationship between increased disaster risk and the changing weather patterns. As Birkmann *et al.* (2009) indicate, the worsening and dramatic trends of weather-related disasters such as droughts, hurricanes, heat waves, cyclones, floods and other extreme weather events confirm that climate change has already been manifested. As such the relationship between extreme weather events and disaster risk should be exploited as the entry point for the potential link between disaster risk reduction and climate change adaptation. This should provide a platform for those involved in disaster risk reduction and climate change adaptation to take up opportunities to integrate their efforts.

However, it has been observed that practitioners addressing disaster risk through disaster risk reduction and climate change adaptation measures are affiliated to separate organisations and institutions both internationally and nationally (Venton & La Trobe, 2008; Mitchell & van Aalst 2008). Osberghaus *et al.* (2010) share similar views and points out that in the real world, disaster risk reduction and climate change adaptation are carried out by different organisations operating at different spatial and temporal scales. The traditional division of government responsibilities into discrete areas (Howes *et al.*, 2012) has contributed to the location of disaster risk reduction and climate change adaptation on different administrative units of government. As a result, disaster risk reduction and climate change have different origins, developed in parallel, have a different conceptualisation of terms and they use different methods, strategies and institutional frameworks to achieve their goals (Lavell, *et al.*, 2012; Schipper, 2009:17; UNISDR, 2008). These differences between disaster risk reduction and climate change adaptation provide major obstacles that could affect the integration of disaster risk reduction and climate change adaptation (Birkmann *et al.*, 2009; Birkmann & Von Teichman, 2010; Few *et al.*, 2006; Harris & Bahadur, 2011; Howes *et al.*, 2013; O'Brien *et al.*, 2008; Shamsuddoha *et al.*, 2013; Thomalla *et al.*, 2006).

At the national level, disaster risk reduction and climate change adaptation as functions of government are located in different administrative units. This is so because governments have traditionally divided their responsibilities into discrete areas (Howes *et al.*, 2012). At the same time the situation is being perpetuated by the fact that the main institutions of modern government were created in the nineteenth century and were not designed to address the current complex environmental issues (Howes *et al.*, 2012 citing Beck, 1992). The affiliation of disaster risk reduction and climate change adaptation to different departments creates a fertile ground for territorial contention between the practitioners, where each tends to work within their own specialist community of practice (Birkmann, *et al.*, 2009; Solecki, *et al.*, 2011). In addition to the challenge posed by affiliation of the two fields in different administrative units of government, there is also an array of practitioners with different expertise attached to the different organisations and institutions that follows different visions and objectives (Birkmann *et al.*, 2009).

As Venton and La Trobe (2008) put it, work in disaster risk reduction and climate change adaptation involves scientists, practitioners and policy-makers from communities that are distinct in many ways, with different cultures and drawing different information, knowledge and experiences. This poses coordination and collaboration challenges. The coordination challenges emanate from the difficulty of defining responsibilities and institutional arrangements for implementing climate change adaptation and disaster risk reduction jointly (Djalante & Thomalla, 2012). Thus it has been argued that fragmentation, both issue compartmentalisation and institutional disjuncture is the flaw that is hampering efforts for integrated disaster risk governance (Carlarne, 2008). Drawing from Perri 6 *et al.* (1999), the negative results of fragmented governance include but are not limited to: each concerned organisation focusing on its own priorities leaving others to pick up the pieces; duplication of services which causes waste and confusion of service recipients; and conflicting goals. This fragmentation has been cited as the major government failure in tackling the so-called “wicked” problems and cross-sectoral problems.

Unsurprisingly, the past two decades have seen researchers, authors, scholars, government and organisations provide compelling arguments and reasons for linking disaster risk reduction and adaptation to the changing climate. To this end, a considerable body of work both academic and policy focused has been done on the inter-linkages between disaster risk reduction and climate change adaptation (see Becker, 2012; Begum *et al.*, 2014; Birkmann & Mechler, 2015; Few *et al.*, 2006; Forino *et al.*, 2015; Forino *et al.*, 2014; Heazle *et al.*, 2013; Howes *et al.*, 2015; Kelman *et al.* 2015, Mercer *et al.*, 2014; Mitchell & van Aalst, 2008; Schipper, 2009; Schipper & Pelling 2006; Rivera, 2014; Sperling & Szekely, 2005; Van der Keur *et al.*, 2016; and Yamin *et*

al., 2005). Despite these calls for multi-disciplinary and inter-disciplinary approaches between the two specialised fields, they are still dominated by approaches in which the different sciences and disciplines develop their knowledge and understanding independent of each other.

This is so because much of the available literature on linking climate change adaptation and disaster risk reduction focuses on similarities and differences, identifying and analysing opportunities for and barriers to integration (Olhoff, 2011; Birkmann & Von Teichmann, 2010; Schipper & Pelling, 2006; Mitchell & van Aalst, 2008), with little or no emphasis on how integration should unfold. Those who advocate the integration of disaster risk reduction and climate change adaptation does not provide modalities of how integration should be carried out. As a result, the linkage between disaster risk reduction and climate change adaptation is continuing conceptually with little evidence of practical integration. Given that both disaster risk and climate change impacts are rising, and that disaster risk reduction and climate change adaptation share common goals of reducing disaster risk, the need for a coherent response cannot be over emphasised.

This calls for re-adjustments or re-orientation of the structures or organisations for effective, efficient and appropriate response. In this regard integration is conceived to be capable of resolving multifaceted problems such as disaster risk. An integrated approach between the two is recognised internationally as robust to address multiple simultaneous risks and hazards (Handmer *et al.*, 2014). Integration in this regard is important because it is able to manage cross-cutting issues that do not correspond to the institutional responsibilities of individual departments. Whereas there are two forms of integration, vertical and horizontal, the focus here is on horizontal integration between different departments in the public sector. As Meijers and Stead (2004) indicate, this integration will require more interaction, accessibility and compatibility, lead to more interdependence, need more formal institutional arrangements, involve more resources, require stakeholders to relinquish more autonomy and is more comprehensive in terms of time, space and actors. In an effort to guide the ways in which integration should take place, the next section provides an analytical framework for the integration of disaster risk reduction and climate change adaptation.

5.4 THE INTEGRATION OF ORGANISATIONS FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION: THE INTEGRATION CONTINUUM

The attractive ideals of integration have not necessarily translated into clear actions among practitioners (Hord, 1986), partly because the concept of integration is ill-defined in the literature and the impact of achieving high level integration is not well understood (Barki & Pinsonneault,

2005:165). Over the year, integration in organisational studies has focused on processes and functions across units within a single organisation (Barki & Pinsonneault, 2005). The term has also been diversely understood over the years and differently conceptualised across disciplines (Barki & Pinsonneault, 2005). As a result of conceptualisation across disciplines, the concept of integration has evolved independently and in a non-integrated manner and as such understood differently (Barki & Pinsonneault, 2005). Whereas integration occupies the epicentre of several domains, in this study, integration is conceptualised drawing from organisational studies and mainly inter-organisational theory.

The literature on organisational studies provides a number of interrelated definitions on the concept of integration. Kaiser (2011:2) defines integration as “an arrangement which brings together relevant parts of organisations on either a long term or temporary *ad hoc* basis to carry out a particular operation, project, programme or policy”. In defining integration, Glouberman and Mintzberg (2001) focus on the coordination or management of the dependencies between the organisations. Shannon and Schmidt (2002:17-18) define integration as “the processes that cross or expand boundaries fixed by existing institutional rules, organisations and division of authority”. According to Negasi (2009:7), the term integration literally means to bring parts of an object into a complete whole. This conceptualisation fits well with institutional assumption of Tolbert and Zucker (1996:176) that the structural components of a system must be integrated in order for the system to survive, since the components are interrelated parts of the whole. Gao and Zhu (2013) are even more explicit and describe integration as the actual implementation or execution through the development of common organisational structures and merged professional practice and interventions.

The integration of disaster risk reduction and climate change adaptation has found support from practitioners and scholars from both fields (Becker, 2012; Begum *et al.*, 2014; Birkmann & Mechler, 2015; Few *et al.*, 2006; Forino *et al.*, 2015; Forino *et al.*, 2014; Heazle *et al.*, 2013; Howes *et al.*, 2015; Kelman *et al.* 2015, Mercer *et al.*, 2014; Mitchell & van Aalst, 2008; Schipper, 2009; Schipper & Pelling 2006; Rivera, 2014; Sperling & Szekely, 2005; Van der Keur *et al.*, 2016; and Yamin *et al.*, 2005). In addition to the link that exists between the two through extreme climate and weather events, proponents of integration have identified similarities, differences, areas of convergence and barriers to integration as reflected in the discussion above. Prominent amongst the reasons for the resurgence in advocacy for integration is that problems that people face such as disaster risk are not defined or shaped in the same way which departments and agencies are structured (Perri 6 *et al.*, 1999). Most of the complex and intractable problems that people face such as disaster risk cut across boundaries of separate

authorities and functional jurisdictions. Thus integration is viewed to carry the potential to link actors, organisations and networks across sector boundaries (Shannon & Schmidt, 2002).

Instead of focusing on the mainstreaming of climate change adaptation considerations into disaster risk reduction and/or *vice versa*, it is argued in this study that the integration of structures for disaster risk reduction and climate change adaptation can draw lessons from the Human Services field and other inter-organisational arrangements that has been involved in service integration as an organising principle in the last four or so decades (see Ahgren, 2012; Axelsson & Axelsson, 2006; Fisher & Elnitsky, 2012; Martin *et al.*, 1983; Mintzberg & Glouberman, 2001; Neale *et al.*, 2012; Sandfort, 2004; Keast *et al.*, 2007; Redburn, 1977; Vincent, 1999; Waldfogel, 1997). As Reitan (1998) indicates, the redesign of services through integration and coordination was encouraged by the fragmentation of human services. This is so because most services problems just like disaster risk are cross cutting and as such no single organisation can address the problem effectively. Van der Ven (1976) argues that cross-cutting problems can be dealt with effectively through joint inter-agency planning and programming for the reason that resources and capabilities to cope with the problems are contained within autonomous organisations and vested interest groups.

The overlapping domains (in the case of the focus of this chapter, disaster risk) of organisations present the need and opportunities for those organisations to engage in inter-organisational relations (Van der Ven, 1976). Thus, the greater the domain similarity, the greater the interdependence, and therefore the greater the need for integration. According to Zurn and Faude (2013), if differentiated institutions have some area of overlapping competence or mandate, they create a demand for second-order differentiation where they need to coordinate their efforts. As Van der Ven (1976) postulated that domain similarity is a qualitative indicator of the kind of organisations likely to become jointly involved in a web of inter-relations. The main purpose of these inter-organisational relations is to attain outcomes that cannot be achieved by an organisation independently. It must however be noted that relations between organisations vary a great deal according to the degree of formalisation, intensity, reciprocity, standardisation, whether they are mandated or voluntary, tangible or intangible (Reitan, 1998).

As a result, inter-organisational integration can take many different forms ranging from management hierarchy, which has to do with the top-down coordination of the organisation; to market competition, which deals with contractual relations between organisations and voluntary cooperation and collaboration between organisations that are not part of the common hierarchy (Axelsson & Axelsson, 2006). Indeed, with so many complex and cross-cutting issues facing humanity currently, integration has become an important issue in the development of modern

societies (Axelsson & Axelsson, 2006). Lawrence and Lorsch (1967) indicate that the degree of differentiation determines the choice of the form of integration with higher degree of differentiation requiring horizontal integration. Axelsson and Axelsson (2006), indicate that sorting out the different forms of integration requires a distinction to be made between two main domains: vertical and horizontal integration. Horizontal integration, which holds the interest of this study, takes place between organisations or units on the same hierarchical level or has the same status (Axelsson & Axelsson, 2006).

Lawrence and Lorsch (1967) posit that a high degree of differentiation requires higher degree of integration. Thus the level of integration will vary between different services and units and the need for integration (Ahgren, 2012). For instance, some cases might require a full merger while in some cases integration will only mean limited loss of contacts among those involved. Thus several authors have presented integration as a continuum with full segregation on the one extreme and fully integrated structure on the other (Ahgren, 2012; Atarodi & Ferdiosipour, 2014; Axelsson & Axelsson, 2006; Hudson *et al.*, 1999; Keast *et al.*, 2007; Leutz, 1999 Vincent, 1999).

At one end of the continuum are organisations that hardly interact with each other when it comes to dealing with public problems that extend beyond their capabilities (Bryson *et al.*, 2006; Page *et al.*, 2013). This side of the continuum is characterised by a highly fragmented system with organisations working in isolation. In situations where organisations are autonomous, the inter-organisational field is differentiated and not integrated, thus resembling a fragmented field of organisations (Axelsson & Axelsson, 2006). At the other end are organisations that have merged into a new entity meant to address the public problem through fully shared authority and capabilities (Page *et al.*, 2013). Such organisations are completely integrated and there is no differentiation (Axelsson & Axelsson, 2006). It should, however, be noted that the merged form of integration may lead to new forms of differentiation and fragmentation (Leutz, 1999).

At the mid-range of the integration continuum are organisations that share information, undertake coordination activities or develop shared power arrangement, through collaboration in order to pool their capabilities to address the challenge (Bryson *et al.* 2006; Crosby & Bryson 2005; Page *et al.*, 2013). However, in practice and in the literature the terms coordination, cooperation, collaboration, networks and integration are used synonymously and interchangeably. This point was emphasised by Laegreid and Rykka (2014) who reflect that in common usage, coordination has a number of synonyms such as cooperation, coherence, collaboration, network, partnerships and integration. However, at a fundamental level, these concepts hold different meanings and connotations with different implications. As Sandfort and

Millward (2006) argue, their relationship can be distinguished based on the intensity in which the concept is applied.

For instance, the difference between coordination and cooperation has more to do with the extent to which collective goals or individuals' goals are at play (Meijers & Stead, 2004). Drawing from Mulford and Rodgers (1982), Meijers and Stead (2004) further indicate that coordination goes beyond cooperation in that it is more formalised, involve more resources, and increased interdependence which threatens autonomy. In cooperation, two or more organisations work together to accomplish own goals rather than collective goals (Meijers & Stead, 2004). In the analytical framework provided in figure 5.2 below, informal linkages (cooperation), coordination, collaboration and merger are considered part of the process of integration and integration continuum has been customised for integrating structures for disaster risk reduction and climate change adaptation.

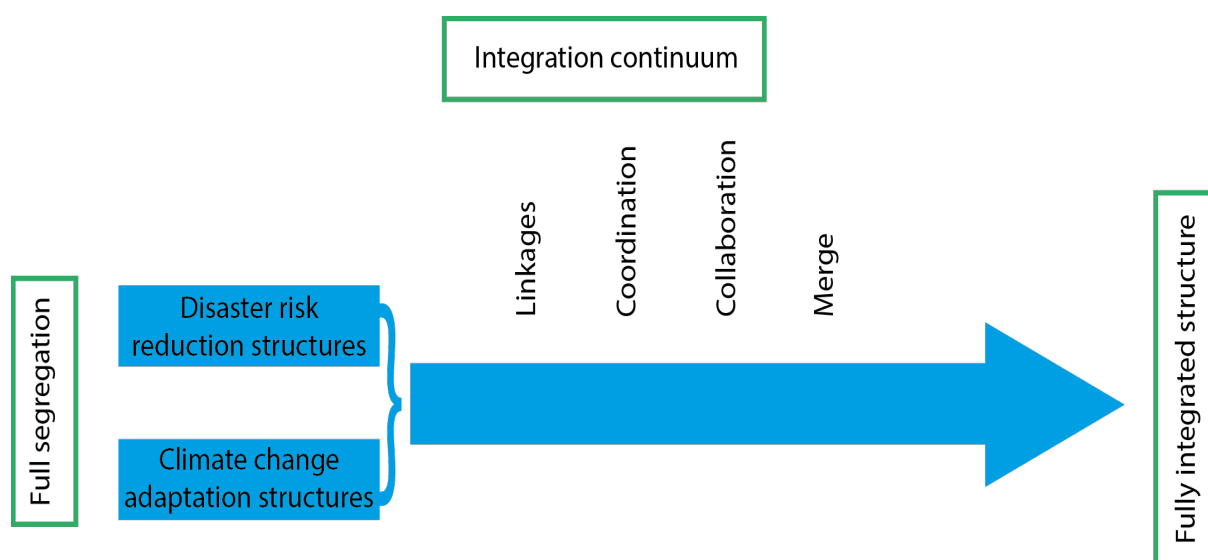


Figure. 6: An analytical framework for integrating disaster risk reduction and climate change adaptation

5.4.1 Informal contacts or Cooperation

Informal contacts or cooperative endeavours are characterised as independent, and autonomous operations. In cooperation, fully independent organisations share information that supports each other's organisational outcomes (Barki & Pinsonneault, 2005). They do so while maintaining separate identities (Gajda, 2004). At this end of the continuum, those involved only share information, retaining their autonomy and the withdrawal of one from the arrangements does not affect the activities (Keast *et al.*, 2007). Thus the key elements in cooperation are the

establishment of short-term, often informal and largely voluntary relations between organisations. Empirical evidence in this study shows that practitioners of disaster risk reduction and climate change adaptation are somehow involved in cooperation of some sort in addressing disaster risk. For instance, they share early warning information and they also meet to share experiences at project level.

5.4.2 Coordination

Traditionally, public sector organisations have adopted an overly narrow silo approach that fails to consider trans-boundary challenges that cut across traditional responsibilities (Laegreid & Rykka, 2014). An increase in the division of labour raises a number of specialist producers whose efforts must be coordinated (Davis, 2003). Similarly, the principle of single purpose organisations with many specialised non-overlapping roles and functions has produced fragmentation, self-centred authorities and the lack of cooperation and coordination (Boston & Eichbaam, 2005 in Laegreid & Rykka, 2014). The sectoral administrative silos in government that result from the resultant fragmentation have to be taken into account when addressing the challenge of policy integration. In this regard, coordination is viewed as one of the strategies to facilitate integration. Whereas there are different variants of coordination observable in the literature, processes (Mulford & Rogers 1982; Dunshire 1978); hierarchical nature (Kochen & Deutsch, 1980), this study draws from Peters (1998) and thus focuses on the degree to which co-ordination can be achieved.

In this regard, Peters (1998:296) referred to coordination as an end state in which the policies and programmes of government are characterised by minimum redundancy, incoherence and lacunae. The concept of co-ordination suggests that a lead organisation or official has formal authority over the processes, products and participants (Kaiser, 2011). This setting produces a hierarchical structure. Thus Axelsson and Axelsson (2006) have described coordination as a form of integration characterised by a high degree of vertical integration and low degree of horizontal integration. In this regard, integration is achieved through the existence of common management hierarchy where decisions are made at the top and implemented at the lower levels (Axelsson & Axelsson, 2006). Barkvis and Juillet (2004:8) define coordination “as the practice of aligning structures and activities to improve or facilitate the achievement of horizontal objectives, reduce overlaps and duplication”. Similarly, Keast and Mandell, (2012) describe coordination as the bringing together of interdependent parts of a system into an ordered relationship to produce a whole. As a result of the different conceptualisation of the term, coordination efforts assume numerous shapes and go under various names.

Thompson (1965) in Hulthen (2013) grouped coordination mechanisms into three main categories, standardisation, planning and mutual adjustments. In simple terms, standardisation means the establishment of internally consistent routines and rules between the organisations (Hulthen, 2013). Coordination by plan is based on the development of detailed schedule (Hulthen, 2013). Moreover, coordination by mutual adjustments focuses on joint problem-solving and decision-making (Hulthen, 2013). In the literature, the term coordination is used as an umbrella concept embracing a number of other related terms such as coherence and consistency. In coordination independent organisations align activities that support mutually beneficial goals (Barki & Pinsonneault, 2005). Coordination requires a higher level of commitment as well as agreed loss of autonomy, increased risk and resource sharing (Keast & Mandell, 2012). Thus, coordination involves joint planning of projects, decision-making, joint policy and joint funding initiatives (Keast & Mandell, 2012).

Within the public sector coordination is a long-standing topic within the field of public administration (Barkvis & Juillet, 2004). Dan (2013) argues that coordination has always been an element of organisations at the fundamental level. He (Dan, 2013) further indicates that the need for creating structures and processes to coordinate intra and inter organisational activities has always existed but it is the method that has changed. According to Peters (2005), coordination and coherence have been problems as long as there has been government, resultant from functional differentiation. From a structural-instrumental perspective, the more the specialisation in public organisations, the greater the need for coordination (Laegreid & Rykka, 2014).

As public administration has become an increasingly multi-actor, and multi-level entity, coordination across levels of government and across policy sectors remains salient (Laegreid & Rykka, 2014). In recent times the commitment to address intractable and complex policy issues has spurred the renewed vigour in coordination in modern society. As Laegreid and Rykka (2014) argues, this emanates from the realisation that the existing specialisation in the public sector apparatus is not fit to handle complex and cross-cutting issues that the modern society is facing. Despite the centrality of coordination issues in government, the issue is paradoxically never a high priority in government (Peters, 1998). This is perhaps so because the recognition that coordination is very difficult to achieve. In his review of "Services Integration", Aggranoff (1991) indicates that coordination continues to be extraordinarily difficult to attain. Seidman (1970) realised the difficulty of coordination and branded it the "philosopher's stone" (Jennings & Crane, 1994).

According to Jennings and Crane (1994:342), “the fact that coordination is considered to be the philosopher’s stone suggests that it is an elusive, magical ingredient that will transform flawed systems of administration”. Coordination challenges vary depending on whether the structural specialisation is based on purpose, process or geography (Laegreid & Rykka, 2014). Particularly in government the difficulty in coordination has its origins in the way in which governments are structured and the entrenched patterns of thinking about public policy and about governing (Peters, 2005). On the other hand, the difficulty of attaining coordination is continuing to be blamed on certain barriers that limit coordination. Campbell and Hartwell (2005) identified and presented eight of these barriers. These include organisational sovereignty, different missions, large discrepancies between power and resources between organisation; different mandates, programming approaches, timeframes and conceptualisation of end state; different cultures, language and system of communication and politics of coordination.

However, Jennings and Crane (1994) identified and grouped these barriers into three major categories: organisational, legal/technical and political. For instance, it is argued that differing missions can lead to conflict over goals, directions and activities because mission shapes priorities and thus can create significant difficulty of joint action (Jennings & Crane, 1994). Therefore, addressing the inherent difficulty prevalent in all coordination efforts and managing the barriers might prove useful in improving coordination (Campbell & Hartnett, 2005). Noting that the term coordination is used rather loosely in the study of the public sector, Peters (2005) has argued for an understanding of four levels of coordination. Firstly, he referred to the most basic form of coordination as negative coordination. In his view, this form of coordination involves government organisations and programmes getting out of each other’s way and producing a negative interaction amongst themselves. Accordingly, this will involve minimal investment in political capital as it is unlikely to significantly alter the patterns of policy-making.

Secondly, Peters (2005) termed the form of co-ordination that moves away beyond simple mutual recognition of programmes to finding ways of working together to provide better services as positive coordination. Whereas each organisation retains its autonomy and pursues its individual goals, they all enter into some form of agreement. The main thrust in this form of coordinating is that coordination between the organisations occurs at programme delivery level (Peters, 2005). Policy integration, which is the third level of coordination, involves coordinating service delivery and goals being pursued by public organisations. In this regard the involved organisations need to cooperate to ensure that their goals are aligned (Peters, 2005). This level of coordination requires intense bargaining and the imposition of authority from the top of government to make the organisations to perform their tasks in an integrated manner (Peters, 2005). At the final level, in addition to the development of strategies for the issues that cuts

across organisational lines of government, a clear vision for the future of policy of the areas involved and that of government needs to be developed.

A clear policy guidance will assist the direction of policy efforts (Campbell and Hartnett, 2005). It is anticipated that an achievement of this level will move policy-making towards comprehensive solutions to the public sector problems. Peters (2005) argues that each of these levels involves greater integration of policy and therefore requires a greater investment of political capital to achieve. Laegreid and Rykka (2014) are of the opinion that over and above addressing issues of efficiency and effectiveness, coordination also addresses issues of participation, legitimacy, trust, power and political control. Particularly political control and support are of utmost importance in achieving coordination in the public sector. It has been indicated, for instance by Fernandez and Rainey (2006), that organisational change in the public sector depends on the degree of support from political overseers and other key stakeholders. This is so because they have the ability to impose statutory changes and the control of flow of vital resources to public organisation (Fernandez & Rainey, 2006). They can do so by creating and conveying a vision that explains the need for change.

Of equal importance in coordination is that powers that political heads have to select political appointees who are sympathetic to the change and who have the knowledge and skills required for managing the transformation (Fernandez & Rainey, 2006). Therefore, ministers who are political heads of departments together with senior civil servants need to provide strong leadership for coordination to succeed (Peng, 2005). On the other hand, it is encouraged that coordination bodies must employ good coordination processes that must be supported by incentives that encourage institutions and individuals to invest in coordination (Campbell & Hartnett, 2005). Well-coordinated efforts will encourage the development of ideas about joint and holistic working environment, joint information systems, dialogue between the departments, planning processes and decision-making (Gao & Zhu, 2013). It is worth mentioning here that an added advantage of coordination is that it can be extended to the private and civil society counterparts. However, IFRC (2009) argues for the integration of disaster risk reduction and climate change adaptation beyond coordination and raising awareness, which brings into the picture the concept of collaboration.

5.4.3 Collaboration

It is inconceivable to imagine a single organisation trying to address disaster risk whether from natural hazards, or as a result of climate change on its own. Arguments have been presented that complex and cross-cutting issues such as disaster risk cannot be addressed effectively through efforts of a single organisation and thus requires multi-organisational and multi-sector

settings (Kapucu, 2010). In such settings organisations frequently develop formal and informal relations in order to work together to pursue shared goals, address common concerns and attain mutual beneficial ends (Kapucu, 2005). When other methods of working together, including cooperation and coordination prove insufficient to address the problem at hand, those involved can form network structures to co-ordinate their efforts (Keast *et al.*, 2004). Such organisational collaborations have become more prominent aspect of the functioning of many different types of organisations including government organisations of modern society. This is so because collaboration is regarded as the prerequisite for effective policy integration (Steurer, 2007; Steurer & Berger, 2010).

Collaboration is the most stable and long-term relationship and is characterised by high levels of reciprocal interdependence (Keast & Mandell, 2012). In collaborations the individual organisations give up some degree of independence in an effort to realise shared goals (Barki & Pinsonneault, 2005). Organisations are dependent on each other to such an extent that the effectiveness of actions of one organisation relies on the actions of another (Keast & Mandell, 2012). Inter-organisational collaboration is used to describe a process that can emerge as organisations interact with one another to create new organisational and social structures (Thomson *et al.*, 2007). Collaboration has been defined as “a process in which autonomous or semi-autonomous actors interact through formal and informal negotiations, jointly creating rules and structures governing their relationship and ways to act or decide on the issue that brought them together” (Thomson *et al.*, 2007). Bryson *et al.* (2006:44) define collaboration “as the linking or sharing of information, resources, activities and capabilities by organisations in two or more sectors to achieve jointly an outcome that could not be achieved by organisations in one sector separately”. Collaboration is an active process of coordinating, developing, agreeing to and implementing strategies for achieving cross-sectoral objectives (Barkvis & Juillet, 2004). Collaboration is a form of integration with high degree of horizontal integration and low degree of vertical integration (Axelsson & Axelsson, 2006). In this regard, integration is achieved through voluntary agreements and mutual adjustments between organisations and it mainly depends on the willingness to work together.

As it can be observed here there are many and varied definitions and conceptualisation of collaboration. As Emerson *et al.* (2011) put it, the definition of collaborative governance is amorphous and its use inconsistent. The lack of consensus among scholars on the meaning of collaboration makes it difficult to compose findings and to know whether what is measured is really collaboration (Thomson *et al.*, 2007). Similarly, different conceptualisations of the term collaboration have led to a number and significance of collaborative forms of organising which include inter-organisational teams, partnerships, alliances and networks. Thomson *et al.* (2007)

identified five dimensions of collaboration. In the governance dimension, collaboration involves creating structures that allow participants to make choices about how to solve collective action problems they face. The administrative dimension conceives of collaboration as a means to the end. In this regard, organisations collaborate to achieve a particular purpose. To do so they create some kind of administrative structure that moves from governance to action.

The organisational autonomy dimension is characterised by the dynamism and frustration implicit in collaboration (Thomson *et al.*, 2007). This is so because partners maintain their own distinct identities and organisational authority separate from collective identity. In mutuality, organisations that collaborate must experience mutually beneficial interdependencies based on either differing or shared interests. Lastly they indicated that norms such as reciprocity and trust play a major role in collaboration. However, it has been argued that different forms and dimensions of collaboration are necessary to achieve different goals (White & Winkworth, 2012). Since there are many different forms of collaboration, this study adopts the view that particular attention needs to be devoted to the factors that determine the failure or success of collaborative efforts. In this regard, the collaboration rubric developed by White and Winkworth (2012) becomes relevant. As the authors argue, the rubric provides a roadmap for collaborative efforts to connect the different forms of collaboration with the actions that are necessary to support them. It guides organisations to the issues that are most important as they build partnerships with others.

According to White and Winkworth's (2012) development model of collaboration, the foundation for any collaboration is effective communication firstly to understand the problem at hand and secondly to build the relationship needed to solve these problems. In a similar line of thinking, Parkinson (2006) indicates that meaningful collaborative relationships demand that clear communication be put in place from the outset. In this regard organisations intending to collaborate must develop direct lines of personal contacts with relevant others, use face to face meetings to address important organisational issues, engage in inter-organisational information session and hospitality and regular meeting to deepen knowledge of the issues affecting the society and the potential for collaborative responses (White & Winkworth, 2012). Over and above the importance of effective communications, White and Winkworth (2012) argue that successful, long-lasting collaboration requires three more important things: authorising authority, shared understanding of the value of the public and operational capacity to implement. They (White & Winkworth, 2012) called these enabling factors for collaboration.

As the Nous Group (2013) indicates, any form of collaboration requires that these enablers and the associated barriers be understood and addressed adequately. It has been argued that

without these enablers, collaboration is bound to fail (White & Winkworth, 2012). Greenwald (2008) argues that to achieve meaningful collaboration, organisations residing in different sectors must overcome barriers related to organisational boundary maintenance. According to White and Winkworth (2012), collaboration will succeed if it is endorsed by those who fund and set policy frameworks which guide the actions, led and supported within the organisation and supported by the influential stakeholders outside the organisation. Of particular importance in the authorising or legitimising environment are the elements such as the adoption of formal mandate through legislation and policy documents, signing of memorandum of understanding, putting information-sharing protocols in place. In this regard the organisations will operate according to the shared regulation and policies specific to the integrative agreement (Parkinson, 2006).

Legal and policy regulations exert the utmost influence on collaboration between public organisations (Kozuch & Sienkiewicz-Malyjurek, 2013). They set out assignments and entitlement for these organisations as well as obligating them to enter into contacts and take joint initiatives (Kozuch & Sienkiewicz-Malyjurek, 2013). At the same time, authorisation requires that the vision for collaboration to be embraced by all members of critical operational staff at all level. Chen and Tjosveld (2008) argue that it is the way that goals are perceived that determine how groups and individuals interact and these interaction patterns determines the outcome. Shared goals and shared planning are important in achieving the goal of collaboration and to agree on how success will be measured (White & Winkworth, 2012). In this regard shared planning and other shared governance mechanisms are essential as they provide a vehicle for resolving language and conceptual problems (which are the major characteristic of the differences between disaster risk reduction and climate change adaptation).

The point of creating and sustaining cross-sector collaboration is the production of public value that cannot be created by a single organisation (Zhang & Lu, 2010). Zhang and Lu (2010) further indicate that public value is most likely created by making use of each organisation's characteristic strength while finding ways to minimise, overcome and/or compensate for each organisations' characteristic weakness. Page *et al.* (2013) posit that cross-sector collaboration unequivocally creates value only when it delivers certain dimensions including substantive outcome, procedural legitimacy and democratic accountability. Public value in collaboration is described as fulfilling the collaboration's overarching and subsidiary purposes, meeting applicable mandates and achieving lasting and widespread benefits at reasonable cost that no single organisation could have achieved alone (Page *et al.*, 2013). These values are a central part of an organisation's culture and emphasise the aspiration of the organisations for what it considers ideal (Chen & Tjosveld, 2008).

However, White and Winkworth (2012) acknowledge that partnerships are costly and that good public administration requires that scarce resources be used responsibly and to the maximum benefit of all. Thus a closer collaboration of the practitioners and policy-makers will promote greater effectiveness and efficiency in the use of available resources. It can therefore be argued that collaboration is effective in bringing together diverse resources, expertise and experiences to solve complex issues whose solutions lay outside the capacity of any single organisation. As indicated here, collaboration is resource-intensive and therefore its funding will continue if it is seen to produce desirable outcomes (White & Winkworth, 2012). Collaboration typically involves two or more organisations who must develop new ways of working together within the existing resources, develop joint initiatives, create new structures, develop common data systems and develop shared outcome frameworks (White & Winkworth, 2012).

In this regard collaboration will comprise many different activities spanning cross training of staff, multi-organisational working group, common financial arrangements, to sharing of administrative data and joint case management (McDonald & Rosier, 2011). Thus an operating process is a process that includes a set of related activities designed to produce a particular outcome through collective action (Zhang & Lu, 2010). According to Sandfort and Millward (2006) collaboration occurs through multiple mechanisms such as integrating staff, joint planning or joint budgeting. The operational capacity for collaborating will be increased through the development of a shared practice framework outlining jointly developed principles, domain of practice and mechanism for information sharing; and training (White & Winkworth, 2012). On the other hand, co-locating of staff in other agencies will increase the capacity for organisations to collaborate (White & Winkworth, 2012). The benefit of collaboration lies in this potential to build capacity and maximise the use of combined resources (Danaher, 2011).

As Thomson *et al.* (2007) indicate, the importance of collaboration lies in the assumption that scarce resources will be efficiently allocated while strengthening inter-organisational ties. Kapucu *et al.* (2010) are of the opinion that an organisation's capacity to collaborate includes having appropriate resources to contribute to the collective effort. Proponents of collaboration often assumes that interdependence among collaborators leads to higher collective utility at a given resource expenditure (Hill & Lynn, Jnr. 2001). The Nous Group (2013) identified the setting of mutual goals, purpose and benefits as threshold, organisational and individual trust, strong and effective leadership and appropriate and adaptive governance as the most important enablers for collaboration. However, a number of barriers must be addressed in order to achieve collaborative outcomes. Particularly for the public sector these will include stringent accountability frameworks that limit flexibility, political environment that may change rapidly and

forces the public sector members involved in collaboration to change direction and priorities, a strong professional public sector and differences in operational language and culture (Nous Group, 2013). Other authors such as McDonald and Rosier (2011) showed that the success of collaboration is highly dependent upon the context – the quality of the relationship between the organisations/ sector and the strategies utilised. Due to the importance of context, process and outcome evaluation of collaboration are important.

A process framework for collaboration suggests that collaboration occurs over time as organisations interact formally and informally through repetitive sequences of negotiation, development of commitment and the execution of those commitments (Thomson & Perry, 2006). Similarly, White and Winkworth (2012) indicate that from a development perspective, collaboration and the construction of partnerships is a process that takes time and experience; that organisations will develop greater capacity to achieve as they engage with each other over time. According to Thomson and Perry (2006), Ring and Van de Ven's (1994) iterative and cyclical process framework suggests that organisations need to negotiate minimal and congruent expectations regarding their collective action in order to commit to an initial course of action. This initial step is important and necessary if there is to be any hope of making progress in effectively managing societal problem that goes beyond the mandate of a single organisation. As Kozuch and Sienkiewicz-Malyjurek (2013) indicate, from the perspectives of relationship strengths, that organisational collaboration proves to be more potent than cooperation and coordination and thus precedes full organisational integration.

5.4.4 Merger or full integration

It has been indicated earlier that at the extreme end of the continuum is the concept of full integration where the different organisations or units of the organisations are merged together to form one entity with its own statutory status and appropriate authority (Bakvis & Juillet, 2004). A merger is described as an arrangement that merges or transfers all or parts of different organisations or their authorities, jurisdiction, personnel and resources on a permanent basis to other organisations either as a new or existing department or agency. According to Barki and Pinsonneault (2005:165) merger or coadunation involves homogenising and fusing two or more organisations or components thereof (i.e. organisational units, departments, partners which includes business processes, people and technology involved) together to the point where they are no longer distinct. It implies complete relinquishment of autonomy of at least one organisation or parts thereof in an effort to strengthen one organisation (Barki & Pinsonneault, 2005; Gajda, 2004).

Barkvis and Juillet (2004) provided a model example of the Canadian Food Inspection Agency which was a merger between activities and responsibilities formerly housed in five different departments. When organisations are merged, they are completely integrated and they are not differentiated (Axelsson & Axelsson, 2006). The basic requirements for policies to qualify as integrated are comprehensiveness, aggregation and consistency (Underdal, 1980). This involves the organisational re-layout where a part or whole or two or more organisations are merged to create a new organisation (Atarodi & Ferdiosipour, 2014). Barkvis and Juillet, (2004) argue that one way of managing horizontal issues is by creating a separate organisation with its own statutory status and appropriate authority reporting to a minister. In all cases full integration means that the resources (human, financial, skills, etc.) of the organisations or units involved are pooled together to form a new organisation (Ahlgren, 2012). It should, however, be noted that the establishment of the new organisation involves putting in place a new hierarchical structure. This in essence might lead to new forms of differentiation and fragmentation. Thus, Barkvis and Juillet (2004) indicate that as an alternative to a full merger, special units within departments can be created and tasked with the duty of supporting horizontality through training, advice and good practices and the promotion of horizontal culture.

What comes out clearly from the preceding discussion on the different modes of integration is that when organisations work together, their interdependence ranges from a simple arrangement to a complex redefined unit with common purpose (Thatcher, 2007:47). It should therefore be noted that the management of integration is not an easy task for anyone. In order for integration to succeed as anticipated, a number of barriers to integration need to be addressed. Most of these barriers are structural and they involve the existence of different administrative boundaries, different laws, rules and regulation, different budgets and financial streams, different information streams and databases (Van Raak *et al.*, 1999; 2003 in Axelsson & Axelsson, 2006). Similarly, other soft issues like different professional and organisational cultures, different values and interest and differences in commitment of individuals are equally important and must be addressed.

According to Fernandez and Rainey (2006), all organisational changes must involve changes in behaviour of the organisational members. According to Axelsson and Axelsson (2006) these softer issues are the most difficult to address for integration. It requires quite an investment on time to change values and cultures. What makes the success of whole-of-government (another term used in the literature for integrated governance) initiatives is the energy, enthusiasm and the commitment of people working in the organisation (Vincent, 1999). As indicated above, mechanisms can be put in place to change the structures through political fiat but it needs time to re-orientate one's values.

On the other hand, a well-integrated government administration requires a delicate and enforceable accountability system to support the monitoring function (Peng, 2005). However, it should be noted that accountability gets complicated when initiatives cut across hierarchical responsibilities (Barkvis & Juillet, 2004). This is so because existing accountability mechanisms are designed for vertical accountability relationship and thus inadequate for horizontal governance (Ryan & Walsh, 2004). It has been argued by Peng (2005) that when the governance relationship becomes complex, many hands of government and departments are involved in a particular policy area thus making the accountability structure somewhat insolvable and unrecognisable maze (Peng, 2005). Similarly, developing functional integration can be devastating when collaborative advantages are hidden and missing because professionals are defending their territories in contra-productive ways (Ahgren, 2012). It has also been argued that failure to cooperate by partners leads to the ultimate demise of ties resulting from misaligned incentives of self-interested agents (Gulati *et al.*, 2012).

5.5 CONCLUSIONS

The literature consulted reveals that the incidence of disasters and their consequences is increasing globally and that anthropogenic factors are playing a major role in their increase. Given that both disaster risk and the impacts of climate change are on the rise, the need for coherent response strategy to address the risk becomes increasingly apparent. The key argument is that fragmented governance structures are unlikely to provide the capacity required to tackle intractable and complex problems such as disasters risk. The chapter identified the root cause of the fragmented governance of disaster risk through disaster risk reduction and climate change adaptation to be Weber's classical theory of bureaucracy. Furthermore, this chapter provided the rationale of why disaster risk reduction and climate change adaptation, as fields of practice, should be integrated. Whereas disaster risk reduction and climate change adaptation developed in parallel, the relationship between the two concepts is changing as more people are realising that the two are intertwined. Finally, the chapter provided an analytical framework for integrating parallel structures for disaster risk reduction and climate change adaptation.

What is clear from the literature, though, is that effective integration of disaster risk reduction and climate change adaptation structures will demand changes in mind-set of those involved in order to take up new challenges. Where feasible, this will require merging the different departments or sections within the departments that deals with disaster risk reduction and climate change adaptation. Where the merger is not feasible, interrelations forums must be

developed where common issues will be discussed and joint planning will occur. Alternatively, departments should be arranged according to outcomes as opposed to functions. It has been observed in chapter 3 and chapter 4 that communities and local authorities are the first to be affected by the impacts of disasters and therefore the local level should be prioritised when integrating the structures. It should however be noted that this integration of the structures is in no way a panacea for solving disaster risk problems. It will potentially contribute to its reduction.

The chapter has therefore addressed the research objective to investigate, assess and discuss the theories/practices of disaster risk reduction and climate change adaptation and their convergence thereof. Moreover, the chapter has provided some reasons for the separation of structures for disaster risk reduction and climate change adaptation, thus partly addressing the third objective, to unravel the reasons and rationale for establishing parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community. This chapter together with chapters 2, 3, and 4 has laid a foundation for analysing existing structures for disaster risk reduction and climate change adaptation in each country constituting the Southern African Development Community. The next chapter presents an analysis of the organisational and legislative frameworks for disaster risk reduction and climate change adaptation in each Southern African Development Community member state.

CHAPTER 6

INSTITUTIONS AND ORGANISATIONS FOR ADDRESSING DISASTER RISK AND CLIMATE CHANGE IN EACH SADC MEMBER STATE

6.1 INTRODUCTION

Southern Africa is one of the most vulnerable regions in the world to the impacts of climate change (Holloway *et al.*, 2013; SARUA, 2014). As a result, the southern African region as part of the sub-Saharan Africa faces numerous hazard events of hydro-meteorological origin every year (Holloway *et al.*, 2013), the effects of which heighten humanitarian crises (USAID, 2013). The resultant disasters present significant challenges to vulnerable populations who often lack access to basic services and the resources necessary to cope with disasters (USAID, 2013). The impacts of these disasters are exacerbated by high levels of poverty, epidemic diseases such as malaria, armed conflicts, reliance on rain-fed agriculture and weak governance structures (Bhavnani *et al.*, 2008). Whereas the region does not experience dramatic disaster events such as tsunamis and volcanic eruptions such as those occurring in the Asia-Pacific region, hydro-meteorological events and climatic event such as cyclones, flooding and droughts are common across the southern African region (The World Bank, 2010).

Further changes in the climate variables will increase the intensity, duration and frequency of weather-related disasters if not already doing so. The anticipated increase in number, scale and intensity of disasters as a result of the changing climate (see IPCC, 2012; IPCC, 2014) has profound implications for disaster risk governance. To this end, weak national and local institutions for addressing disaster risk are cited as major factors contributing to vulnerability to natural hazards in developing countries (Anderson, 1995; Smith, 2001). Thus addressing disaster risk effectively calls for the transformation of governance including government institutions that were created in the nineteenth century, as these institutions were not designed to address current complex environmental issues and disaster risks (Beg *et al.*, 2002; Howes *et al.*, 2012 citing Beck, 1992; Sokona & Denton, 2001).

Chapter 3 and chapter 4 of this study have outlined the governance of disaster risk reduction and climate change adaptation respectively. It has come out clearly that whereas both require multi-level or polycentric and cross-sectoral governance systems, government, particularly at national level, which is of interest in this chapter, still has an important role to play. The literature review on the inter-linkages between disaster risk reduction and climate change notes that the two fields of practice have a similar objective, that of addressing disaster risk thus necessitating their integration. This chapter adopts this as a point of departure and seeks to address the

second objective of this study, by critically reviewing and analysing the organisations and legislative frameworks (institutional arrangements) for disaster risk reduction and climate change adaptation in each country constituting the Southern African Development Community. This is important to provide a solid foundation for the empirical study to follow in chapters seven and eight of the study.

This chapter is arranged in five broad sections. In setting the scene, the chapter opens by conceptualising regional integration with the focus on its drivers particularly on the African continent. As the study area in question, the chapter briefly presents a background to the SADC region in the third section. In section four, the structures for disaster risk reduction and climate change adaptation are presented and analysed. This is done by looking at three important aspects, the profile of each SADC country including the major hazards that pose disaster risk is presented, organisations, both governmental and non-governmental responsible for disaster risk reduction and climate change (adaptation) are presented, as well as the policy and legislative frameworks for both disaster risk reduction and climate change adaptation. Section five presents a summative discussion of the findings of section four. Finally, conclusions from the chapter are drawn.

6.2 REGIONAL INTEGRATION AND ITS DRIVERS ON THE AFRICAN CONTINENT

Regional integration has become a global phenomenon since the introduction of this concept in Europe in the early 1950s (Negasi, 2009; Ndulo, 1999). According to Whalley (2006:2) there were effectively no regional agreements in the world trading system before the General Agreement on Tariffs and Trade (GATT) was negotiated in 1947 and came into effect in 1948. Pomfret (2005) share similar views and indicates that three waves of regionalism have swept the world trading system since the signing of the General Agreement on Tariffs and Trade in 1947. According to Negasi, (2009), regional integration arrangements initially became fashionable in the 1960s following the formation of the European Economic Community in 1957 and the European Union in 1960. Contrary to this view, Mwanza (2010) and Taye (2000) indicate that in Africa, regional integration dates back to the early 1900 with the establishment of the Southern African Customs Union (SACU) in 1910 and the East African Community (EAC) in 1919, which ceased to function in the 1970s (UNECA, 2006) and re-established in 1999 (Khorana, 2007). Whereas the issue of the origin of the concept is not contested, regional integration has become an important component of modern governance arrangements (Hartzenberg, 2011).

In this regard, a region, as Page (2001) puts it, is a group of countries that have chosen themselves and created a legal framework for cooperation, cover an extensive economic

relationship, have the intention to be of indefinite duration and the possibility of foreseeing that the region will evolve or change. Longhi and Nijkamp (2007:3) view regions as economic systems that share many characteristics of national economies. As indicated elsewhere in this study, the term integration is viewed to literally mean bringing parts of an object into a complete whole (Negasi, 2009:7). Particularly for regional integration, the basic ingredient of any integration form is the elimination of barriers to trade among two or more countries (Allen, 1963:4 in Hosny, 2013:133). As a result of the focus on economic and trade liberalisation, much of regional integration is equated to economic integration.

In this regard, Sheer (1981:33) defines economic integration as “a process by which nations reduce trade barriers and reorganise multiple economies to meet national and supranational objectives”. Similarly, Negasi (2009) citing Winter (1996) indicates that regional integration is any policy designed to reduce trade barriers between a subset of countries regardless of whether those countries are contiguous or close to each other. It is characterised by the establishment of joint institutional mechanisms and a degree of shared sovereignty (Negasi, 2009). Economic integration is characterised by a number of stages as identified by Balasaa in 1961 (Andrei, 2012; Hosny, 2013; Pomfret, 2005; Sheer, 1981). These include Free Trade Areas (FTA) in which a number of countries do not impose any trade barriers (zero tariffs) on goods procured within the union; Customs Union (CU) which is an FTA where member countries apply common external tariffs on imported goods from outside; Common Market (CM) which allows free movement of labour and capital among member states; and Monetary Union (MU), wherein member countries use a single currency (Balasaa, 1961).

These stages or categories are often treated as a sequencing pattern towards closer integration as well as the taxonomy of deeper integration (Pomfret, 2005). Pomfret (2005) further indicates that the defining feature of these regional trade arrangements is the treatment that non-members receive from members. However, many of the agreements, which comprise the recent wave of regional trade arrangements substantially goes beyond the conventional free trade agreements in dealing with items not yet subjected to the World Trade Organisation (WTO) disciplines (Whalley, 2006). Whalley (2006) further indicates that the additional issues for trade negotiations, differs both between multilateral and regional negotiations and across individual and regional negotiations.

It is imperative to indicate here that regional integration organisations are established for particular reasons mainly to address socio-economic conditions of the member countries (Shams, 2003). Shams (2003) indicates that regional integration is a means to realise economic and political objectives. To this end, the interaction between economic and political factors of

integration may yield high, mixed or low ratings of the potential success of a union (Haas & Schmitter 1964 in Hosny 2013). Particularly for Africa, regional integration reflects a strong focus on liberalisation of trade in goods following the provisions of Article XXIV of the GATT in the establishment of free trade areas and customs union (Hartzenberg, 2011). According to UNECA (2006), changes in the world trading systems are the major drivers of Africa's regional integration agenda.

Regional integration in Africa follows the traditional concept based on geographical proximity and contiguity of countries and political cooperation through to economic cooperation (UNECA, 2006:1). However, a number of compelling reasons are provided in the literature as to why Africa is pursuing the regional integration agenda. According to Leshaba (2004), African leaders have seen regional integration and cooperation as a way to replace links with former colonial rulers after independence. Hartzenberg (2011) sees regional integration as a rational response to the difficulties faced by a continent with many small markets and landlocked countries. According to Mwanza (2010), continental integration is a means towards effective integration into the world's trading system and for solving Africa's developmental challenge. UNECA (2012) indicates that Africa have vigorously pursued integration agenda as a collective and development strategy.

The blueprint for Africa's continental integration is spelt out in the Abuja Treaty agreed upon in 1991 (Mwanza, 2010). This treaty is heralded as a landmark of change in the policies and implementation of regional integration in Africa. The main purpose of the Abuja Treaty was to establish the African Economic Community (Mwanza, 2010). The Abuja Treaty stipulates that African states must endeavour to strengthen their regional economic communities by coordinating, harmonising and progressively integrating their activities in order to attain the African Economic Community (UNECA, 2012). It should, however, be noted that despite the identification of all the drivers and the adoption of the Abuja Treaty, for the continent's regional integration agenda, the path to Africa's integration has not been easy (UNECA, 2012).

Integration has been characterised by poor implementation of the ambitious regional integration targets as a result of following the linear market integration (Hartzenberg 2011). Linear market integration means that integration follows a stepwise process of goods, labour and markets and eventually monetary and fiscal integration (Hartzenberg, 2011). However, UNECA (2006) points out that there are somewhat mixed results in the regional integration process in Africa. Similarly, Mwanza (2010) acknowledges that there are certain success stories of note by some African regional economic communities. Furthermore, Mutai (2011) notes that regional integration in both the East African Community and the Southern African Development

Community holds a lot of promise for the states concerned. This is so despite a need to take a number of steps to get regional integration and trade liberalisation in these blocs back on track. The next section provides background to the Southern African Development Community as the primary focus of this study.

6.3 BACKGROUND TO THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY REGION

Inferring from the word, the Southern African Development Community is a conglomeration of states for the purpose of development of the southern African region (Shams, 2003:22). SADC is an inter-state economic and political body, which aims to achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of southern Africa and support the socially disadvantaged through regional integration (SADC, 2010a). According to Qobo (2007), the regionalisation in southern Africa was mainly driven by political rather than economic considerations with trade or economic agendas coming into the picture after the recasting of the Southern African Development Coordinating Conference into the Southern African Development Community in 1992. However, SADC (2003) points out that “regional co-operation and integration in southern Africa owes its origin to historical, economic, political, social and cultural factors that have created strong bonds of solidarity and unity among the peoples of southern Africa”. SADC (2013) further indicates that these factors have contributed to the formation of a distinct southern African personality and identity that underpins political and economic cooperation.

Regional integration among the southern African countries was first initiated in the 1970s by the Frontline States, which included Angola, Botswana, Mozambique, Tanzania and Zambia, with the main purpose of achieving political liberalisation in the region and the reduction of dependence on apartheid South Africa (Jurčić *et al.*, 2011; Saurombe, 2009). However, it was only in 1980 that nine African states formed what was then called the Southern African Development Coordination Conference (SADCC). In pursuance of their objectives, SADCC focused on functional cooperation in key sectors through the SADCC Programme of Action (SADC, 2003; Saurombe, 2009). Above all SADCC reflected the spirit of Pan Africanism, which was preoccupied with the need for regional integration as a means towards the unity of the African continent and the recovery of the African dignity and status in global affairs (SADC, 2003).

With the need for strengthening the SADCC identified, the Windhoek Declaration transformed the SADCC in 1992 to form what is currently known as the Southern African Development Community (SADC, 1992). The redefinition of SADCC to SADC by the SADC Treaty of 1992

changed the organisation from a loose association towards more legally binding arrangements (Saurombe, 2009). SADC's legal status is outlined in Article 3(1) of the Treaty, which states that "SADC shall be an international organisation and shall have legal personality with capacity and power to enter into contract, acquire, own or dispose of movable or immovable property and to sue and to be sued" (SADC, 1992). Sourombe (2009) further indicates that the geopolitical changes during this era included the independence of Namibia from colonial rule as well as the promise of a new dawn of democracy in South Africa. Limited by the focused nature of this chapter, to present the different structure to address disaster risk from natural hazards and those resulting from the changing climate in SADC, this section will not detail all the history of the region.

To this end the southern Africa sub-region is defined as the total geographical area occupied by the fifteen member States of the Southern African Development Community (Chishakwe, 2010). These member states are Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. A brief overview of each SADC member states as depicted in figure 6.1 below will be presented in section 6.4.



Figure. 7: Map of SADC (SADC, 2012)

As a body, the SADC is an inter-state organisation whose goal is to promote sustainable and equitable economic growth and socio-economic development through efficient productive systems, deeper co-operation and integration, good governance and durable peace and security among fifteen member states (SADC Treaty 1992). SADC (1992) indicates that the organisation aims to achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of southern Africa and support the socially disadvantaged through regional integration as outlined in the treaty. In addition, SADC develops policies aimed at the progressive elimination of obstacles to free movement of capital and labour, goods and services and the people of the region, promote development of human resources, development, transfer of technology and improvement of economic management and performance through regional cooperation (Kalenga, 2012; Goosen *et al.*, 1999; Ndulo, 1999; SADC, 1992). Furthermore, it promotes coordination and harmonisation of international relations of member states and secures internal understanding and mobilisation of inflows of public and private resources into the region (SADC, 1992).

Therefore, as Kalenga (2012) indicates, SADC has adopted a developmental approach, which seeks to address production, infrastructure and efficiency barriers to growth and development. Furthermore, SADC member states have placed industrial development at the core of the region's development integration approach (McCarthy, 2014). As SADC (1992) indicates, such objectives will be achieved through:

- harmonisation of political and socio-economic policies and plans of member states;
- mobilisation of the peoples of the region and their institutions to take initiatives to develop economic, political and cultural ties across the region; and
- the creation of appropriate institutions and mechanisms for mobilisation of requisite resources for the implementation of programmes and operations of SADC and its institutions.

The integration agenda of SADC was conceptualised under the Regional Indicative Strategic Development Plan (RISDP) of 2003. As McCarthy (2014) indicates, this document is a blueprint for regional integration in SADC. Similarly, Kalenga (2012) is of the opinion that the RISDP articulates the roadmap for SADC integration in the area of trade and economic liberalisation through the establishments of the FTA in 2008, CU in 2010, CM by 2015, MU by 2016 and CU with single currency by 2018 (see previous section on the brief explanations of each of these). According to McCarthy (2014) the region took the first step towards regional integration by launching the Free Trade Area in 2008.

Despite this progress towards regional integration, SADC is still plagued by a number of challenges. Saurombe (2009) observes that the biggest challenge in SADC is that the region lacks a synchronised development agenda as some member states belong to one or more other trade areas such as the Common Market for Eastern and Southern Africa (COMESA), SACU, EAC. The same sentiment was echoed by UNECA (2006) that the multiplicity of overlapping membership in regional economic communities' constraints the integration aspirations of the region. Moreover, Kalenga (2012), identifies institutional integration, which entails a reduction in national sovereignty as the remaining contested issue in SADC. Shams (2003) is of the opinion that the weakness of SADC as a regional integration organisation is reflected in the weakness of its Secretariat. In this regard, as Kalenga (2012) indicates, the institutions that are established to oversee, implement and coordinate the regional integration agenda for SADC lacks legal and institutional frameworks to ensure that member states comply with their obligations.

These legal and institutional frameworks are viewed to be important for the successful integration of the region. It has been argued for instance that success in the EU integration was to a large extent as a result of the existence of these legal and institutional frameworks (Kalenga, 2012). Consequently, the prospects for deeper integration in SADC are cited by Kalenga (2012) and Mapuva and Munyengwa-Mapuva (2014) to remain bleak as the region faces a number of challenges (Mapuva & Munyengwa-Mapuva, 2014). These include multiple and concurrent memberships by member states to different regional economic communities; the heterogeneous nature of the SADC economies; duplication emanating from the activities of the SACU and the SADC; the intricacies of rules of origin; different levels of economic development within SADC member states; as well as the failure of the SADC Tribunal to provide recourse to justice and act as a unifying platform for member states (Mapuva & Munyengwa-Mapuva, 2014).

Many of these challenges are attributed to the transformation that took place from SADCC to SADC, which was not accompanied by appropriate institutional frameworks for integration (Saurombe, 2009). This necessitated the restructuring process of the SADC institutions, which was initiated in 2001. As SADC (2015) indicates, the restructuring process was part of the institutional reform that was made necessary as a result of a number of difficulties and constraints encountered in the transition from the coordinating Conference into a Community. As a result, eight (8) institutions were established under the guidance of Article 9 of the Treaty Amendment. These institutions are:

- Summit of Heads of State or Government;

- Organ on Politics Defence and Security Cooperation;
- Council of Ministers
- A Secretariat;
- A Tribunal;
- A Troika;
- Standing Committees of Officials; and
- SADC Committees.

The SADC Organ on Politics Defence and Security, which is of particular interest in this study is managed on a Troika basis and is responsible for promoting peace and security in the SADC region. It is mandated to steer and provide Member states with direction regarding matters that threaten peace, security and stability in the region (SADC, 1992). Article 2.2(l) of the Protocol on Politics, Defence and Security Cooperation identifies the enhancement of regional capacity in respect of disaster management and coordination of international humanitarian assistance as one of the organ's important objectives. As outlined in the Outcomes and Recommendations of the Pre-Season Preparedness and Planning Workshop that took place between 5 and 8 October 2010 in Gaborone, Botswana, the Secretariat and the SADC member states' national disaster authorities acknowledge that good disaster risk reduction depends on coordination efforts of all involved and at all levels (SADC, 2010b). Of particular importance is the acknowledgement that climate change is likely to worsen the frequency and magnitude of hydro-meteorological hazards, thus necessitating a need by governments of member states and their partners to implement radical measures to ensure community safety and protection of economic assets (SADC, 2010b). Having provided the background on the SADC region and acknowledging that disaster events in the region affect several countries simultaneously, a regional approach to managing the risk is necessary and therefore the next section outlines current initiatives to address disaster risk through disaster risk reduction and climate change adaptation.

6.4 CURRENT INITIATIVES AT SUPRA-NATIONAL (SADC) LEVEL ON DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

The SADC objectives articulated in Article 5 (a) and (g) of the SADC Treaty provides the basis for establishing institutional and development of measures for disaster risk reduction and humanitarian action (Akol *et al.* 2014). As a result of the recognition that the region is at risk from multiple hazards, SADC was the first Regional Economic Commission to draft a disaster risk reduction strategy in 2001 (Akol *et al.* 2014; Manyena 2013). The main purpose of this strategy was to enhance disaster risk reduction coordination at regional level (Manyena, 2013). Moreover, recognising the importance of disaster risk reduction, SADC took concrete steps to

ensure that it is mainstreamed into national policies by establishing a Disaster Risk Reduction Unit in 2008 within the SADC Organ on Politics Defence and Security. Thus the coordination of regional preparedness and response programmes for trans-boundary hazards and disasters within the SADC region is the responsibility of the Disaster Risk Reduction Unit.

More importantly, the SADC Regional Platform for Disaster Risk Reduction was inaugurated in 2011. Currently the SADC Secretariat through the Regional Platform for Disaster Risk Reduction is implementing a number of programmes and projects aimed at early detection, early warning and mitigation of disaster effects. As such, the current SADC disaster risk reduction programme has three pillars, namely, strengthening disaster risk reduction coordination capacity, strengthening disaster risk reduction information management systems and building response capacity (Akol *et al.*, 2014). Taking into consideration the adaptation to the impacts of climate change, programmes and activities on risk reduction and disaster management within SADC are ensuring a shift in approach from reactive disaster management to preventative and multi-sectoral disaster risk reduction initiatives (Chishakwe, 2010:66).

This has lead to the creation of a number of other institutions and development of initiatives to implement disaster risk reduction and climate change adaptation. Amongst others, these include the Climate Services Centre (formerly Drought Monitoring Centre established in 1990), which is responsible to provide operational, regional services for monitoring and predicting extremes in climate condition for the purpose of improving disaster risk management in the region and to help prepare SADC member states for hydrometeorological hazards, conservation and protection of natural resources (SADC, 2016); Southern African Climate Outlook Forum (SARCOF), which brings together national DRM officers, national meteorological departments and other stake holders to seasonal climate forecasts and prediction; Regional Remote Sensing Unit; and Regional Vulnerability Analysis and Assessment Programme Management Unit.

For effective implementation of disaster risk reduction programmes and initiatives, the SADC Ministers responsible for Disaster Risk Management and Ministers of Finance, in their meeting on June 26, 2015 agreed to establish a regional disaster preparedness and response fund (SADC, 2015). Importantly, the Ministers urged members' states to domesticate the Sendai Framework on Disaster Risk Reduction and encouraged the SADC Secretariat and member states to review current regional and national Disaster risk reduction policies and strategic frameworks in order to align them to the Sendai Framework (SADC, 2015). Having provided this background on the SADC region, the importance of coordination to reduce disaster risk, and the current initiatives on disaster risk reduction and climate change at supra-national (SADC) level, the next section outlines and presents an overview of organisations and legislative frameworks for disaster risk reduction and climate change adaptation in each SADC member states.

6.5 AN OVERVIEW OF ORGANISATIONAL AND INSTITUTIONAL ARRANGEMENTS FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE (ADAPTATION) IN EACH SADC MEMBER STATE

Whereas southern Africa has historically been exposed to disasters such as droughts and floods, the sub-continent has seen an increase in the frequency and severity of climatic hazards in recent decades (Engelbrecht *et al.*, 2013; Ziervogel *et al.*, 2008). As indicated climate change is likely to worsen sudden onset disaster. The high degree of natural variability in climate is thought to make the region highly vulnerable to anthropogenically induced climate change, and as should the effect of anthropogenic forcing is increasing the frequency and/or amplitude of extreme climatological anomalies (Engelbrecht *et al.*, 2013; SADC 2012). Whereas the changes in extreme weather events over the southern Africa region remains largely unexplored (Engelbrecht *et al.*, 2013:173) in their study using variable-resolution global model conformal-cubic atmospheric model (CCAM) found for instance that rainfall and extreme rainfall events associated with closed-lows are consistently projected to increase over the region. As these changes manifest, a critical test of governance systems is to develop solutions to effectively adapt and respond to the increasingly complex risk parameters (social, economic, political and environmental) (Deere-Birkbeck, 2009:1173).

In this regard, measures to address disasters risk including the risk posed by climate change have been prominent on the policy agenda over the last two to three decades. This as governments at national level and national disaster management authorities are central to implementing risk reduction measures (World Bank, 2010). However, just like in the rest of Sub-Saharan Africa, the institutional arrangements for risk reduction in SADC are very diverse (World Bank, 2010). Member states of SADC are characterised by diverse institutional, legislative and administrative frameworks for governance of disaster risk including risk posed by climate change (The World Bank, 2010). These frameworks are integrated into the government administrative machinery with disaster management, risk reduction and climate change adaptation carried out by several institutions including government ministries, national departments/organs and local government in collaboration with humanitarian organisations and international partners (The World Bank, 2010).

Besides, a number of these countries, if not all, face significant governance challenges, including institutional and policy framework to effectively respond to disasters and to manage risk reduction measures (The World Bank, 2010). Specifically, these governance challenges include poor staffing and skills, weak analytical and implementation capacity, an unclear institutional landscape addressing disaster risk management, and climate change across various ministries and agencies, and weak partnerships with other agencies and academia,

NGOs, and the private sector (The World Bank, 2010). The next sub-sections present an overview of organisations and legislative frameworks for both disaster risk reduction and climate change adaptation in each member state of the Southern African Development Community. The list consists mainly of the main organisations and is not exhaustive. Whereas this is meant to be a desktop study, however, due to the limited available information, additional information was sourced from key informants in each country to fill in the information gap.

6.5.1 Republic of Angola

Geographically the Republic of Angola is located on the western coast of southern Africa and shares borders to its north with the Republic of Congo and the Democratic Republic of Congo, to the east with the Democratic Republic of Congo and the Republic of Zambia, to the south with the Republic of Namibia and to the west with the Atlantic Ocean (Government of Angola (GoA), 2011). Angola has a total land area of 1,246,700 square kilometres (GoA, 2011). The location of the Republic of Angola on the continent and the map of the country are reflected in figure 6.1 below. As at 2010, the population was estimated to be 18 million people with a population density of about 13.2 inhabitants per square kilometre (GoA, 2011).



Figure. 8: Location and map of Angola (UNISDR, 2011b)

6.5.1.1 Natural hazards, disasters and climate change impacts

Angola is regularly affected by veld fires, storms, floods, landslides, sea level rise, ravines, drought and to a lesser extent, earthquakes (GoA, 2011; Severino and Pichard, 2012). Floods in Angola are a recurrent phenomenon with most of them affecting houses and commercial buildings and the interruption of transport, in part due to the growth of cities in risk areas (GoA, 2011). Floods also cause massive crop failures and untenable health situations due to the proliferation of mosquitoes and other disease vectors (GoA, 2011). Malaria is identified to be the

main cause of death in Angola, especially among those under the age of five (GoA, 2012). The armed conflicts that lasted for over thirty years have caused severe human and material losses and deeply affected the socio-economic situation of the country (Severino & Pichard, 2012). Angola is vulnerable to the impacts of climate change with the most affected sector including biodiversity loss, human health, infrastructure, fisheries, and agriculture and food security (SARUA, 2014).

6.5.1.2 Structures for disaster risk reduction and climate change (adaptation)

Angola has a centralised government structure, which until 2002 was primarily focused on national security (Nachmany *et al.*, 2015). The country's political administrative division involves 18 provinces, 163 municipalities, 376 communes and 1671 towns (GoA, 2011). GoA (2011) further indicates that the quality of governance or good governance of state institutions is very important to guarantee the provision of public services for those most in need and to orient the economic and social development process, thus guaranteeing the fulfilment of norms and fundamental principles. Table 6.1 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) in Angola at the national level of government.

Table. 1: Organisations for disaster risk management and climate change adaptation in Angola

National Organisations working on DRM	National Organisations working on Climate change (adaptation)
<i>a. Disaster Management Coordination</i> - National Service for Civil Protection in the office of the Interior Minister, - National Commission on Civil Protection in the presidency coordinates	<i>a. Climate Change Coordination</i> - Co-ordination Unit for Climate Change within the Ministry of Environment - The Technical Multi-Sectoral Commission for the Environment (CTMA) - National Commission on Climate Change and Biodiversity
<i>b. Sectoral Government departments</i> - Ministry of Social Affairs & Reintegration and Unit for Coordination of Humanitarian Assistance (UTCAH). - Ministry of Health - Ministry of Planning - The Ministry of Urbanism and Environment - Ministry of Agriculture - Ministry of Water and Energy - Military of Police - Civil Aviation - Meteorology Institute; - Merchant Marine and Ports - Fire Department	<i>b. Sectoral Government departments</i> - National Directorate on Renewable Energy - Ministry of Agriculture - Ministry of Water and Energy - Ministry of Territorial Administration (MAT) - Ministry of Agriculture (MINAGRI) - Ministry of Geology and Mining (MINGM) - Ministry of Science and Technology (MINSCT) - Ministry of Transport (MINTRANS) - Ministry of Commerce (MINCO) - Ministry of Fisheries (MINPES) - Ministry of Finance (MINFIN).

<i>c. Multilateral and bilateral organisations and International NGOs</i> • UNDP – Crisis Prevention and recovery • OCHA	<i>c. Multilateral and bilateral organisations and International NGOs</i> • DFID • Sida • AfricaAdapt • IFPR (leading); in partnership with ASARECA, FANRPAN, PIK • Global Environmental Fund (GEF) • United Nations Environment Programme (UNEP)
<i>d. Research Institutions</i> • National Technical Centre under the Ministry of Superior Education, Science and Technology	<i>d. Research Institutions</i> • National Technical Centre under the Ministry of Superior Education, Science and Technology • Southern Africa Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) • Centre of Excellence for Sciences Applied to Sustainability (CESSAF) at University of Agostinho Neto • Climate Change and Tropical Ecology Research Centre at José Eduardo dos Santos University (UJES)

Sources: Government of Angola (2011); Nachmany *et al.* (2015); SARUA (2014) and the UNDP (2011)

Government's efforts in Angola in disaster risk reduction are led by the National Service for Civil Protection in the office of the Interior Minister and the National Commission on Civil Protection in the Presidency (SARUA, 2014; UNDP, 2011). Thus the NSCP is the lead organisation in the coordination and provision disaster management and emergency assistance (SARUA, 2014 UNDP, 2011). On the other hand, the Ministry of the Environment is the nationally designated authority for all the environmental issues including climate change (Nachmany *et al.*, 2015). The Coordination Unit for Climate Change within this Ministry of Environment is responsible for the overall coordination and in this regard is supported by the Technical Multi-Sectoral Commission for the Environment (CTMA) on all climate change policy related decisions (Nachmany *et al.*, 2015; SARUA, 2014).

The analysis shows that in addition to the central coordinating mechanisms for both disaster risk reduction and climate change (adaptation), there are a large number sectoral government departments or ministries; international organisations and research institutions involved in both disaster management and climate change (adaptation). What is not clear though is whether there is coordination among all these structures to reduce disaster risk. As the UNDP (2012) indicates, the increased frequency of hazard events both natural and climate related in Angola, particularly floods have increased the need for stronger coordination among all the players to ensure a multi-sectoral and comprehensive approach.

6.5.1.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

In the Republic of Angola there is no stand-alone legal document for disaster risk management and reduction (Severino & Pichard, 2012). Disaster risk reduction is mainly addressed through the National Calamity and Natural Disaster Preparation, Contingency, Response and Recovery Plan for 2009 – 2014 (Presidential Decree No.205/10) (Kunguma & Ncube, 2016, UNDP, 2011) and the Strategic Disaster Risk Management Plan (SARUA, 2014). The general objective of the National Plan for Preparation, Contingencies and Response is to define the lines of force that guide a suitable and concerted response, the conditions and the essential means to minimise the adverse effects of serious accident or catastrophe that affects the Angolan population (GoA, 2011). Moreover, some indirect references and broad allusions to disaster risk reduction are found in other legal documents such as laws, decrees and regulations (Severino & Pichard, 2012). These, amongst others, include, Presidential Decree No.103/2011 to establish the National Strategic Plan for Disaster Management; Basic Law of Civil Protection No. 28/03; Presidential Decree No.205/10 for the approval of the National Plan of Preparation, Contingency, Response and Recovering from Calamities and Natural Disasters 2009-2014; and Presidential Decree No.103/2011 to establish the National Strategic Plan for Disaster Management (Severino & Pichard, 2012).

Similarly, there is no overarching legislative and policy framework for adaptation to the impact of climate change in Angola. Issues of climate change are addressed in some sectors through specific climate mitigation and adaptation priorities that are outlined in the National Strategy on Climate Change (2007); the General (National) Plan of the Government of Angola (2010-11); and the National Adaptation Programme of Action (NAPA) of 2011 (GoA, 2011). In particular, the Angola's National Plan of 2010-2011 makes provision for climate change in national development (GoA, 2011). The National Plan further provides for adaptation and mitigation measures in the areas of agriculture, fishing, water resources, biodiversity, construction, energy and waste management. At the same time the Initial National Communication (INC) to the United Nations Framework Convention on Climate Change for Angola (GoA, 2012) recognises the country's high levels of vulnerability to climate change and the relationship between climate change and development. Climate change is also provided for in the National Development Plan of Angola (GoA, 2011).

6.5.2 The Republic of Botswana

Botswana is centrally located in the heart of southern Africa occupying a total land area of 581, 730 square kilometres and is landlocked, sharing borders with Zimbabwe, South Africa,

Namibia and Zambia (Omari, 2010; UNEP, RISO Centre, 2012). The location of the Republic of Botswana on the continent and the map of the country are reflected in figure 6.2 below. According to the 2011 census the total population is estimated at 2, 024 904 with an expected growth rate of 1.9% (Central Statistics Office (CSO), 2011).



Figure. 9: Location and map of Botswana (UNISDR, 2011b)

6.5.2.1 Natural hazards, disasters and climate change impacts

Botswana is vulnerable to a range of disasters, both natural and human induced. Major disasters include drought, floods, bushfires, animal diseases and HIV/AIDS in addition to structural fires, major transport accidents, pest infestation, strong winds, industrial accidents and earthquakes (Government of Botswana (GoB), 2013; Marope & Maundeni). Drought is a frequent phenomenon countrywide and major droughts have occurred in the 1980s, becoming periodic with increasing frequency since then (Wingqvist & Dahlberg, 2008). Wild fires both natural and human induced are a regular occurrence during the dry months of April to November, peaking in July (Government of Botswana, 2013). Botswana is considered highly vulnerable to potential negative impacts of climate change, which potentially could increase disaster risk substantially (Abrahamsson & Becker, 2010; Omari 2010). The most vulnerable sectors include agriculture/livestock, woodlands/forests, water and health (Wingqvist & Dahlberg, 2008).

6.5.2.2 Structures for disaster risk reduction and climate change (adaptation)

Botswana enjoys democratic governance and a stable macro-economic environment and development (Omari, 2010), which are critical ingredients for disaster risk reduction (see chapter 3 of this study for more details). The institutional framework of governance in Botswana spreads from the national to the local levels of government (Fakir, 2009). Table 6.2 below

summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 2: Organisations for disaster risk management and climate change adaptation in Botswana

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> - National Disaster Management Office (NDMO), in the Office of the President - National Committee on Disaster Management - National Disaster Management Technical Committee - National Disaster Relief Order to provide financial assistance to victims of natural hazards	<i>a. Climate Change Coordination</i> - Select Committee on Climate Change at Parliament level - Department of Meteorological Services (DMS) under the Ministry of Environment Wildlife and Tourism - National Committee on Climate Change administered under the Department of Meteorological Services
<i>b. Sectoral Government departments</i> - The Ministry of Agriculture - Ministry of Local Government, Gaborone - Ministry of Finance and Development Planning - Department of Forestry and Range Resources - Department of Geological Survey - Department of Meteorological Services - Botswana Defence Force - Botswana Police Service	<i>b. Sectoral Government departments</i> - Ministry of Mineral, Energy and Water Affairs, - Ministry of Agriculture - Ministry of Finance and Development Planning - Ministry of Lands and Housing - Department of Forestry and Range Resources
<i>c. Multilateral and bilateral organisations and International NGOs</i> - Botswana Red Cross Society - UNDP - The Swedish Civil Contingencies Agency (MSB)	<i>c. Multilateral and bilateral organisations and International NGOs</i> - United Nations Environment Program – Risoe Centre (URC) - International Union for the Conservation of Nature and Natural Resources (IUCN)
<i>d. Research Institutions</i> - University of Botswana - Botswana College of Agriculture	<i>d. Research Institutions</i> - Botswana Global Change Committee (BGCC) in the Department of Environmental Science - University of Botswana - Botswana Institute for Technology, Research and Innovation

Sources: Abrahamsson and Becker (2010); GoB (2009, 2011, 2013); Omari (2010); SARUA (2014)

The analyses in table 6.2 above show that through the National Disaster Management Office (NDMO), the Office of the President is responsible for implementation and monitoring of DRM activities in the country (Abrahamsson & Becker, 2010; GoB, 2009, 2011). In performing its duties, the office is supported by the National Committee on Disaster Management and the National Disaster Management Technical Committee. The responsibility for climate change

adaptation in Botswana is not explicitly located within one government department, but is scattered across several ministries and departments (Omari, 2010). The analyses also show that the main coordination organisation for climate change related issues in Botswana is the Department of Meteorological Services (DMS) under the Ministry of Environment Wildlife and Tourism supported by the National Committee on Climate Change administered under the Department of Meteorological Services. However, the Select Committee on Climate Change at Parliament level oversees the development of climate change policies (Omari, 2010).

The analysis shows that there is strong support for addressing climate change and disaster risk management through sectoral government departments, international organisation and research institutions in Botswana. To some extent the involvement of international organisation is project based and for a specific time-frame. Some ministries and department such as Meteorological services, Agriculture and Finance and Development planning are playing a supporting role for both disaster risk reduction and climate change adaptation. The University of Botswana conducts research on climate change through the Botswana Global Change Committee (BGCC) in the Department of Environmental Science, and also provide improved methods for predicting various types of disasters (e.g. geological and climate hazards); conducts assessments on vulnerability and risk reduction; and recovery procedures (GoB, 2009). Other institutions involved in climate change research and disaster risk reduction research in Botswana includes Botswana Institute for Technology, Research and Innovation and the Botswana College of Agriculture (Omari, 2010; SARUA, 2014).

6.5.2.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation).

Despite identifying the need for comprehensive legislation dedicated to disaster risk management and reinforcement of existing institutional structures for disaster response and risk reduction (GoB, 2009), there is currently no overarching legislation pertaining to disaster risk management (reduction) in Botswana except sector specific legislation (Botswana IFRC, 2013; GoB 2009). The Botswana IFRC (2013) further indicates that these policies, plans and laws are fragmentary and have many gaps. The Botswana National Disaster Management Policy of 1996 as well as the National Disaster Risk Management Plan (2009), addresses all aspects of disaster risk management in the country and provides guidelines for all the sectors and institutional levels to implement disaster preparedness and emergency response (GoB, 2013).

The National Disaster Risk Management Plan (NDRMP) is developed on the foundation of the Constitution and the National Policy on Disaster Management 1996 as well as the various existing laws that address disaster risk reduction and the Hyogo Framework for Action

(Botswana IFRC, 2013). According to GoB (2009), the National Disaster Risk Management Plan is the basis for the establishment of policies, strategies and procedures to guide all levels of society in disaster preparedness, response and risk reduction. In 2013, government developed and adopted the National Disaster Risk Reduction Strategy, 2013–2018, which focuses on building community resilience. The government of Botswana acknowledges the need to strengthen the linkages between DRR and Climate Change Adaptation (CCA) fraternity in the country (GoB, 2011). As a first step towards this realisation National Disaster Risk Reduction Strategy, 2013–2018 acknowledges the role of climate change and its impacts on Botswana.

There is no over-arching environmental and specifically climate change legislation in Botswana (Omari, 2010:10). The only recent and substantial climate policy relating to climate change adaptation in Botswana is the 2011 Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (SARUA, 2014). This Communication identifies adaptation priority sectors as water, health, rangeland and livestock, and forests (SARUA, 2014). SARUA (2014) indicates that in the absence of this overarching policy and strategy on climate change, the National Management Policy of Disasters (1996) provides a relevant cross-cutting national policy framework, although it focuses on adaptation measures only through disaster management and risk reduction. Other climate change issues are addressed in some sectors as specific climate mitigation and adaptation policies such as the Botswana Energy Master Plan prepared by the Energy Affairs Division (EAD) in June 1996 (SARUA, 2014).

6.5.3 The Democratic Republic of Congo

The Democratic Republic of the Congo (DRC) formerly Zaire is the largest country in Middle Africa by population and land mass (Crawford *et al.*, 2011). The country has the continent's fourth largest population and is the second biggest in terms of area as it covers a land area of about 2.34 million square kilometres and has a population of about 71 million inhabitants (African Development Bank, 2013a). The DRC is located at the crossroads of the continent and it shares borders with nine other countries, Republic of Congo in the west, Uganda, Burundi, Rwanda, Tanzania on the east, Central Africa Republic and Sudan in the north and Zambia and Angola on the south (African Development Bank, 2013a; Government of the Democratic Republic of Congo, 2012). The location of the DRC on the continent and the map of the country are reflected in figure 6.3 below.



Figure. 10: Location and map of the DRC (UNISDR, 2011b)

6.5.3.1 Natural hazards, disasters and climate change impacts

The hazard and disaster profile for the DRC is characterised by the prevalence of volcanic eruptions, erosions, landslides, mudslides, floods, drought, epidemics (Ebola, Cholera, Polio), civil armed conflicts, and traffic accidents (Government of the Democratic Republic of Congo, 2012; UNEP, 2011; UNISDR Regional Office for Africa, 2010). Given the multiple hazards faced and the increasing proportion of the population exposed to the hazard the Democratic Republic of Congo's vulnerability to disasters is very high (UNEP, 2011). The DRC is considered one of the countries most affected by floods as it is at the mercy of the Congo River, which crosses the country from East to West (Lukamba 2010). The flooding of the river presents a serious threat to riparian communities, including some twelve million inhabitants of Kinshasa, the capital (Lukamba, 2010).

Beside the challenge of floods in the western DRC, the eastern part of the country is characterised by volcanic eruptions (Lukamba, 2010; United Nations Disaster Assessment and Co-ordination (UNDAC), 2008). These are prevalent in Northern Kivu and seismic activities along the Rift Valley including Mount Nyiragongo (Lukamba, 2010). The East African rift valley system and the Lake Kivu basin are the most seismically active regions on the African continent with earthquakes frequently damaging villages and towns situated in the area (UNDAC, 2008). Climate change presents an additional stress for the DRC already struggling with the challenges posed by years of conflict in addition to widespread poverty and on-going environmental degradation (Burton *et al.*, 2010).

6.5.3.2 Structures for disaster risk reduction and climate change (adaptation)

Since the July 2006 elections, the Democratic Republic of the Congo has been led by a semi-presidential, strongly decentralised state with the executive powers divided between the President and the Prime Minister (UN, 2007). Planning for disaster risk management (DRM) occurs at three government levels in the DRC: (1) at the central level, (2) at the district level, (3) at local level (SADC, 2012b). Table 6.3 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 3: Organisations for disaster risk management and climate change adaptation in Democratic Republic of Congo

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> - The Council for Civil Protection within the Ministry of Interior - National Crisis Committee	<i>a. Climate Change Coordination</i> - Ministry of Environment, Conservation of Nature, Water and Forestry - National Authority for the Clean Development Mechanism - National Climate change Committee
<i>b. Sectoral Government departments</i> - Ministry of Home Affairs - Ministry of Social Welfare and Humanitarian Affairs - Ministry of Defence and National Security - Ministry of Environment and Natural Resources - Ministry of Public Health - Ministry of Budgets and Finance	<i>b. Sectoral Government departments</i> - Ministry of Agriculture, Fisheries and Livestock - Ministry of Energy
<i>c. Multilateral and bilateral organisations and International NGOs</i> - Red Cross - The World Bank - United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) - Action Aid - UNDP	<i>c. Multilateral and bilateral organisations and International NGOs</i> World Meteorological Organisation
<i>d. Research Institutions</i> - National Institute of Agronomic Studies and Research (NIASR) - University of Kinshasa, Department of Public Health	<i>d. Research Institutions</i> - National Institute of Agronomic Studies and Research (NIASR) - University of Kinshasa, Department of Public Health

Source: Government of the Democratic Republic of Congo (2006, 2012); Kengoum (2015); Kunguma and Ncube (2016); Laitiainen (2014); Nachmany *et al.* (2015).

In the DRC, the Council for Civil Protection within the Ministry of Interior and Security is the main national platform for disaster risk reduction issues (Government of the Democratic

Republic of Congo, 2012). In carrying out its mandates, the coordinating structure is supported by the National Crisis Committee that is in charge of the coordination during emergency responses (Laitinen, 2014). At the same time the Ministry of the Environment, Natural Conservation and Tourism is the focal point organisation for climate change and adaptation to its impacts (Kengoum, 2015). The Clean Development Mechanism supports Ministry in its endeavours to address climate change. This analysis also reveals that a number of sectoral government departments/ ministries including Ministry of Home Affairs, Ministry of Social Welfare and Humanitarian Affairs, Ministry of Defence and National Security, Ministry of Environment and Natural Resources, Ministry of Public Health, Ministry of Humanitarian and NGOs, Ministry of Agriculture, Fisheries and Livestock, Ministry of Energy are involved in both disaster risk reduction and climate change adaptation (Kunguma & Ncube, 2016).

Moreover, the analysis shows that the National Institute of Agronomic Studies and Research and the department of Public Health at the University of Kinshasa are the main research institutions involved in climate change disaster risk reduction. Furthermore, the analysis shows that there is a strong presence of international organisations supporting the implementation of disaster risk management with only the World Meteorological Organisation supporting the implementation of climate change adaptation measures (Democratic Republic of Congo, 2006, 2012; Laitinen, 2014).

6.5.3.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

There is no overarching legislation for disaster risk management in the DRC (UNISDR, 2010). The legal framework for disaster risk reduction rests on three laws, namely the 1996 Decree creating the Civil Protection Council, which changed its name in 1999 to the National Crisis Committee; the 2002 Decree on the National Programme on Emergencies and Humanitarian Action; and the 2003 Decree on the Transitional Government (2003), which included a disaster management framework (UNISDR, 2010). As for climate change and adaptation, the DRC does not have specific legislation for climate change (adaptation) (Kengoum, 2015), but have sectoral climate change-related legislations such as Law No. 14/011 for the Electricity Sector, Law No. 14/003 on Protection of the Nature, Law No. 11/022, Fundamental Agricultural Law and Decree No. 09/40 for the establishment of management structure of implementing REDD+ process (Nachmany *et al.*, 2015). In response to Agenda 21 of the United Nations Rio Conference in 1992 and with the help of the UNEP, DRC adopted its first National Environmental Action Plan in 1997, addressing the country's major issues related to poverty, population growth and environmental protection (Nachmany *et al.*, 2015). Specifically, for adaptation to climate change, the main government policy initiatives include the First National Communication

published in 2000, the Second National Communication of 2009 and the National Adaptation Programme of Action (NAPA), published in 2006 (Crawford *et al.*, 2011).

6.5.4 The Kingdom of Lesotho

The Kingdom of Lesotho is a small mountainous country of about 30,355 square kilometres the country is completely land-locked by the Republic of South Africa (World Bank, 2011a; Verduijn, 2005). The location of the Kingdom of Lesotho on the continent and the map of the country are reflected in figure 6.4 below. The country falls under the category of Least Developed Countries (LDC) with per capita income of approximately US\$ 1000 (Government of Lesotho, 2012; International Monetary Fund, 2012). According to the 2011 Lesotho Demographic Survey, the total population was estimated to be 1,894,194 persons (Bureau of Statistics, 2013).



Figure. 11: Location and map of Lesotho (UNISDR, 2011b)

6.5.4.1 Natural hazards, disasters and climate change impacts

The main hazards that affect Lesotho include drought, snowfalls, hailstorms, strong winds, localised floods and early frost (World Bank, 2011a). Lesotho's vulnerability is compounded by a number of underlying factors that include high levels of poverty and high prevalence of HIV/AIDS (World Bank, 2011a; UNDP, 2010). Droughts, heavy rainfall, frost, snow and hailstorms are all common phenomena in Lesotho (Lesotho Office of the Auditor General, 2010; Verduijn, 2005). According to UNISDR Regional Office for Africa (2010), drought, floods, epidemics and windstorms are the major hazards affecting Lesotho, with drought affecting the highest number of people and causing the highest economic damage. Lesotho as a nation is vulnerable to climate change as a result of its location and its high dependence on economic activities that depend on natural resources (Lesotho Meteorological Services, 2001).

Furthermore, the country's vulnerability to hazards is compounded by a number of other factors, including high levels of poverty particularly in rural areas, the scattered nature of rural settlements, which makes the provision of and access to social services difficult (World Bank, 2011a).

6.5.4.2 Structures for disaster risk reduction and climate change (adaptation)

Lesotho is a unitary state, with national and local government spheres (Maleleka, 2009). At the national level, the country has retained the Westminster type of parliament after independence, a legacy of British colonial rule (Maleleka, 2009). Table 6.4 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 4: Organisations for disaster risk management and climate change adaptation in Kingdom of Lesotho

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> • Lesotho Disaster Management Authority (DMA), in the Prime Minister's Office • Lesotho Disaster Assessment and Coordination Committee	<i>a. Climate Change Coordination</i> • Ministry of Natural Resources through Meteorological Services • Parliamentary Portfolio Committee
<i>b. Sectoral Government departments</i> • Ministry of Agriculture and Food Security, • Ministry of Health and Social Welfare • Lesotho Meteorological Department • Ministry of Water and sanitation	<i>b. Sectoral Government departments</i> • Ministry of Agriculture and Food Security, • Ministry of Water and sanitation • Ministry of Forestry and Land Reclamation
<i>c. Multilateral and bilateral organisations and International NGOs</i> • UNICEF Humanitarian Action • UNDP • Red Cross and Red Crescent • USAID/OFDA • The World Bank • Lesotho Vulnerability Assessment Committee (LVAC)	<i>c. Multilateral and bilateral organisations and International NGOs</i> • UNEP and • Global Environment Facility, • World Meteorological Organisation • <u>FAO</u>
<i>d. Research Institutions</i> • National University of Lesotho	<i>d. Research Institutions</i> • National University of Lesotho

Sources: Government of Lesotho (1997); Machepa (2010); UNDP (2007); Verduijn (2005); The World Bank (2011)

The Lesotho Disaster Management Authority in the office of the Prime Minister is the main coordinating body for disaster risk management (UNDP, 2007b). The Lesotho Disaster

Assessment and Coordination Committee supports the Lesotho Authority in its efforts to identify and reduce risks. On the other hand, the Ministry of Natural Resources through the Meteorological Services supported by the Parliamentary Portfolio Committee is responsible for the coordination of climate change and adaptation (UNDP, 2007b). The analysis shows that there is a prevalence of international support for both disaster risk reduction and climate change adaptation in Lesotho (Machepa, 2010; UNDP, 2007b; Verduijn 2005; The World Bank, 2011a). A couple of departments and ministries are involved in disaster risk reduction and these include the Ministry of Agriculture and Food Security, Ministry of Health and Social Welfare, the Lesotho Meteorological Department and the Ministry of Water and sanitation (Machepa, 2010; UNDP, 2007b; Verduijn 2005; The World Bank, 2011a). The Ministry of Agriculture and Food Security and the Ministry of Water and sanitation together with the Ministry of Forestry and Land Reclamation are the sectoral departments involved in climate change adaptation (Verduijn 2005, Lesotho Meteorological Services, 2001). The University of Lesotho is involved in both climate change and disaster risk reduction related research focusing specifically on issues of vulnerability (Verduijn, 2005).

6.5.4.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

The policy and legislative framework for disaster risk reduction in Lesotho includes the National Disaster Management Act 1997 (Act No. 2 of 1997); the National Disaster Management Plan of 1996, the National Action Plan for Capacity Development in DRR of 1997 and the Disaster Management Manual of 1997 (UNDP, 2007b). Although the Lesotho disaster management system is fairly well-established with a National Disaster Management Plan supported by the Disaster Management Act of 1996, all activities are focused on emergency response/relief (UNDP, 2007b).

Although Lesotho joined the international community in expressing concerns about the negative impacts of climate change by signing and ratifying UNFCCC and the Kyoto Protocol, there is yet no coordinated national policy to deal with the problem of climate change (African Development Bank, 2013b; the Lesotho Meteorological Services, 2001). Limited capacity to adapt to climate change and implement programmes is cited as the major challenge in Lesotho (African Development Bank, 2013b; Lesotho Meteorological Services, 2001). This has also resulted in the Government's failure to fully implement the National Adaptation Program of Action on Climate Change developed in 2007 (African Development Bank, 2013b). However, there are a number of policies and measures in various sectors including environment, waste management, energy, land use, health and sanitation, water development, agriculture, which are closely

aligned with the objectives of the UNFCCC, and seek to assist the country to adapt to the impacts of climate change (Lesotho Meteorological Services, 2001).

6.5.5 The Republic of Madagascar

Madagascar is a large island (the 5th biggest worldwide), which lies in the southwest Indian Ocean, with a population of 21.32 million (Hove *et al.*, 2011; Global Facility for Disaster Risk Reduction, 2011). The country stretches 1,600 km from north to south and 580 km wide, and it has an area of 587,041 square kilometres with 5,603 kilometres of coastline (IFRC, 2014). The location of the Republic of Madagascar on the continent and the map of the country are reflected in figure 6.5 below. The Madagascar population is estimated at 22.2 million with a population density of about 35 people per square kilometre (World Health Organisation, 2014).



Figure. 12: Location and map of Madagascar (UNISDR, 2011b)

6.5.5.1 Natural hazards, disasters and climate change impacts

The major hazards, faced regularly in Madagascar are cyclones/tropical storms, floods, droughts, sea level rise and locust invasions (IFRC, 2014; GFDRR, 2011; Nachmany *et al.*, 2015). Madagascar is one of the world's biodiversity hotspots and one of the most vulnerable countries to climate change (Nachmany *et al.*, 2015). Madagascar is subject to periodic extreme weather events, including cyclones, flooding and droughts, and it is expected that these events will intensify under climate change (Nachmany *et al.*, 2015). As the IFRC (2014) indicates,

Madagascar is also one of the countries most vulnerable to climate change, especially due to increasing extremes in weather events.

6.5.5.2 Structures for disaster risk reduction and climate change (adaptation)

Madagascar is a unitary and democratic republican state based on a system of decentralised territorial communities composed of communes, regions and provinces (Government of Madagascar, 2010), but maintains a strong presidency within a constitutional structure (The World Bank, 2010b). The World Bank (2011b) further states that neo-patrimonial patterns of rules are characterised by a hybrid mix of patrimonial and legal-rational bureaucratic domination according to formal institutions. The lack of effective checks and balances between government branches, institutional weaknesses, the inappropriate mingling of public and private interests and interference in the application of the legal framework together with perceptions of widespread impunity have reduced the levels of efficiency, transparency and accountability of government action (The World Bank, 2011b). Table 6.5 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level and the list is not exhaustive.

Table. 5: Organisations for disaster risk management and climate change adaptation in Madagascar

National Organisations working on DRM	National Organisations working on Climate change
<i>a. <u>Disaster Management Coordination</u></i> • The National Disaster Risk Management Council • Unit for the Prevention and Management of Emergencies • National Bureau of Disaster and Risk Management	<i>a. <u>Climate Change Coordination</u></i> • Directorate of Climate Change under the Ministry of Environment, Sea, Ecology and Forests. • The Thematic Climate Change Group (GT-CC)
<i>b. <u>Sectoral Government departments</u></i> • Ministry of Public Health, • Ministry of National Education, • Ministry of Agriculture.	<i>b. <u>Sectoral Government departments</u></i> • The Health and Climate Working Group - • Ministry of Energy • The Ministries of Agriculture
<i>c. <u>Multilateral and bilateral organisations and International NGOs</u></i> • GFDRR • UNDP • UNOCHA • UNISDR	<i>c. <u>Multilateral and bilateral organisations and International NGOs</u></i> • WMO • Africa Development Bank • WWF Madagascar

d. <u>Research Institutions</u> (all based within the University of Antananarivo) • Geophysical Institute and Observatory of Antananarivo (IOGA) • National Institute of Nuclear Science and Technology (INSTN) • Centre for Studies and economic Research for Development (CERED):	d. <u>Research Institutions</u> • General Managing of Meteorology (known as DGM) based within the Ministry of Transportation and Meteorology

Sources: IFRC (2014); GFDRR (2011); Hove *et al.* (2011); Nachmany *et al.* (2015).

The legal framework provides for three key national Disaster Risk Management institutions, the National Disaster Risk Management Council (known as CNGRC), the National Bureau for Disaster and Risk Management and the Unit for Emergencies Prevention and Management (IFRC, 2014; GFDRR, 2011).). The National DRM Council was envisaged as an inter-ministerial strategic body with advisory and supervisory roles and based within the Prime Minister's Office. The BNGRC is the operational arm in the national DRM system and is in charge of DRM activities throughout the country. Unfortunately, the National Disaster Risk Management Council in practice is not operational (IFRC, 2014). The two main organisations for climate change are the Directorate of Climate Change in the Ministry of Environment and Forests and the Thematic Climate Change Group (GT-CC), which focuses on promoting the exchange of information (Hove *et al.*, 2011; Nachmany *et al.*, 2015).

The analysis shows that a number of ministries such as the Ministry of Public Health, Ministry of National Education and Ministry of Agriculture have units or divisions working on disaster risk management. Moreover, the Ministry of Public Health and the Ministry of Agriculture, together with the Ministry of Energy, are involved in climate change adaptation. As with most of the countries in the SADC region, international organisations such as GFDRR, UNOCHA, WMO, ADB and WWF are assisting in both disaster risk reduction and climate change adaptation. As for research institutions, the analysis reveals that a number of Centres within the University of Antananarivo are involved in disaster risk reduction research whilst the General Managing of Meteorology (known as DGM) based within the Ministry of Transportation and Meteorology is involved in climate change related research. This analysis does not show any evidence of the integration or mainstreaming of disaster risk reduction and climate change (adaptation) structures. In fact, Nachmany *et al.* (2015) pointed out that in parallel to the management of disasters, by the National Disaster Risk Management Office, climate change adaptation activities in Madagascar are developed under the mandate of the Directorate of Climate Change.

6.5.5.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

There are two key laws in Madagascar that deal with disaster risk management, Law No. 2003-010, of 05 September 2003, on the National Policy on Disaster Risk Management, and Decree No. 2005-866, of 20 December 2005, which provide detailed rules for the application of the 2003 disaster risk management law (IFRC 2014). Whereas these two laws apply at all levels of government, there are further laws at the sub-national level, primarily seeking to establish disaster risk management committees at their respective levels of government (IFRC 2014). The legal frameworks for disaster management in Madagascar focus more on response and recovery than on prevention and preparedness (IFRC 2014). Beyond the legal framework on disaster risk management, there is a much more detailed policy document, the National Strategy for Risk and Disaster Management 2003 - 2010, which was prepared in 2003, but never officially adopted (IFRC,2014).

As far as responding to climate change, there is no particular legislative framework in Madagascar. Moreover, Madagascar has developed a number of reports that describe its vulnerability to the impacts of climate change and possible adaptation measures, including its two National Communications for the UNFCCC and NAPA (Hove *et al.*, 2011). According to Nachmany *et al.* (2015). Madagascar's national strategic framework for climate change adaptation is contained in the National Climate Change Policy (2010) and the National Adaptation Program of Action (NAPA) (2006). The Policy aims to promote measures to reduce Madagascar's vulnerability to climate change and emissions of greenhouse gases, and to develop behaviours that aid in the fight against climate change (Nachmany *et al.*, 2015).

6.5.6 The Republic of Malawi

Malawi is a landlocked country located south-east in Africa and shares boundaries with Zambia in the west, Mozambique in the east, south and south-west and Tanzania in the north (Central Statistics Office, 2011; IFRC, 2015). It occupies an area of 118,484 square kilometres, of which 94,276 square kilometres and land and the remainder is water (Central Statistics Office, 2011). The location of the Republic of Malawi on the continent and the map of the country are reflected in figure 6.6 below. The Population and Housing census of 2008 estimated Malawi's population at 13.1 million people with a population density of about 139 persons per square kilometre (Central Statistics Office, 2008, 2011).



Figure. 13: Location and map of Malawi (UNISDR, 2011b)

6.5.6.1 Natural hazards, disasters and climate change impacts

Malawi faces a number of hazards, both natural, climate-related and human-induced, which include floods, drought, stormy rains, strong winds, hailstorms, landslides, earthquakes, pest infestations, diseases outbreaks, fire and accidents (Government of Malawi, 2015; The World Bank, 2010). The intensity and frequency of disasters have been increasing, in the light of climate change, population growth, urbanisation and environmental degradation (Government of Malawi, 2015). When natural shocks are considered in the light of other vulnerabilities in the country, many segments of Malawi's population lack the adaptive capacity needed to recover from these hazards that are often operating simultaneously (Bussell, 2014). Due to reliance on rain-fed agriculture, 85 percent of the rural population's livelihoods as well as the country's economy are vulnerable to droughts and floods, the most frequently occurring natural hazards in Malawi (Bussell, 2014; Government of Malawi, 2015).

6.5.6.2 Structures for disaster risk reduction and climate change (adaptation)

After three decades of dictatorial one-party rule, Malawi witnessed a dramatic transition to a multi-party political system during the 1992–1993 period (Government of Malawi, 2010). This has led the country to become a democratic republic with a unicameral parliament. According to Booth *et al.* (2006), Malawi has a hybrid, 'neo-patrimonial' state, where there is a framework of formal law and administration. The USAID (2013) argues that Malawi must tackle fundamental governance issues that include amongst others institutional reform, and an inefficient bureaucracy in order to realise the full potential of its development imperatives. Table 6.6 below

summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 6: Organisations for disaster risk management and climate change adaptation in the Republic of Malawi

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> • Department of Disaster Management Affairs under the office of President and Cabinet • National Disaster Risk Management Committee • The National Disaster Risk Management Technical Committee • The National Disaster Risk Management Technical Sub-Committees	<i>a. Climate Change Coordination</i> • The Ministry of Environment and Climate Change Management • Department of Climate Change and Meteorological Services in the Ministry of Natural Resources, Energy and Environment • National Climate Change Committee (NCCC) • National Technical Committee on Climate Change
<i>b. Sectoral Government departments</i> • Ministry of Agriculture and Food Security • Ministry of Health and Population • Ministry of Irrigation and Water Development • Ministry of Education, Science and Technology, • Ministry of Transport and Public Infrastructure, • Ministry of Development Planning and Cooperation (MDPC) • Ministry of Lands • Ministry of Irrigation and Water Development • Department of Poverty and Disaster Management Affairs • Department of Climate Change and Meteorological Services (DoCCMS)	<i>b. Sectoral Government departments</i> • Ministry of Agriculture and Food Security • Ministry of Health and Population • Ministry of Economic Planning, Development and Cooperation (MoEPDC) • Ministry of Education, Science and Technology • Department of Environmental Affairs
<i>c. Multilateral and bilateral organisations and International NGOs</i> • USAID/OFDA • UNDP • UN-HABITAT • The World Food Programme (WFP) • World Bank • GFDRR • Catholic Organisation for Relief and Development Aid (CORDAID)	<i>c. Multilateral and bilateral organisations and International NGOs</i> • International Federation of Red Cross and Red Crescent Societies (IFRC) • The African Development Bank • Global Environment Facility (GEF),
<i>d. Research Institutions</i> • The National Research Council of Malawi • University of Malawi • University of Mzuzu	<i>d. Research Institutions</i> • The National Research Council of Malawi • University of Malawi • University of Mzuzu • Lilongwe University of Agriculture and Natural Resources

Sources: CEPA (2012); Government of Malawi (2006, 2011, 2013, 2015); Lunduka *et al.* (2010); SARUA (2014); The World Bank (2010); Wolstenholme and Ngambi (2010)

The Department of Disaster Management Affairs created through the Disaster Preparedness and Relief Act of 1991 (Act 24 of 1991), is the main organisation responsible for the coordination of disaster risk management programmes and activities in Malawi (Government of Malawi, 2011; The World Bank, 2010). In executing its duties, the department is supported by the National Disaster Risk Management Committee, the National Disaster Risk Management Technical Committee, the National Disaster Risk Management Technical Sub-Committees (The World Bank, 2010). The analysis further shows that the Ministry of Environment and Climate Change Management supported by the Department of Climate Change and Meteorological Services in the Ministry of Natural Resources, Energy and Environment, National Climate Change Committee (NCCC) and the National Technical Committee on Climate Change are responsible for climate change adaptation (CEPA, 2012; Government of Malawi, 2011; Wolstenholme & Ngambi, 2010)

Whereas there is a prevalence of government sector departments involved in disaster management, the Ministry of Agriculture and Food Security, Ministry of Development Planning and Cooperation (MDPC) and Ministry of Health and Population are also involved in addressing the impacts of climate change (Government of Malawi, 2006; Lunduka *et al.*, 2010; Wolstenholme & Ngambi, 2010). For instance, the Department of Agriculture is responsible for agriculture-related hazards while at the same time being responsible for informing farmers about climate change and promote practices that are better suited for the changing climate conditions (Suarez *et al.*, 2008). The analysis also reveals that the same institutions involved in the disaster risk management research are also involved in climate change adaptation research (SARUA, 2014). The analysis further reveals that there is a strong presence of international organisations supporting the implementation of measures for both disaster risk management and climate change adaptation in Malawi (CEPA, 2012; Government of Malawi, 2011; Wolstenholme & Ngambi, 2010; The World Bank, 2010).

6.5.6.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

Until 1991, the management of disasters in the Malawi was conducted on an *ad hoc* basis where agencies were called into action after an event has occurred based on the needs and capabilities (Bussell, 2014). This situation changed when the Parliament of Malawi enacted the Disaster Preparedness and Relief Act of 1991 (Act 24 of 1991), which became the main legislative framework for disaster risk reduction in country (Lunduka *et al.*, 2010). The Act

mainly deals with the establishment of an institutional framework for disaster management, declaration of a state of disaster and the creation and management of a disaster appeal fund (IFRC, 2015). Of importance in addressing disaster risk in Malawi is the acknowledgement by the National Disaster Risk Reduction Framework, 2010-2015 that timely achievement of the mission would require broadening the constituency of stakeholder beyond the conventional DRR actors and engage actors working on sector, population groups as well as actors working at community level and national and international policy and advocacy (Lunduka *et al.*, 2010).

The analysis further reveals that there is no specific policy and legislative framework to address climate change and adaptation to its impacts in Malawi. As the Government of Malawi (2013) indicates, climate change activities are governed by the following policy documents: The National Environmental Action Plan (NEAP), Vision 2020, the National Environmental Policy and the Environment Management Act of 1996 and the Malawi Growth and Development Strategy II. All these policy and/or programmes informed the development of Malawi's Climate Change Learning Strategy which seeks to capacitate the general public about climate change (Government of Malawi, 2013). Over and above, Malawi is committed to both the United Nations Framework Convention on Climate Change and the Kyoto Protocol and as a result the country has developed the Initial National Communication, the Second National Communication, and the National Adaptation Programmes of Action. The development of the NAPA in 2006 was an effort to understand the changes in the nature and pattern of the hazards and seeks to clarify the impact of climate change on disasters (Government of Malawi, 2015). The NAPA was developed to enable Malawi to address urgent and immediate adaptation needs caused by climate change and extreme weather events (Government of Malawi, 2015).

6.5.7 The Republic of Mauritius

Mauritius is located in the Indian Ocean, about 800 km east of Madagascar, and occupies a total land area of 2,040 square kilometres, including its outer islands namely Rodrigues, the Cargados Carajos (St Brandon), Agalega, Tromelin and the Chagos Archipelago (UNISDR, 2015b). The location of the Republic of Mauritius on the continent and the map of the country are reflected in figure 6.7 below. Mauritius population is estimated at 1.26 million (as of 1 July 2014) with a population density of 618 people per square kilometre (Statistics Mauritius, 2014; UNISDR, 2015b).



Figure. 14: Location and map of Mauritius (UNISDR, 2011b)

6.5.7.1 Natural hazards, disasters and climate change impacts

Disasters pose a major threat and interruption to the development process of a country, especially to Small Island Developing States such as Mauritius (Bhuruth, *et al.*, 2005). Thus as a SIDS, Mauritius is highly vulnerable to disasters emanating from hazards such as cyclones, droughts, tsunamis, flash floods and tidal waves (Government of Mauritius, 2012). Disasters emanating from these hazards are predicted to increase in the context of climate change and can pose severe challenges to the country (Government of Mauritius, 2012). Thus Government of Mauritius (2013) acknowledges that Mauritius is highly vulnerable to the threat of climate change manifesting itself in several ways including cyclones, tidal surge, droughts, floods crop and livestock as well as human diseases.

6.5.7.2 Structures for disaster risk reduction and climate change (adaptation)

The Republic of Mauritius is anchored on a strong democratic foundation with the system of Government based on the United Kingdom Westminster model of parliamentary democracy (Government of Mauritius, 2012). The responsibility for the conduct of any business of the government, including the responsibility for the administration of any department of the government rests with the Prime Minister and other Ministers (UN, 2004). Table 6.7 below summaries the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 7: Organisations for disaster risk management and climate change adaptation in Mauritius

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> - Ministry of Environment, Sustainable Development Disaster and Beach Management - National Disaster Risk Reduction and Management Council - National Disaster Risk Reduction and Management Centre - National Emergency Operations Command under the command of Commissioner of Police	<i>a. Climate Change Coordination</i> - Climate Change Division in the Ministry of Environment, Sustainable Development Disaster and Beach Management. - Mauritius Meteorological Services under the Prime Minister's Office - the National Climate Committee - Climate Change Information Centre (CCIC)
<i>b. Sectoral Government departments</i> - Mauritius Police Force - National Disaster and Operations Coordination Centre - Ministry of Agro Industry and Food Security - Ministry of Housing and Lands - Ministry of Health and Quality of Life	<i>b. Sectoral Government departments</i> - Ministry of Agro Industry and Food Security - Ministry of Fisheries - Ministry of Renewable Energy and Public Utilities - Ministry of Tourism - Ministry of Housing and Lands - Water and Sanitation - Ministry of Health and Quality of Life
<i>c. Multilateral and bilateral organisations and International NGOs</i> - Mauritius Red Cross Society. - Disaster Preparedness and Emergency Response Association, International	<i>c. Multilateral and bilateral organisations and International NGOs</i> - African Adaptation Programme under UNDP - Global Climate Change Alliance for Mauritius
<i>d. Research Institutions</i> - University of Mauritius - Mauritius Oceanography Institute - Mauritius Research Council (MRC)	<i>d. Research Institutions</i> - University of Mauritius - University of Mascareignes - Indian Ocean Commission (IOC) - Mauritius Research Council (MRC)

Sources: Government of Mauritius (2013); Mauritius Oceanography Institute (2016), SARUA (2014); UNISDR (2015)

In Mauritius, the National Disaster Risk Reduction and Management Centre in the Ministry of Environment, Sustainable Development Disaster and Beach Management is the main institution for planning, organising, coordinating and monitoring disaster risk reduction and management activities at all levels (UNISDR, 2015b). In executing its duties, the National Disaster Risk Reduction and Management Centre is supported by the National Disaster Risk Reduction and Management Council, the Central Cyclone and Other Natural Disasters Committee, under the chairmanship of the Secretary to Cabinet and Head of the Civil Service and the National Disaster and Operations Coordination Centre set up at the Police Headquarters (UNISDR, 2015).

The analysis further reveals that the Climate Change division in the Ministry of Environment, Sustainable Development, Disasters and Beach Management supported by the Mauritius Meteorological Services under the Prime Minister's Office, the National Climate Committee and Climate Change Information Centre (CCIC) are responsible for the coordination of climate change efforts at national level (UNISDR, 2015b). Of particular interest is the fact that the Mauritius Meteorological Service is also the focal point for the Hyogo Framework for Action and Sendai Framework for Disaster Risk Reduction (UNISDR, 2015b). What is even more encouraging about the institutional arrangements for disaster risk governance in Mauritius is the location of the National Disaster Risk Reduction and Management Centre and Climate Change division in the Ministry of Environment, Sustainable Development, Disasters and Beach Management (UNISDR, 2015b).

A number of government sectoral departments and ministries including the Ministry of Agro-Industry and Food Security, Ministry of Fisheries, Ministry of Renewable Energy and Public Utilities, Ministry of Tourism, Ministry of Housing and Lands, Water and Sanitation and the Ministry of Health and Quality of Life are all involved in addressing the impacts of climate change (Government of Mauritius, 2013; Mauritius Oceanography Institute, 2016, SARUA, 2014; UNISDR, 2015b). Moreover, the analysis shows that the Mauritius Police Force, Ministry of Agro-Industry and Food Security, Ministry of Housing and Lands, and the Ministry of Health and Quality of Life are involved in disaster risk reduction (Government of Mauritius, 2013; Mauritius Oceanography Institute, 2016, SARUA, 2014; UNISDR, 2015b). Furthermore, the analysis reveals that a number of international organisations support the implementation of measures for both disaster risk management and climate change adaptation (UNISDR, 2015b). The analysis further reveals that a number of institutions are involved in disaster risk reduction and climate change adaptation. For instance, the Mauritius Oceanography Institute (MOI) is involved in the Tsunami early warning research particularly for coastal zone areas that are at risk in the event of a tsunami (Mauritius Oceanography Institute, 2016). Institutions such as the University of Mauritius, the Mauritius Research Council, University of Mascareignes and the Indian Ocean Commission (IOC) are involved in both disaster risk management research and climate change adaptation research (SARUA, 2014).

6.5.7.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

There is currently no over-arching policy and legislative framework for disaster risk reduction and management and climate change adaptation in Mauritius. As UNISDR (2015b:59) puts it, there are no laws directly related to either disaster risk reduction or climate change adaptation in Mauritius although there are projects/bills to establish such legislations, thus providing a legal

framework. The documents in development include a draft National Disaster Risk Reduction and Management Bill and Risk Transfer mechanism. Other legislation related to disaster risk reduction and management in Mauritius include Mauritius Fire and Rescue Services Bill of 2013. Similarly, in the absence of a comprehensive and dedicated legislation related to climate change in Mauritius the country is in the process of developing a draft Climate Change Bill (UNISDR, 2015b).

Furthermore, currently climate change and adaptation to its impacts are specifically tackled under the National Climate Change Adaptation Policy Framework developed in 2013. The Framework Report comprises of a National Climate Change Adaptation Policy; a Climate Change Adaptation Strategy and Action Plan of 1998; a Climate Change Adaptation Investment Program, and Project Concept Papers (UNISDR/IOC, 2015). Prior to this Mauritius developed a Climate Change Action Plan in 1998 and ultimately submitted its first National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) in 1999 and the second national communication in 2011 (Republic of Mauritius, 2012). Other legislation related to climate change includes the National Meteorological Service Act (Provisional Legislation); Environmental Protection Act 2002 (amended in 2008), Coastal Zone Management and Building Codes and Land Management (UNISDR, 2015). Whereas structures, policies and legislative frameworks for disaster risk reduction and climate change are not yet integrated, the National Climate Change Adaptation Policy Framework Report of 2013 acknowledges that there is a need to integrate the two into a single framework by building on the republics' experience in dealing with disasters.

6.5.8 The Republic of Mozambique

The Republic of Mozambique is located in south-eastern Africa and borders Tanzania, Malawi, Zambia, Zimbabwe, Swaziland and South Africa with an east coast along the Indian Ocean (Government of Mozambique, 2007). The country covers an area of about 799,380 square kilometres, of which 786,380 square kilometres are land and 13,000 square kilometres surface water (Government of Mozambique, 2007). The location of the Republic of Mozambique on the continent and the map of the country are reflected in figure 6.8 below. More than 60 percent of the population of 23 390 675 (2010 figure) is located in the coastal areas (SARUA, 2014).

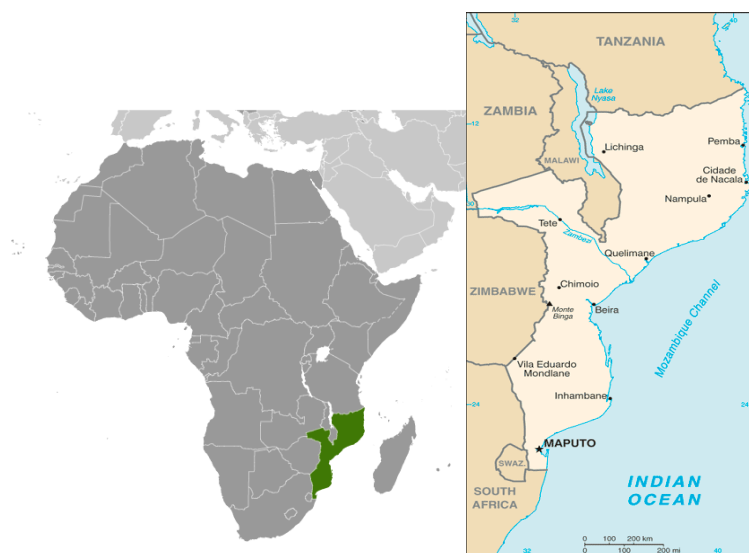


Figure. 15: Location and map of Mozambique (UNISDR, 2011b)

6.5.8.1 Natural hazards, disasters and climate change impacts

Mozambique is highly exposed and vulnerable to the impacts of a variety natural extreme events as a result of its geographic position, location and size (INGC and UNDP, 2010). The country ranks third amongst the African countries most exposed to risks from multiple weather-related hazards, suffering from periodic floods, cyclones and droughts (Bussell, 2014; Government of Mozambique, 2015; INGC, 2009; World Bank, 2009). The report “Responding to Climate Change in Mozambique, INGC Phase II” suggests that the exposure to natural disaster risk in Mozambique will increase significantly over the coming 20 years and beyond as a result of climate change (Logchem & Queface, 2012).

6.5.8.2 Structures for disaster risk reduction and climate change (adaptation)

The Republic of Mozambique is an independent, sovereign, unitary and democratic state of social justice (Constitution of Mozambique, 1990). Meneses and Santos (2009) defined the Mozambique state as being composed of a very heterogeneous set of institutions in which different political and legal cultures, practices and institutions coexist with little overall coherence. Mozambique has made major advances in the past decade in establishing and modernising relevant legal, institutional, policy and programme frameworks, in particular with regard to the establishment and operation of the National Disaster Management Institute (IFRC, 2012). Table 6.8 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 8: Organisations for disaster risk management and climate change adaptation in the Republic of Mozambique

National Organisations working on DRM	National Organisations working on Climate change
<i>a. <u>Disaster Management Coordination</u></i> • National Disaster Management Institute, in the Ministry of State Administration • The Coordinating Council for Disaster Management (CCGC), chaired by the Prime Minister • Technical Council for Disaster Management (CTGC).	<i>a. <u>Climate Change Coordination</u></i> Ministry of Land, Environment and Rural Development (MITADER) • National Disaster Management Institute, in the Ministry of State administration • Ministry of Planning • Inter-Institutional Group on Climate change
<i>b. <u>Sectoral Government departments</u></i> • National Directorate of Water, • National Directorate of Territorial Planning (DINAPOT) • Ministry of Public Works, Habitation and Water Resources • Ministry of Health • The Ministry of Women and Social Welfare • Ministry of Economy and Finance • Ministry of Agriculture and Food Security • National Institute of Meteorology (INAM) in the Ministry of Transport and Communication,	<i>b. <u>Sectoral Government departments</u></i> • The Ministry of Planning and Development (MPD) • Ministry of Agriculture and Food Security • National Institute of Meteorology (INAM) in the Ministry of Transport and Communication, • Ministry of Public Works, Habitation and Water Resources • Ministry of Mineral Resources and Energy (MIREME) • Ministry of Economy and Finance
<i>c. <u>Multilateral and bilateral organisations and International NGOs</u></i> • The World Bank • UN • GTZ • USAID/OFDA • The Mozambican Red Cross, • The World Food Program • UN Disaster Assessment and Coordination (UNDAC) • The Office of United Nations Disaster Relief (UNDRO) Coordinator	<i>c. <u>Multilateral and bilateral organisations and International NGOs</u></i> • The World Bank • UN • UNDP/GFF • CARE, • World Vision and Save the Children. • Mozambique's United Nations Human Settlements Programme (UN-HABITAT)
<i>d. <u>Research Institutions</u></i> • The Mozambique Institute of Agrarian Research, • The National Meteorological Institute, • The National Institute of Statistics, • The National Centre of Cartography and Remote Sensing, • The National Directorate of Geological Survey, • The National Institute of Hydrography and Navigation, • The Technical Secretariat for Food Security and Nutrition (SETSAN), • The University of Eduardo Mondlane • Catholic University of Beira (UCB);	<i>d. <u>Research Institutions</u></i> • The National Meteorological Institute, • The National Institute for Agronomic Investigation, • The University of Eduardo Mondlane, and • The Universidade Pedagógica;

Sources: Bussell & Malcomb (2014); INGC and UNDP (2010); Government of Mozambique (2015); Logchem and Queface (2012); Parkinson (2013); SARUA (2014); The World Bank (2009)

The National Institute for Disaster Management in the Ministry of State Administration is the responsible body for both disaster risk management and climate change adaptation in Mozambique (The World Bank, 2009). For disaster risk management the body is supported by the Coordinating Council for Disaster Management (CCGC), chaired by the Prime Minister and the Technical Council for Disaster Management (CTGC). The analysis shows that the existing institutional arrangements for climate change are shared between two councils – the Sustainable Development Council (CONDES), which is responsible for climate change and the environment; and the Coordinating Council for Disaster Management (CCGC), which is responsible for climate change and disaster risk (Logchem & Queface, 2012; SARUA, 2014). Logchem and Queface (2012) argue that such an arrangement leads to parallel decision-making.

This situation is further complicated by the fact that the Ministry for the Coordination of Environmental Affairs (MICOA) is the designated national authority for climate change in Mozambique (Logchem & Queface, 2012). It has the responsibility to oversee the country's involvement in the UNFCCC – providing institutional leadership on mitigation and low carbon development (Logchem & Queface, 2012). The Ministry of Planning and the Inter-Institutional Group on Climate Change support the Ministry of the Coordination of Environment in its effort on climate change. In this regard the Ministry of Planning and Development (MPD) is responsible for mainstreaming climate change into the planning policies of the country, providing institutional leadership on adaptation across sectors (Logchem & Queface, 2012).

The involvement of both the Ministry of Environment (MICOA) and the INGC are in climate change-related activities and seem to create turf wars between the two institutions (Bussell & Malcomb, 2014). As a result, no comprehensive strategy for dealing with climate change, or for related disaster risk reduction efforts, has been developed at the national level (Bussell, 2014). The analysis further shows that a number of ministries or government departments are involved in disaster risk reduction and climate change adaptation with Ministry of Agriculture and Food Security, National Institute of Meteorology (INAM) in the Ministry of Transport and Communication, Ministry of Public Works, Habitation and Water Resources and Ministry of Economy and Finance involved in both disaster risk reduction and climate change adaptation issues (Government of Mozambique, 2015).

Moreover, a number of Institutions including the Mozambique Institute of Agrarian Research, the National Meteorological Institute, the National Institute of Statistics, the National Centre of Cartography and Remote Sensing, the National Directorate of Geological Survey, the National Institute of Hydrography and Navigation, and the Technical Secretariat for Food Security and Nutrition (SETSAN), are involved in disaster risk management research in Mozambique with specific focus on risk assessments (Bussell & Malcomb, 2014; INGC and UNDP, 2010). Furthermore, a number of institutions including the National Meteorological Institute, the National Institute for Agronomic Investigation, the University of Eduardo Mondlane, and the Universidade Pedagógica are involved in climate related research. On the other hand, as a result of the country's high vulnerability to disasters, there is a strong presence of international organisation in Mozambique supporting both disaster risk management and climate change adaptation (Bussell & Malcomb, 2014; INGC and UNDP, 2010; Government of Mozambique, 2015; Logchem & Queface, 2012).

6.5.8.3 Policy and legislative frameworks for disaster risk reduction and climate change (adaptation)

Mozambique adopted a National Master Plan for Prevention and Mitigation of Natural Calamities in 2006 (The World Bank, 2009). The Master Plan followed the Disaster Management Policy of 1999 and became the country's operative strategy for disaster risk management. It specifically emphasises the links between development policies and preparedness, prevention, mitigation and vulnerability reduction (The World Bank, 2009).

Whereas there is no legislative framework for adaptation to the impacts of climate change in Mozambique, the country's proactive response to climate change has resulted in the development of the National Climate Strategy in 2012 (SARUA, 2014). Climate change issues are also catered for in the Agenda 2015 as a cross-cutting issue. Furthermore, climate concerns are integrated into various policies and programmes, including the Master Plan for Prevention and Mitigation of Natural Disasters (2006), Environmental Strategy for the Sustainable Development of Mozambique (2007) and National Water Resources Management Strategy (2006) (SARUA, 2014).

6.5.9 The Republic of Namibia

Namibia is situated on the south-western coast of Africa, and covers an area of 825,418 square kilometres (Government of Namibia, 2010, 2011a). The Republic of Namibia shares its land borders with Angola, Zambia, Botswana and South Africa (The Government of Namibia, 2011a). The location of the Republic of Namibia on the continent and the map of the country are

reflected in figure 6.9 below. According to the 2011 Population and Housing Census, the country's population stood at 2,113,077 (Namibia Statistics Agency, 2011).



Figure. 16: Location and map of Namibia (UNISDR, 2011b)

6.5.9.1 Natural hazards, disasters and climate change impacts

Namibia has a high risk of climatic and hydrological hazards (Dahlberg & Wingqvist, 2008). These include drought as a result of low and variable rainfall, flooding, and veld fires (Government of Namibia, 2011b). Like all the other countries in SADC, Namibia is vulnerable to the impacts of climate change. Namibia's Second National Communication to the UNFCCC (Government of Namibia, 2011a) summarises vulnerabilities and the need for adaptation responses in the following areas: socio-economic development; water resources; agriculture; coastal zone and fisheries; community-based natural resource management (CBNRN) and tourism; health and disaster risk preparedness. As SARUA (2014) indicates vulnerability to climate change in Namibia differs between regions and between various socio-economic groups.

6.5.9.2 Structures for disaster risk reduction and climate change (adaptation)

The Republic of Namibia is a sovereign, secular, democratic and unitary State founded upon the principles of democracy, the rule of law and justice for all (Government of Namibia, 1990). The country consists of three spheres of government: national, regional and local. Table 6.9 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 9: Organisations for disaster risk management and climate change adaptation in the Republic of Namibia

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> • The Office of the Prime Minister (OPM) National Disaster Risk Management Committee (NDRMC) • Directorate for Disaster Risk Management (DDRM) • National Focal Persons Forum (NFPF) • Namibia Vulnerability Assessment Committee	<i>a. Climate Change Coordination</i> • Ministry of Environment and Tourism (MET) • Climate Change Unit (CCU) • The Parliamentary Standing Committee on Natural Resources and Economics • National Climate Change Committee (NCCC) • Meteorological Services Division of the Ministry of Works and Transport (MWT)
<i>b. Sectoral Government departments</i> • Ministry of Agriculture, Water and Forestry (MAWF); • Ministry of Health and Social Services (MHSS), • Meteorological Services Division of the Ministry of Works and Transport (MWT)	<i>b. Sectoral Government departments</i> • Ministry of Agriculture, Water and Forestry (MAWF); • Ministry of Regional and Local Government, Housing and Rural Development (MRLGHRD) • Ministry of Health and Social Services (MHSS), • Ministry of Land and Resettlements (MLR); • Ministry of Fisheries and Marine Resources (MFMR); • Ministry of Mines and Energy (MME).
<i>c. Multilateral and bilateral organisations and International NGOs</i> • USAID/OFDA • UNDP	<i>c. Multilateral and bilateral organisations and International NGOs</i> • UNDP • Global Environmental Facility • DfID
<i>d. Research Institutions</i> • UNAM • National Commission on Research, Science and Technology	<i>d. Research Institutions</i> • National Commission on Research, Science and Technology • Meteorological Services Division of the Ministry of Works and Transport (MWT) • The Multidisciplinary Research Centre at UNAM • Desert Research Foundation of Namibia

Sources: Davis (2011); Government of Namibia (2009, 2011a, 2011b, 2012); IFRC (2012); SARUA (2014)

In Namibia, the Office of the Prime Minister (OPM) has the overall responsibility for the coordination of disaster risk management (Government of Namibia, 2012). The National Disaster Risk Management Committee (NDRMC), Directorate for Disaster Risk Management (DDRM), National Focal Persons Forum (NFPF) and Namibia Vulnerability Assessment Committee support the efforts of the office of the Prime Minister (Government of Namibia, 2009, 2012). The analysis further reveals that the Ministry of Environment and Tourism (MET) is responsible for all environmental issues and specifically for climate change and adaptation. The Ministry is supported by the Climate Change Unit (CCU), the Parliamentary Standing

Committee on Natural Resources and Economics advising Cabinet on relevant policy matters, National Climate Change Committee (NCCC) for sector-specific and cross-sectoral implementation and the Meteorological Services Division of the Ministry of Works and Transport (MWT) (Government of Namibia, 2009, 2011a).

Whereas a number of government sector departments are involved in climate change adaptation, both the Ministry of Agriculture, Water and Forestry (MAWF) and Ministry of Health and Social Services (MHSS) are involved in disaster risk reduction and climate change adaptation (Government of Namibia, 2009, 2011b). Moreover, the analysis shows that the USAID and UNDP are the important international organisations that support the implementation of disaster risk management interventions (IFRC, 2012). On the other hand, the UNDP together with DfID and the Global Environment Facility supports the implementation of climate change interventions (Government of Namibia, 2011b). Furthermore, the analysis shows that the National Commission on Research, Science and Technology, Meteorological Services Division of the Ministry of Works and Transport (MWT), the Multidisciplinary Research Centre at UNAM and the Desert Research Foundation of Namibia are the structures conducting research on climate change and adaptation while the National Commission on Research, Science and Technology and the University of Namibia are also providing disaster risk reduction research (SARUA, 2014).

6.5.9.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

The Civil Defence Ordinance No. 3 of 1979, the Civil Defence Act 1986, Civil Defence Proclamation 1978 and accompanying civil defence regulations used by the former administration are the disaster risk management legislative frameworks that existed in Namibia before the promulgation of the Disaster Risk Management Act, of 2012 (Act 10 of 2012) (Government of Namibia, 2012). The Disaster Risk Management Act seeks to give effect to the provisions of the Namibian Constitution on property rights and addresses operational needs for disaster management by establishing institutions for DRM, coordinating mechanisms, a National DRM Framework, programmes and plans for improved institutional emergency preparedness and response capacity at local, regional, and national levels to ensure that disaster risk reduction management is mainstreamed into development plans, provides for compensations for death or injury and damage to property respectively; and establishes the National Disaster Fund (Government of Namibia, 2012). In 1994 the Office of the Prime Minister established the National Emergency Management System now known as National Disaster Risk Management System following Namibia's drought emergency of 1992/1993 (IFRC, 2012). This was followed

in 2009 by the adoption of the National Policy for Disaster Risk Management, which became the main policy framework aimed at addressing disaster risk.

The implementation of the National Policy for Disaster Risk Management in Namibia is very relevant to the National Climate Change Policy since predictions of the impacts of climate change include increases in climate-related disasters such as floods and cyclones and drought (UNDP, 2010). The National Policy on Climate Change of 2011 for Namibia is the main policy addressing climate change (Government of Namibia, 2011a). The main purpose of this policy is to provide the legal framework and overarching national strategy for the development, implementation, monitoring and evaluation of climate change mitigation and adaptation activities (Government of Namibia, 2011a). The policy aims to manage climate change response in a way that recognises the national developmental goals and promotes integration and coordination of programmes of various sector organisations, so that benefits to the country as a whole are maximised, and negative impacts minimised (Government of Namibia, 2011a). In 2009 the country developed the Climate Change Strategy and Action Plan, which has been anchored on three aspects; adaptation, mitigation and crosscutting issues (Government of Namibia, 2009).

6.5.10 The Republic of Seychelles

The Republic of the Seychelles is made up of 116 islands scattered over an area of 1.374 million square kilometres of sea (National Bureau of Statistics, 2013; Seng & Guillande, 2008). The total land area of Seychelles is 455.3 square kilometres with a total coastline estimated at 491 km (Seng & Guillande, 2008). The Seychelles archipelago is divided into two distinct collections: Mahé group of 43 islands and the Coralline group numbering 73 islands (National Bureau of Statistics, 2013). The location of the Republic of the Seychelles on the continent and the map of the country are reflected in figure 6.10 below. A national census of population and housing conducted in 2010 shows that the population stood at 90 945 (National Bureau of Statistics, 2012).



Figure. 17: Location and map of Seychelles (UNISDR, 2011b)

6.5.10.1 Natural hazards, disasters and climate change impacts

The Seychelles' location, topography, and landscape make the country vulnerable to a range of hazards, including tropical cyclones, tsunamis, storm surges, extreme rainfall, flooding, landslides, rockslides, and forest fires - most of which are likely to be exacerbated by the effects of climate change (Government of Seychelles, 2013). Despite being vulnerable to the effects of climate change and the associated extreme events the Seychelles are considered less exposed to major natural disaster than most of the neighbour countries such as Mauritius, Réunion, Comoros, Madagascar or the countries on African continent (Seng & Guillande, 2008). According to the Government of Seychelles (2009), the country is economically, culturally and environmentally vulnerable to the potential effects of climate change and associated extreme events. This is as a result of such characteristics as the narrow coastal zones and the concentration of development on the low-lying coastal areas (Government of Seychelles, 2011).

6.5.10.2 Structures for disaster risk reduction and climate change (adaptation)

The Republic of the Seychelles is a sovereign, democratic republic and their form of government is a Presidential System based on the concept of Separation of Powers Doctrine, between the Judiciary, Executive and Legislature (Government of Republic of Seychelles, 1994). The Public Sector is organised into two main entities: The Public Service and non-ministerial government entities – parastatal agencies; which together form the Public Sector. The Public Sector is the machinery of government through which its national objectives are fulfilled (Government of Republic of Seychelles, 2011). Table 6.10 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 10: Organisations for disaster risk management and climate change adaptation in the Republic of the Seychelles

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> - National Disaster Committee (NDC) created in 1995 in the Office of the President - The Division of Risk and Disaster Management (DRDM) under the Ministry of Environment and Energy - National Emergency Operations Centre	<i>a. Climate Change Coordination</i> - Ministry of Environment, Energy and Climate Change - the Climate Affairs, Adaptation and Information (CAAI) Division includes the Seychelles National Meteorological Services (SNMS) - Ministry of Environment, Natural Resources and Transport - Seychelles National Climate Change Committee
<i>b. Sectoral Government departments</i> - Ministry of Land Use and Housing - Department of Police - The Seychelles Fire and rescue Services Agency (SFrSA) in the Ministry of Home Affairs. - The Seychelles People's Defence Force (SPDF) - Seychelles Agriculture Agency (SAA) in the Ministry of Natural Resources and Industry. - Ministry of Health	<i>b. Sectoral Government departments</i> - Ministry of Fisheries and Agriculture - Water and Sanitation - Land use and Forestry - Ministry of Health
<i>c. Multilateral and bilateral organisations and International NGOs</i> - UNICEF HUMANITARIAN ACTION - UNDP - Red Cross and Red Crescent - The world Bank	<i>c. Multilateral and bilateral organisations and International NGOs</i> - UNEP - UNDP - Global Environment Facility - CICERO
<i>d. Research Institutions</i> - Seychelles Agriculture Agency (SAA) - Seychelles National Meteorological Services (SNMS)	<i>d. Research Institutions</i> - University of Seychelles - Seychelles Centre for Marine Research and Technology - Seychelles National Meteorological Services (SNMS)

Sources: Government of the Seychelles (2013, 2014); SARUA (2014); Seng and Guillande (2008)

An interesting development in Seychelles' institutional setup for disaster risk reduction and climate change adaptation is the placement of both the Division of Risk and Disaster Management (DRDM) and the Climate Affairs, Adaptation and Information (CAAI) Division under the Ministry of Environment and Energy (Government of the Seychelles, 2013). In addition, the Ministry of Environment and Energy also incorporates the Wildlife, Enforcement and Permits (WEP) division (Government of the Seychelles, 2015). The Division of Risk and Disaster Management (DRDM) is responsible for promoting an integrated and coordinated system for disaster risk management to prevent and mitigate emergencies and disasters

(Government of the Seychelles, 2013). The Climate Affairs, Adaptation and Information (CAAI) Division is responsible for formulating plans for the development and coordination of the Climate Change Adaptation Policy and the related sector strategies amongst other things (Government of the Seychelles, 2013). Whereas the linkages and the coordination mechanisms between the two divisions are not clear, their placement in one ministry holds a great promise for addressing disaster risk in a harmonised way.

The analysis further shows that a number of sectoral departments and or Ministries are involved in disaster risk management issues in the Seychelles. These include the Ministry of Land Use and Housing, Department of Police, the Seychelles Fire and rescue Services Agency (SFrSA) in the Ministry of Home Affairs, the Seychelles People's Defence Force (SPDF), Seychelles Agriculture Agency (SAA) in the Ministry of Natural Resources and Industry and the Ministry of Health (Government of the Seychelles, 2013, 2014). Moreover, the analysis shows that the Ministry of Fisheries and Agriculture, Water and Sanitation, Land use and Forestry and Fisheries are the sectors involved in climate change (Government of the Seychelles, 2013, 2014).

The analysis further reveals that there are a fair number of international institutions assisting in both disaster risk reduction and climate change adaptation (Government of the Seychelles, 2013, 2014, 15). As for research, the analysis shows that the Seychelles National Meteorological Services (SNMS) and the Seychelles Agriculture Agency (SAA) are involved in Agricultural related disaster risk management research, whereas the University of the Seychelles, the Seychelles National Meteorological Services (SNMS) and the Seychelles Centre for Marine Research and Technology are involved in climate change adaptation research (Government of the Seychelles, 2013, 2014; SARUA, 2014).

6.5.10.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

The main policy and legislative frameworks for disaster risk reduction in the Seychelles are the National Disaster Management Policy on November 23, 2010 and the National Disaster Risk Management Act in 2014 (Act 15 of 2014) (Seng & Guillande, 2008). The development of these documents was accompanied by the adoption of the five-year Strategic Plan to support both policy and legislative documents with a clear roadmap to 2019 (Seng & Guillande, 2008).

As for climate change, there is no overarching climate change policy and legislative frameworks in the Seychelles, and the main activities of government on climate change (both mitigation and adaptation) are enshrined in the Environment Management Plan 2000 to 2010 (EMPS, 2001),

the Seychelles First National Communication (INC, 2000) and the Seychelles National Climate Change Strategy of 2009. However, the Government of the Seychelles (2009) acknowledges that possible adaptation actions identified in the First National Communication are much more complex to implement. The Seychelles National Climate Change Strategy seeks to provide a coherent and consolidated approach to climate change related policies, programs and projects. In 2011 the country developed the Second National Communication, which presented an opportunity to transform the Initial National Communication from a mere reporting process to a strategic and policy support tool (Government of the Seychelles, 2011). As the Government of the Seychelles (2011) indicates, the Second National Communication seeks to facilitate policy changes by exploring ways to facilitate the mainstreaming of the National Communication process into the government agenda for environment sustainability.

6.5.11 The Republic of South Africa

The Republic of South Africa covers roughly 1 221 000 square kilometres of the southernmost part of the African continent, and is bordered by the Atlantic Ocean on its west coast, and the southern Indian Ocean on its south and east coasts (Government of South Africa, 2012). The country shares its land borders with Namibia and Botswana on the north-western side, Zimbabwe in the north, Mozambique and Swaziland on the east and land locking Lesotho (Government of South Africa, 2012). Its coastline stretches more than 2 500 kilometres from Namibia in the west, southwards to the Cape and then northwards to the border with Mozambique (Government of South Africa, 2012). The location of the Republic of South Africa on the continent and the map of the country are reflected in figure 6.11 below. The 2011 Population and Housing Census shows that the population was about 51,8 million people (Statistics South Africa, 2012).



Figure. 18: Location and map of South Africa (UNISDR, 2011b)

6.5.11.1 Natural hazards, disasters and climate change impacts

South Africa faces a wide range of natural, climate-related and human-induced hazards that could potentially lead to disaster events and these includes droughts, floods, wildfires, fires in informal settlements, industrial accidents, displacement, high winds, and disease outbreaks and epidemics (Vermaak & Van Niekerk, 2004). While South Africa is subject to a wide variety of natural and human-induced hazards, the three that occur most frequently – floods, droughts and fires (Government of South Africa, 2005; Humby, 2011). The projected changes and increase in climate over the next 50 years will have significant impacts on various sectors of the South African economy more especially the energy, mining, health, agriculture (particularly maize production), biodiversity, water resources and rangelands (Kiker, 2000).

6.5.11.2 Structures for disaster risk reduction and climate change (adaptation)

South Africa is a constitutional democracy with a three-tier system of government and an independent judiciary (GCIS, 2012). The national, provincial and local levels of government all have legislative and executive authority in their own spheres, and are defined in the Constitution as “distinctive, interdependent and interrelated” (GCIS, 2012). The South African government’s approach of dealing with disasters changed significantly after the dawn of democracy in 1994. One of the main reasons was the need to bring the law into the modern era so that it would be in line with international best practice in the field of disaster risk management (Van Niekerk, 2014). To this end disaster risk management in South Africa is established as a public sector function within the three spheres of government even though disaster risk management goes beyond pure line function responsibility (SALGA, 2011). Table 6.11 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table. 11: Organisations for disaster risk management and climate change adaptation in the Republic of South Africa

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> • National Disaster Management Centre, in the Department of Cooperative Governance and Traditional Affairs • Intergovernmental Committee on Disaster Management • National Disaster Management Advisory Forum (NDMAF) • South African Weather Services	<i>a. Climate Change Coordination</i> • Climate Change Unit in the Department of Environmental Affairs • Inter-Ministerial Committee on Climate Change (IMCCC) • National Committee on Climate Change (NCCC) • Intergovernmental Committee on Climate Change (IGCCC)

<i>b. Sectoral Government departments</i> • Agriculture, Forestry and Fisheries • Department of Rural Development and Land Reform • SAPS • Health • South African National Defence Force • South African Weather Services	<i>b. Sectoral Government departments</i> • Agriculture, Forestry and Fisheries • Water Affairs • South African Weather Services • The Department of Science and Technology • Department of Health
<i>c. Multilateral and bilateral organisations and International NGOs</i> • GFDRR • UNHRC • UNOCHA • UNDP	<i>c. Multilateral and bilateral organisations and International NGOs</i> • Global Environment Facility (GEF) • United Nations Development Programme (UNDP) • USAID • DfID, • JICA, • GIZ • FAO • UN-Habitat • UNEP
<i>d. Research Institutions</i> • Disaster Management Training and Education Centre for Africa at University of Free State • African Centre for Disaster Studies at North West University • Agricultural Research Council • WRC • RADAR at Stellenbosch University • CSIR • University of Venda • Durban University of Technology	<i>d. Research Institutions</i> • South African National Energy Research Institute (SANERI) • South African National Biodiversity Institute (SANBI) • Council for Scientific and Industrial Research (CSIR) • Climate System Analysis Group (CSAG) and the Department of Oceanography at University of Cape Town • Water Research Commission • Council for Geoscience (CGS) • National Research Foundation (NRF)

Sources: Department of Environmental Affairs (2011); Government of South Africa (2002, 2005, 2011); Humby (2011); SALGA (2011); SARUA (2014); Van Niekerk (2014); Ziervogel *et al.*, 2014)

The National Disaster Management Centre, in the Department of Cooperative Governance and Traditional Affairs, the Intergovernmental Committee on Disaster Management, and the National Disaster Management Advisory Forum (NDMAF) are the main coordinating structures for disaster risk management at national level in South Africa (Government of South Africa, 2002, 2005; Humby, 2011; SALGA, 2011). At the same time the Department of Environmental Affairs, the Inter-Ministerial Committee on Climate Change (IMCCC) and the National Committee on Climate Change (NCCC) are the main structures coordinating climate change and adaptation to its impacts at national level (Department of Environmental Affairs, 2011; SARUA, 2014). The analysis shows that a couple of sectoral departments including Agriculture, Forestry and Fisheries and the Department of Rural Development and Land Reform for disaster risk management and Agriculture, Forestry and Fisheries and Water Affairs and Department of Science and Technology are involved in climate change adaptation (DEA, 2011; SARUA, 2014)

Whereas there are a limited number of international organisations involved in supporting disaster risk management interventions, the analysis reveals a strong presence of research institution in South Africa including Disaster Management Training and Education Centre for Africa (DiMTEC) at University of the Free State, African Centre for Disaster Studies (ACDS) at North-West University and the Agricultural Research Council for disaster risk management and South African National Energy Research Institute (SANERI), the South African National Biodiversity Institute (SANBI), Council for Scientific and Industrial Research (CSIR), Climate System Analysis Group (CSAG) and the Department of Oceanography at University of Cape Town (SARUA, 2014; Ziervogel *et al.*, 2014). As with the majority of the countries in SADC, there is no evidence of coordination between the different structures involved in disaster risk management and climate change and adaptation to its impacts.

6.5.11.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

The Republic of South Africa was one of the first African countries to legislate disaster risk management comprehensively (Vermaak & van Niekerk, 2004). This process culminated in the Disaster Management Act No. 57 of 2002 (DMA) as amended and the National Disaster Management Policy Framework (NDMF) in 2005 respectively (Van Niekerk, 2014). The centrepiece of the South Africa government's legislative response to disaster management, the Disaster Management Act 57 of 2002 (DMA), repealed the former Civil Protection Act 67 of 1977 (Humby, 2011). The Act recognises the wide-ranging opportunities in South Africa to avoid and reduce disaster losses through the concerted energies and efforts of all spheres of government, civil society and the private sector (Humby, 2011). However, the Act also acknowledges the crucial need for uniformity in the approach taken by such a diversity of role-players and partners. On the other hand, the national disaster management framework is the legal instrument specified by the Act to address such needs for consistency across multiple interest groups, by providing a coherent, transparent and inclusive policy on disaster management appropriate for the Republic as a whole. However as noted by Van Niekerk (2014), there are implementation discrepancies among the ideals espoused in the act and the framework and the realities within government.

As for climate change, South Africa does not have an overarching legislative framework for climate change in place despite a number of efforts to develop climate change policy since 2005. However, the National Climate Change Response White Paper of 2011 is the first coherent outline of government's responsibilities relating to mitigation and adaptation (Ziervogel *et al.*, 2014). The White Paper identifies disaster risk management as short-term adaptations to climate change because both address vulnerabilities to climate change-related impacts. It

further indicates that resilience to climate change-related extreme events, such as heat waves, floods, droughts, wildfires and storm surges, will be the basis for South Africa's future approach to disaster management. Other efforts to address climate change in South Africa include the development of the National Climate Change Response Strategy in 2004 and a draft National Climate Change Response Green Paper in 2010 (Ziervogel *et al.*, 2014). The South African government has also developed a wide range of sectoral policy documents, strategies and action plans to address climate change. Richards, (2008) argues that the existence of this impressive array of policies, frameworks and strategies does not necessarily imply effective implementation and coordination.

6.5.12 The Kingdom of Swaziland

The Kingdom of Swaziland is a monarchy and land-locked country located in the south-eastern part of Africa covering an area of 17,363 square kilometres (Central Statistics Office, 2008). The country is bordered by the Republic of South Africa on the north, west and south and by the Republic of Mozambique to the east (Manyatsi & Mhazo, 2014). The location of the Kingdom of Swaziland on the continent and the map of the country are reflected in figure 6.12 below. The last national census that was conducted in 2007 put the population at 1,018,449, with annual growth rate of 0.9% (Government of Swaziland, 2007).



Figure. 19: Location and map of Swaziland (UNISDR, 2011b)

6.5.12.1 Natural hazards, disasters and climate change impacts

The Kingdom of Swaziland is prone to a number of hydrological hazards such as droughts, windstorms, hailstorms and floods with drought being the most common (Government of Kingdom of Swaziland, 2007; National Disaster Management Agency (NDMA), 2015). Similarly,

the UNDP, (2008) indicates that disaster risk levels are spiralling up due to extreme vulnerability to increasing hazards such as droughts, environmental degradation, windstorm, flood, and hailstorm. This indicates that the country is highly vulnerable to the effects of climate change. As SARUA, (2014) indicates climate change in Swaziland is expected to lead to overall warming and drying, with a greater frequency and an intensification of droughts and floods. In a similar line of reporting, UNDP (2008) indicates that with an increasing manifestation of climate change, it is clear that hydro-meteorological hazards will continue to wreak havoc in poverty-stricken countries such as Swaziland.

6.5.12.2 Structures for disaster risk reduction and climate change (adaptation)

Swaziland is a unitary, sovereign, democratic Kingdom (Government of Kingdom of Swaziland, 2005). The constitutional monarchy has two spheres of government: national and local (Government of Kingdom of Swaziland, 2005). The system of government for Swaziland is a democratic, participatory, “tinkhundla” based system which emphasises devolution of state power from central government to “tinkhundla” areas (Government of Kingdom of Swaziland, 2005). Table 6.12 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table.12: Organisations for disaster risk management and climate change adaptation in the Kingdom of Swaziland

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> National Disaster Management Agency in the Deputy Prime Minister's Office	<i>a. Climate Change Coordination</i> - Department of Meteorology the Ministry of Tourism and Environmental Affairs - National Climate Change Committee - Swaziland Environmental Authority
<i>b. Sectoral Government departments</i> - Ministry of Agriculture - Ministry of Natural Resources and Energy - Ministry of Health - Ministry of Housing and Urban Development - Ministry of Tourism and Environment	<i>b. Sectoral Government departments</i> - Ministry of Agriculture - Ministry of Natural Resources and Energy - Ministry of Health
<i>c. Multilateral and bilateral organisations and International NGOs</i> - USAID/OFDA - UNDP - WFP - UNICEF - WHO - FAO	<i>c. Multilateral and bilateral organisations and International NGOs</i> - UNDP - Vulnerability Assessment Committee - GEF

<i>d. Research Institutions</i>	<i>d. Research Institutions</i>
• University of Swaziland • Amadi University	• The Swaziland National Research Council • University of Swaziland

Sources: Brown (2011); Government of Swaziland (2012); NDMA (2015); SARUA (2014)

The National Disaster Management Agency in the office of the Deputy Prime Minister is the main coordinating structure for disaster risk management at national level in Swaziland (Brown, 2011). As for climate change and adaptation to its impacts, the Swaziland Meteorological Services in the Ministry of Tourism and Environmental Affairs supported by the National Climate Change Committee and Swaziland Environment Authority is the main coordinating structure (Brown, 2011; NDMA, 2015). Disaster risk management (DRM) is identified as one of the priority areas of adaptation in addition to agriculture and food security, water resources and quality (Government of Kingdom of Swaziland, 2014). Through the cluster approach a number of sectoral government departments and ministries such as Ministry of Agriculture, Ministry of Health, Department of Water Affairs in the Ministry of Natural Resources and Ministry of Tourism and Environment amongst others are involvement in disaster risk management and climate change adaptation (NDMA, 2015). Moreover, a number of international organisation including UNDP, GEF, USAID, UNICEF, WHO, FAO and WFP supports the implementation of disaster risk reduction and climate change adaptation measures. Furthermore, the Swaziland National Research Council, Amadi University and University of Swaziland are the main organisations involved in climate change and disaster risk management research (SARUA, 2014).

6.5.12.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

Prior to 2005, national efforts on disaster risk reduction were almost non-existent in Swaziland (UNDP, 2008). This is so despite the existence of the draft National Disaster Risk Management Policy of 1999, which was not formally adopted by government. It was only after the 2004 SADC Regional Workshop in Disaster Risk Reduction which took place in Johannesburg, that the Government of Swaziland embraced the need for a paradigm shift from a focus on emergency response/relief by its Disaster Management Task Force, to identification of root causes of risks, and disaster risk reduction approach, also within the context of climate risk management (UNDP, 2008). As a result of these developments, Swaziland promulgated the Disaster Management Act of 2006 (Act 1 of 2006), which amongst other things seeks to provide for the integration and coordination of disaster management and the establishment of the disaster management fund.

On the other hand, the National Disaster Management Policy adopted in 2010 is the main policy framework which aim to change the approach to and the nature of Disaster Risk Management in Swaziland. This policy framework succeeded the draft National Disaster Risk Management Policy of 1999. Swaziland has also adopted the Disaster Risk Reduction National Action Plan (2008-2015), which is in line with the Swaziland Disaster Management Act. However, Government of Kingdom of Swaziland, (2015) acknowledges that whereas the Disaster Management (DM) Act of 2006, and the Disaster Risk Management Policy (2010) have been put in place, they are facing serious implementation challenges. For instance, they indicate that the Act has complex management structures thus making coordination needs to grow exponentially, at the risk of duplication. At the same time most of the organs created by the act are not in place except for the NDMA. Similarly, the national Disaster risk management policy (2010) has not been operationalised yet since its adoption (Government of the Kingdom of Swaziland, (2015).

As for climate change and adaptation to its impacts, it is indicated that there are no specific policy and legislative frameworks for climate change in Swaziland (Brown, 2011). Instead, climate change considerations are integrated to some extent into recent policies and strategies, including: food security and agricultural sector policies; biodiversity conservation and management policy; natural disaster and emergency policy; national biofuels strategy and action plan; and national energy policy implementation strategy (SARUA, 2014). Brown (2011) argues that by falling across several ministries, these legal and policy frameworks for climate change are fragmented.

6.5.13 The United Republic of Tanzania

The United Republic of Tanzania is located south of the Equator, lying mostly between latitudes 1 and 12°S, and longitudes 29° and 41°E. It is constituted by the Tanzanian mainland and the island of Zanzibar with a total area of 945,087 square kilometres plus 59 050 square kilometres of inland water bodies (Government of the United Republic of Tanzania, 2009). Tanzania shares borders with Kenya and Uganda to the north; Rwanda, Burundi and the Democratic Republic of Congo to the west; Zambia and Malawi to the south-west, Mozambique to the South; and the Indian Ocean to the East (Government of the United Republic of Tanzania, 2012). The location of the United Republic of Tanzania on the continent and the map of the country are reflected in figure 6.13 below. The 2012 Population and Housing Census for the United Republic of Tanzania shows that the country's population is 44,9 million with 43.6 million people residing in the mainland and 1.3 million residing in Zanzibar (National Bureau of Statistics, 2013).



Figure. 20: Location and map of Tanzania (UNISDR, 2011b)

6.5.13.1 Natural hazards, disasters and climate change impacts

Tanzania is vulnerable to recurring disasters that affect lives, livelihoods, destroy infrastructure and cause food insecurity and health related problems emanating from natural and human-made hazards (Becker, 2011; UNDP, 2011). The Guidelines for the Management of Environmental Emergencies (Government of United Republic of Tanzania, 2014) identifies hurricanes, floods, wildfires, industrial plant explosions, chemical spills, acts of terrorism as the environmental emergencies or sudden onset disaster or accidents affecting the country. With more than 70% of all disasters in Tanzania being of hydro-meteorological origin (Government of the United Republic of Tanzania, 2012), it is anticipated that they will be heightened by climate change (UNDP, 2011).

6.5.13.2 Structures for disaster risk reduction and climate change (adaptation)

Tanzania is one state and is a sovereign United Republic with the territory of the United Republic consists of the whole of the area of Mainland Tanzania and the whole of the area of Tanzania Zanzibar, and includes the territorial waters (Government of the United Republic of Tanzania, 1977). All state authority in the United Republic is exercised and controlled by the Government of the United Republic of Tanzania and the Revolutionary Government of Zanzibar (UN, 2004). Table 6.13 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table.13: Organisations for disaster risk management and climate change adaptation in the United Republic of Tanzania

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> - Disaster Management Office in the Office of the Prime Minister - Tanzanian Disaster Relief Committee	<i>a. Climate Change Coordination</i> - Division of Environment in the Vice President's Office - National Climate Change Steering Committee - National Climate Change Technical Committee
<i>b. Sectoral Government departments</i> - Tanzania Meteorological Agency, - Ministry of Agriculture and Food Security, and Cooperatives - Ministry of Health and Social Welfare - Ministry of Lands and Housing and Human Settlements - Ministry of Defence and National Service	<i>b. Sectoral Government departments</i> - Ministry of Agriculture, Food Security, and Cooperatives (MAFC) - Tanzania Meteorological Agency, - Ministry of Health and Social Welfare - Ministry of Water and Irrigation - Ministry of Natural Resources and Tourism - Ministry of Livestock Development and Fisheries
<i>c. Multilateral and bilateral organisations and International NGOs</i> - UNDP - International Red Cross/ Crescent	<i>c. Multilateral and bilateral organisations and International NGOs</i> - UNDP - UNEP - IUCN - UNICEF
<i>d. Research Institutions</i> - Disaster Management Training Centre (DMTC) at Ardhi University (ARU) - Tanzania Commission for Science and Technology (COSTECH) - Sokoine University of Agriculture	<i>d. Research Institutions</i> - Muzumbe University - Centre for Energy, Environment, Science and Technology (CEEST) - Tanzania Commission for Science and Technology (COSTECH) - Sokoine University of Agriculture - University of Dar es Salaam

Sources: Becker (2011); Government of United Republic of Tanzania (2012), Nindi (2012); SARUA (2014)

The analysis in table 6.13 above shows that the Disaster Management Office in the Office of the Prime Minister in conjunction with the Tanzanian Disaster Relief Committee is the main coordinating structures for disaster risk management (Becker, 2011; Nindi, 2012). At the same time the Division of Environment in the Vice President's Office supported by Tanzanian Meteorological Agency, the National Climate Change Steering Committee and National Climate Change Technical Committee is the main coordinating body for climate change and adaptation to its impacts (Government of United Republic of Tanzania, 2012, Nindi, 2012).

There are also strong sectoral government departments addressing disaster risk through adaptation to climate change and disaster risk reduction albeit lack of evidence for cooperation and coordination between these departments. As such the National Disaster Management Policy (2004), mandates forecasting for specific sectoral ministries and authorities (i.e. the

Tanzanian Meteorological Agency, Ministry of Agriculture and Food Security, and Ministry of Health) in the sense of being a crucial part of early warning systems for weather hazards, food insecurity and epidemics that are explicitly highlighted (Nindi, 2012)

On the other hand, there is a minimum involvement of international organisations and research institutions supporting the implementation of interventions for both disaster risk management and climate change adaptation. In this regard the UNDP is the only evident international organisation supporting disaster risk management whereas the Disaster Management Training Centre (DMTC) at Ardhi University (ARU) is the only institution for research on disaster management.

6.5.13.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

The main legislative framework for disaster risk management in Tanzania is the Disaster Relief Coordination Act, of 1990 and the Disaster Relief Coordination Regulations, of 1991 (Becker, 2011). However, in 2014 the country published a Bill (Bill Supplement No. 5, of 2014) for the enactment of the Disaster Management Act. The Act seeks to provide for establishment of the Disaster Management Agency, disaster risk management, coordination mechanism for disaster prevention, mitigation, preparedness, response and recovery, establishment and management of Disaster Management Fund and to provide for other related matters (Government of Tanzania, 2014). On the policy front, the National Operational Guidelines for Disasters of 2003 and National Disaster Management policy of 2004 outlines national goals and objectives for hazard risks and emergency management (Nindi, 2012). Other policies that have emphasis in disaster risk management include the National Land Policy, 1995; the National Human Settlements Development policy, 2000; and the environmental Management Policy. Disaster risk management is also part of the National Strategy for Growth and Reduction of Poverty (Government of Tanzania, 2009).

As far as climate change is concerned, there is currently no over-arching national climate change policy (Yanda *et al.*, 2013). Climate change is addressed in the context of environmental management and in this regard the legal framework and overall policy framework are The Environmental Management Act, Cap 191 of 2004 and the National Environmental Policy of 1997 respectively (Government of the United Republic of Tanzania, 2012; Nachmany *et al.*, 2015). The country has enacted a number of policies and legislative acts that either directly address climate change issues or indirectly support these objectives through environmental conservation in the related areas of alternative energy, protection of forest lands, and disaster response (Nachmany *et al.*, 2015). The 2004 Environmental Management Act

prescribed that the Minister responsible for the environment would assume the national leadership role on climate change, thus setting the course of subsequent action on climate change in Tanzania (Yanda *et al.*, 2013).

The formulation of NAPA in 2007 formed a clear basis for identifying and implementing adaptation actions at both sectoral and local levels (Government of the United Republic of Tanzania, 2012). In 2012 the government of Tanzania developed the National Climate Change strategy with a vision to enhance climate resilience in Tanzania and reduce the vulnerability of natural and social systems to climate change (Government of the United Republic of Tanzania, 2012).

6.5.14 The Republic of Zambia

The Republic of Zambia is a landlocked country located on the central plateau of the southern African region, with a land area of 752 614 square kilometres (SARUA, 2014). The country shares borders with Angola, Botswana, the Democratic Republic of Congo, Malawi, Mozambique, Namibia, Tanzania and Zimbabwe (Central Statistical Office 2015; Government of Zambia, 2007). The location of the Republic of Zambia on the continent and the map of the country are reflected in figure 6.14 below. The population of Zambia as captured during the 2010 census of Population and Housing was about 13.1 million people (Central Statistical Office, 2012) with a population density of 17 people per square kilometre (Central Statistical Office, 2015).



Figure. 21: Location and map of Zambia (UNISDR, 2011b)

6.5.14.1 Natural hazards, disasters and climate change impacts

Zambia is characterised by several hazards and when these interact with the fragile environment created by high levels of vulnerability of the populations, economic assets and the natural environment create a recipe for a disaster (Government of Zambia, 2005). In this regard the major types of hazards in Zambia include droughts, floods, epidemics, pest infestation, environmental degradation, refugees, and internally displaced populations as well as road accidents (Government of Zambia, 2005, 2007; Groen & Jacobs, 2012). Some of these hazards such as floods, extreme heat, and droughts are climate change-related and have adverse impacts on water quality, agricultural production, food security, water security, wildlife and infrastructure (SARUA, 2014).

6.5.14.2 Structures for disaster risk reduction and climate change (adaptation)

Zambia is a sovereign Republic under a constitutional form of governance. Republic is a unitary, indivisible, multi-ethnic, multi-racial, multi-religious, multi-cultural and multi-party democratic State (Government of Zambia, 1996). The government comprises the Central and Local Government whilst administratively the country is divided into nine provinces (Government of Zambia, 2010). The Government of the Republic of Zambia recognises the fact that it is its fundamental responsibility to protect its people, infrastructure, and other national assets against disasters and climatic hazards such as droughts and floods (Government of Zambia, 2007). Table 6.14 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table.14: Organisations for disaster risk management and climate change adaptation in the Republic of Zambia

National Organisations working on DRM	National Organisations working on Climate change
<i>a. Disaster Management Coordination</i> - Disaster Management and Mitigation Unit in the Office of the Vice President - National Disaster Management Council - National Disaster Technical Committee	<i>a. Climate Change Coordination</i> - Ministry of Lands, Natural Resources and Environmental Protection, formerly Ministry of Tourism, Environment and Natural Resources - Zambia Climate Change Facilitation Unit - National Climate Change and Development Council (NCCDC)

<i>b. Sectoral Government departments</i> • Ministry of Agriculture and Co-operatives (MACO) • Zambia Meteorological Department (ZMD) • National Early Warning Unit	<i>b. Sectoral Government departments</i> • The Zambia Meteorological Department (ZMD) under the Ministry of Transport and Communication • The Ministry of Agriculture and Cooperatives • Ministry of Mines, Energy and Water • National Early Warning Unit • Ministry of Health • Ministry of Finance and National Planning
<i>c. Multilateral and bilateral organisations and International NGOs</i> • USAID/OFDA • International Federation of Red Cross and Red Crescent Societies (IFRC) • OXFAM • CARE International Zambia • World Vision Zambia • Concern Worldwide	<i>c. Multilateral and bilateral organisations and International NGOs</i> • IUCN Zambia • The World Bank, • British Council, • UNDP, • UNEP
<i>d. Research Institutions</i> • Mulungushi University - DMTC • The Zambia National Science and Technology Council	<i>d. Research Institutions</i> • Mulungushi University - DMTC • University of Zambia • The Zambia National Science and Technology Council • The National Institute for Scientific and Industrial Research • Southern Africa Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL).

Sources: Bwalya (2010); Davis (2011); Funder *et al.* (2013); Government of Zambia (2007, 2010); Groen and Jacobs (2012); SARUA (2014)

The Ministry of Lands, Natural Resources and Environmental Protection and the Disaster Management and Mitigation Unit in the Office of the Vice-President are the two main coordinators for climate change (adaptation) and disaster risk management respectively (Davis, 2011; Funder *et al.*, 2013; Government of Zambia, 2007, 2010). On the one hand, the Disaster Management and Mitigation Unit is responsible for disaster preparedness, prevention, response and mitigation through conducting of vulnerability assessments, contingency planning for floods and coordination of emergency response efforts and disaster relief with other government agencies and international organisations (Funder *et al.*, 2013). On the other hand, the Climate Change Facilitation Unit in the Ministry of Tourism, Environment and Natural Resources is responsible for international climate change negotiations, provides National Communications on Climate change to the UNFCCC and is also instrumental in the development of National Adaptation Programme of Action (Funder *et al.*, 2013).

With climate-related hazards such as floods and drought prevalent in Zambia and given the clear overlaps between disaster risk management and adaptation to climate change, it would make more sense that the DMMU and the CFFU cooperate and coordinate their efforts with roles and responsibilities clearly defined (Slunge & Wingqvist, 2010). There is also a strong sectoral government department addressing disaster risk through adaptation to climate change and disaster risk reduction albeit lack of evidence for cooperation and coordination between these departments.

The analysis show that a number of sector departments are involved in climate change with some department such as Agriculture, the National Early Warning Unit and the Meteorological Department involved in both disaster risk management and climate change adaptation. To some extent a number of multilateral and bilateral organisations and international NGOs are involved in both disaster risk reduction and climate change adaptation. Moreover, the analysis show that a number of institutions including Mulungushi University – DMTC, University of Zambia, the Zambia National Science and Technology Council, the National Institute for Scientific and Industrial Research, and Southern Africa Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) are involved in climate change adaptation research (SARUA, 2014), with Mulungushi University – DMTC and the Zambia National Science and Technology Council involved in disaster risk reduction (Funder *et al.*, 2013).

6.5.14.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

The main legislative framework for disaster risk management in Zambia is the Disaster Management Act, of 2010 (Government of Zambia, 2010). This Act aims to establish and provide for the maintenance and operation of a system for the anticipation, preparedness, prevention, coordination, mitigation and management of disaster situations and the organisation of relief and recovery from disasters (Government of Zambia, 2010). The Act also gives legal power over disaster management and disaster risk reduction to the Disaster Management and Mitigation Unit (DMMU) within the Office of the Vice-President (Fumpa-Makano, 2011). The main policy framework for disaster risk management in Zambia is the Disaster Management Policy developed in 2005 (Funder *et al.*, 2013). Similarly, the Disaster Management Operations Manual of 2005 summarises the roles, responsibilities and procedures relating to the management of disasters in general, and specifically for drought-induced disasters.

There is no specific policy or legislation for climate change (adaptation) in Zambia. Climate change issues have been mainstreamed into the 2011-2015 Sixth National Development Plan (SNDP) under the overall Vision 2030 (Funder *et al.* 2013). The government is currently drafting

the National Climate Change Response Strategy (NCCRS), which essentially aims to and provide a cross-cutting policy and institutional framework (Funder *et al.*, 2013). The country developed its National Adaptation Programme of Action (NAPA) in 2007 and this NAPA identifies priority sectors such as agriculture, natural resources, water, health and energy for action (Bwalya, 2010; Funder *et al.*, 2013).

6.5.15 The Republic of Zimbabwe

Zimbabwe is landlocked in tropical southern Africa, sharing borders with South Africa to the south, Botswana to the southwest, Mozambique to the east and Zambia to the northwest and is part of the great plateau which traverses Africa (Chagutah, 2010). Zimbabwe has a total land area of 391,000 square kilometres (Brown *et al.*, 2012). The location of the Republic of Zimbabwe on the continent and the map of the country are reflected in figure 6.15 below. The Zimbabwe 2012 Population Census National Report indicates that the total population of the country was 13 061 239 with the population density of 33 persons per square kilometre (Zimbabwe National Statistics Agency, 2012).



Figure. 22: Location and map of Zimbabwe (UNISDR, 2011b)

6.5.15.1 Natural hazards, disasters and climate change impacts

Zimbabwe is particularly prone to a number of natural and human-made hazards such as droughts, floods, veld fires, storms, and HIV/AIDS among other epidemics (Bongo *et al.*, 2013). Climate variability and change pose a significant threat to sustainable development and poverty reduction in Zimbabwe as the country is particularly vulnerable due to endemic poverty, limited coping capacity and a highly variable climate (Brown *et al.*, 2013). According to Brown *et al.*

(2012) the impacts of climate change in Zimbabwe, particularly rainfall variability and extreme events, are expected to adversely affect a variety of socio-economic sectors.

6.5.15.2 Structures for disaster risk reduction and climate change (adaptation)

According to the Constitution of Zimbabwe Amendment No. 20 of 2013, the country is a unitary, democratic and sovereign republic with the constitution as the supreme law of the country. Government in Zimbabwe is divided into three tiers: the national government, provincial and metropolitan councils and local authorities, who are further divided into urban councils and rural councils (Constitution of Zimbabwe Amendment (No.20) Act, 2013). Section 9 (2) of the Constitution stipulates that the State must ensure that all institutions and agencies of government at every level are provided with adequate resources and facilities to enable them to carry out their function conscientiously, fairly, honestly and efficiently. Table 6.15 below summarises the main organisations responsible for disaster risk reduction and climate change (adaptation) at national level.

Table.15: Organisations for disaster risk management and climate change adaptation in Republic of Zimbabwe

National Organisations working on DRM	National Organisations working on Climate change
<i>a. <u>Disaster Management Coordination</u></i> • Department of Civil Protection in the Ministry of Local Government, Rural and Urban Development • National Civil Protection Coordination Committee	<i>a. <u>Climate Change Coordination</u></i> • National Climate Change Office under the Ministry of Environment and Natural Resources • National Climate Change Committee • National Task Team on Climate under the Directorate of the President's Office
<i>b. <u>Sectoral Government departments</u></i> • Disaster risk management department • Zimbabwe National Water Authority (ZINWA) • The Meteorological Department • Zimbabwe Defense Force (ZDF) • Zimbabwe Republic Police (ZRP) • Health Services • Social Welfare	<i>b. <u>Sectoral Government departments</u></i> • Disaster Risk Management department • Meteorological office housed in the Ministry of Transport • National Task Team on Climate Change in the Directorate of the Presidents' office. • Zimbabwe National Water Authority (ZINWA)
<i>c. <u>Multilateral and bilateral organisations and International NGOs</u></i> • USAID/OFDA • UNDP	<i>c. <u>Multilateral and bilateral organisations and International NGOs</u></i> • Practical Action • CARE Zimbabwe • UNDP • USAID

<i>d. Research Institutions</i> • Institute of Development Studies at the National University of Science and Technology (IDS-NUST) • Bendura University • University of Zimbabwe • Bulawayo University	<i>d. Research Institutions</i> • Institute of Environmental Studies at the University of Zimbabwe • Community Technology Development Trust (CTDT) • Environmental Management Agency in the Ministry of Environment and Tourism • The Southern Centre for Energy and Environment (SCEE)

Sources: Bongo *et al.* (2013); Brown *et al.* (2012); Davis (2011); Dodman and Mitlin (2014); Mtisi and Prowse (2012)

Interestingly, the draft National Climate Change Response Strategy advocates for disaster risk management aimed at reducing vulnerabilities to extreme weather events to be central in all of Zimbabwe's climate change adaptation strategies (Government of Zimbabwe, 2013). The document acknowledges that the generation and provision of reliable and appropriate information on present and future climate risks is a key component of disaster risk management (Government of Zimbabwe, 2013:53). However, the strategy acknowledges that there are different organisations that promote disaster risk management and climate change adaptation in Zimbabwe, whose interventions are not coordinated. In this regard the Department of Civil Protection in the Ministry of Local Government, Rural and Urban Development supported by the National Civil Protection Coordination Committee is the main coordinating structure for disaster management (Bongo *et al.*, 2013).

The National Climate Change Office under the Ministry of Environment and Natural Resources supported by the National Climate Change Committee and the National Task Team on Climate under the Directorate of the President's Office is the main coordinator for climate change and adaptation to the impacts of climate change (Davis, 2011; Dodman & Mitlin, 2014; Mtisi & Prowse, 2012). Furthermore, the Baseline Report on Economic Development and Climate Change for Zimbabwe of December, 2012 indicates that disaster risk management and climate change adaptation currently fall within different ministries, and are addressed at the national level under different policy frameworks. Consequently, they are managed through different line departments that rarely have any coordination across them (Government of Zimbabwe, 2012). In this regard, some of the departments involved in both disaster management and climate change adaptation include Zimbabwe Water Authority, the Meteorological department and the Disaster Risk Management Department (Mtisi & Prowse, 2012). The analysis shows little if any evidence of coordination between the different structures and sectors for disaster risk management and climate change adaptation.

6.5.15.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

Prior to Zimbabwe's Independence in 1980, disaster management was referred to as civil defence (Bongo *et al.*, 2013). The status quo remained after independence with the civil defence administered through the Civil Defence Act of 1982 (Bongo *et al.*, 2013), which was the first piece of legislation to address disasters (Chikoto & Sadiq, 2012). Since then, the concept of disaster management has evolved and developed from civil defence to civil protection, and ultimately into disaster risk management (DRM). As a result of these developments, the main legislative framework for disaster risk management in Zimbabwe is the Civil Protection Act 5 of 1989 (Bongo *et al.* 2013), which repealed the Civil Defence Act of 1982 (Chikoto & Sadiq, 2012). As for climate change, there is currently no distinct, overarching climate change policy in Zimbabwe (Chagutah, 2010; Davis, 2011; Government of Zimbabwe, 2012). Instead, fragmented responses are implied in a battery of sectoral policies, including those relating to environment and natural resources management, water resources management, agriculture and food security and disaster management. As a result, the Ministry of Environment and Natural Resources, which is the main government institution working on climate change derives its mandates from the Environmental Management Act of 2002. Through the Climate Change Office, the country has produced its Initial National Communication to the UNFCCC in 1998 and its Second National Communication in 2013 (Dodman & Mitlin, 2015).

6.6 SUMMATIVE DISCUSSION: ORGANISATIONAL AND INSTITUTIONAL ARRANGEMENTS FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE (ADAPTATION) IN EACH SADC MEMBER STATE

An analysis of structures for disaster risk reduction and climate change (adaptation) and the prevailing policy and legislative frameworks in each country constituting SADC reveals an interesting picture regarding developments. Whereas there are national peculiarities, it is evident that political leadership within each SADC member states are increasingly paying attention to issues of climate change, as this has become an urgent threat for the whole region and the continent (Richards, 2008). According to Brown *et al.* (2013), many African countries, including those in the SADC region, are beginning to develop national frameworks for responding to climate change, intended to guide adaptation projects and programmes. However, the analysis in the preceding section reveals that most if not all countries within SADC are at early stages of addressing climate change thus focusing on developing national communications to the UNFCCC with less attention given to adaptation to the impacts of climate change.

Similarly, most countries within the region are putting in efforts to move away from emergency response and management to disaster risk reduction. A number of countries have adopted policy and legislative framework and created structure to address disaster risk. Whereas there has been significant progress in this regard, there is still a lack of recognition or ignorance thereof of the role that climate change is playing in bringing or increasing new risks and hazards when developing policies and creating structures. The analysis shows that instead of implementing disaster risk reduction and climate change adaptation in an integrated manner, all but three countries (including Mauritius, Mozambique and the Seychelles) still have separate structures for disaster risk reduction and climate change adaptation. The following sections summarise the findings of the analysis with regard to the dominants hazards, climate change impacts and disasters organisational and legislative frameworks for both disaster risk reduction and climate change adaptation in the SADC region.

6.6.1 Natural hazards, disasters and climate change impacts

Globally, southern Africa is one of the most vulnerable regions to the impacts of climate change (Desanker, 2002). Current climate variability and vulnerability to extreme events such as floods and droughts are high, and a range of existing stressors, including water availability, land degradation, desertification and loss of biodiversity constrain food security and development (SARUA, 2014). In most of these countries, high levels of poverty, prevalence of diseases and conflicts exacerbated these vulnerabilities to the impacts of climate change and natural hazards (Mulugeta *et al.*, 2007).

6.6.2 Structures for disaster risk reduction and climate change (adaptation)

The analysis in this study reveals that the coordinating structure for disaster risk reduction and climate change adaptation in all the countries except Mauritius, Mozambique and the Seychelles are fragmented as they are housed in different ministries and or departments. The analysis shows that the National Disaster Management Institute, in the Ministry of State Administration is the responsible organisation for both disaster risk management and climate change adaptation in Mozambique even though there is a second organisation responsible for climate change. Moreover, the analysis reveals that the Ministry of Environment and Energy houses both the Division of Risk and Disaster Management (DRDM) and the Climate Affairs, Adaptation and Information (CAAI) Division in Seychelles, while the National Disaster Risk Reduction and Management Centre and Climate Change division are located in the Ministry of Environment, Sustainable Development, Disasters and Beach Management in Mauritius. What is not evident from the analysis is how the two divisions are coordinating their efforts within the same organisation.

Besides, the placement of disaster risk management and climate change adaptation divisions in one organisation in these countries holds a great promise as the advocacy for the integration of disaster risk reduction and climate change adaptation is continuing. It can thus be argued that except for these three countries all the SADC member states are still organising the coordination mechanisms for both disaster risk reduction and climate change adaptation based on the principle of single purpose organisation. In some cases, some of these structures that have been established are not operational to drive disaster risk reduction and climate change adaptation policy respectively.

However, the picture is different when analysing how disaster risk reduction and climate change are implemented from sectoral government departments. Although data has been scarce in some countries on sectoral integration of disaster risk reduction and climate change adaptation, the analysis reveals that in most if not all countries sector departments such as those responsible for Agriculture, Health, Water, and Energy amongst other are involved in both disaster risk reduction and climate change issues. What stand out from the analysis though is that all countries rely to some extent on the support of international organisations for both disaster risk reduction and climate change. These multinational organisations are proving the much needed expert guidance and resources for addressing disaster risk through disaster risk reduction and climate change adaptation. Similarly, most countries have fair amount of institutions involved in disaster risk reduction and climate change adaptation research. The research institutions are supporting disaster risk reduction and climate change efforts through policy support, providing proven scientific data and the translation of scientific data for a wide range of uses (Forino *et al.*, 2015). The analysis of each SADC member state shows that the research institutions involved in disaster risk reduction and climate change adaptation are diverse and they include specialised research centres, universities, government entities and multinational organisations.

6.6.3 Policy and legislative frameworks for both disaster risk reduction and climate change (adaptation)

Most countries in the SADC region are in early and different stages of developing policies and legislative frameworks for climate change (adaptation). The instruments developed to address climate change range from Initial National Communication to the UNFCCC, through to Second National Communications, National Adaptation Programmes, climate change response strategies, Clean Development Mechanism and National Action Plan (Viljoen, 2013). The analysis reveals that no country in the SADC has an overarching legislative framework for climate change (adaptation). Climate change is addressed to a varying degree in other forms of legislation such as Environmental legislation, Agriculture, Water, Energy, Forestry and Fisheries

amongst others. Whereas some of these policy and legislative frameworks acknowledge the importance of risk reduction as part of adaptation, they are not explicit on the linkages with risk management policy and legislative frameworks.

Similarly, some disaster risk management policy and legislative frameworks acknowledge the influence of climate change on disaster risk, but do not provide details of how this risk can be addressed in an integrated manner. As most countries within the SADC move from a focus on emergency, recovery and response to disaster risk reduction approaches, they are missing an opportunity to factor in adaptation to the impacts of climate change in their risk reduction strategies. In essence disaster risk reduction and climate change adaptation are still treated as standalone issues in the policies of all the SADC member states even in those countries with integrated structures for disaster risk reduction and climate change adaptation. The policies that are being developed are single purpose, only addressing particular facets of the problem. This despite the acknowledgement by some authors such as Briassoulis (2004) that a single sectoral policy cannot address a complex problem as a whole.

6.7 CONCLUSIONS

In addressing the second objective of the study, this chapter has provided a critical analysis of the organisations and the policy and legislative frameworks for both disaster risk reduction and climate change adaptation in each country constituting the Southern African Development Community. The results of the desk-top study of the institution (organisations and legislative frameworks) show that disaster risk reduction and climate change (adaptation) as fields of practice are fragmented as they are carried out by different departments in most SADC countries with support from humanitarian organisations and international partners. These findings support results of empirical studies carried by such authors as Becker, (2013), who found that disaster risk reduction and climate change adaptation are affiliated to different departments and ministries in all the countries in SADC except Mozambique. The analysis also reveals that policy frameworks for both disaster risk reduction (management) and climate change (adaptation) do exist in all the countries in SADC and that there is limited linkage if any between these policies.

This despite the fact that the majority of these organisations rely on the same source of baseline information such as hydro-meteorological data used in early warning systems and for long-term climate predictions. It is thus safe to conclude that number of countries in Southern African Development Community, face significant disaster risk governance challenges in that they lack a comprehensive and integrated organisational and institutional (policy and legislative) mechanisms to effectively address disasters risk emanating from both natural hazards and

climate change. Integration of disaster risk reduction and climate change adaptation structures becomes pertinent in developing countries including SADC member states that cannot afford parallel structures as these structures might impede each other's work and send mixed messages to policy makers and budget holders (Becker *et al.*, 2013). Becker *et al.* (2013) further indicate that the duplications of structures are viewed as unfortunate, inefficient and fertile soil for conflict over resources to implement similar activities.

The purpose of this chapter was to review documents and reports on the organisations for disaster risk reduction and climate change adaptation within each SADC member states. As already indicated, the findings of the analysis show that organisations for disaster risk reduction and climate change adaptation are located separately in all but three countries. The next chapter, chapter seven, presents the findings of the empirical study on the reasons for and effects of having separate structures for disaster risk reduction and climate change.

CHAPTER 7

REASONS FOR AND EFFECTS OF ESTABLISHING PARALLEL STRUCTURES FOR DRR AND CCA IN SADC MEMBER STATES: EMPIRICAL FINDINGS AND DISCUSSION

7.1 INTRODUCTION

The preceding chapter provided an analysis of organisations and institutions for disaster risk reduction and climate change adaptation at the national level of each of the SADC member states. The analysis shows that disaster risk reduction and climate change adaptation are addressed by different organisations in all the countries except Mozambique, Mauritius and Seychelles. Chapter 1 indicated that the study applied both theoretical and empirical perspectives. With chapters 2 to 6 focusing on the theoretical perspectives, this chapter focuses on presenting and discussing the empirical findings. This is to make sure that empirical perspectives are taken into account by the study. By unravelling the reasons or rationale for and the effects of locating structures for disaster risk reduction and climate change adaptation in different department, ministries and/or agencies in each SADC member state, the chapter addresses the third and fourth objectives of the study. Furthermore, the chapter re-emphasises empirically the need for integrating the structures and reinforcing the ways in which integration of these structures should take place.

The chapter commences by briefly outlining the methodology used for data collection and data analysis. The methodology applied in the study is presented in detail in section 6 of chapter 1. This chapter moves on to present the findings of the study that emanate from the views of key informants, i.e. disaster risk reduction (management) and climate change (adaptation) practitioners in the SADC member states. These participants were selected because they are knowledgeable on the topic. Participants participated willingly and voluntarily as they were informed of their rights to participate in the study (see Annexure B, the informed consent). It was important to solicit the views of practitioners to inform the development of the survey questionnaire to further enhance the results of the study as outlined in section 6 of chapter 1. Subsequently the chapter presents the findings of the survey, in which data was collected through an online survey. This is then followed by an integration of the findings of both the qualitative and quantitative studies and the interpretation of the data using side-by-side comparison, and convergent data analysis approach for merging data (Creswell, 2015). In this regard, inferences and conclusions on the reasons for and effects of having separate structures and the ways in which integration of disaster risk reduction and climate change should integrate, are drawn.

7.2 RESEARCH METHODOLOGY

To gain a deeper understanding of integration within the SADC member states and particularly reasons for and effects of locating disaster risk reduction and climate change within different departments, ministries and or agencies, a cross-national and cross-jurisdictional approach was used to gather information from key informants at national levels of governments. Conducting an empirical study was important to garner practical perspectives regarding the integration of structures for disaster risk reduction and climate change adaptation in SADC in order address the objectives of the study in full. Data was drawn from practitioners of both disaster risk reduction and climate change adaptation with the aim of exploring their views on integration.

The study applied a mixed-methods research design, in that both qualitative and quantitative strategies and tools were used in the study. The selection of this design was based on the premise that the use of either quantitative or qualitative research design alone was deemed insufficient for gaining an understanding of the problem. The advantage of using a mixed-methods research is that qualitative design offers in-depth experience of individual perspectives while quantitative design provides generalisation and precision (Creswell, 2015). Mixed-methods research designs are also deemed efficient as they incorporate both meaning and quantity in the same study (Morse, 2010). Specifically, the study applied a Sequential Exploratory mixed-methods design in which the problem under study was firstly explored qualitatively and the findings of the first study used to develop the instruments used to collect and analyse data quantitatively in the second phase of the study (Brannen, 2009; Creswell, 2015; Creswell, 2009; Johnson & Onwuegbuzie, 2007). As such a qualitative design was used to test and obtain the perceptions and attitudes of selected respondents regarding the reasons for and effects of having separate structures for disaster risk reduction and climate change adaptation by the SADC member states. Respondents were selected from government departments, ministries or agencies responsible for disaster risk reduction (management) and climate change adaptation/environmental authorities and/ or meteorological organisations at both management and technical/ operational levels.

Firstly, convenience purposeful sampling (Collins, 2010) was applied to select respondents in the fields of disaster risk management, climate change adaptation, environment and meteorology within SADC member states to participate in the face-to-face semi-structured interviews. The use of the semi-structured interview approach allowed respondents to describe their understanding and experiences integration of structures in their own words (Patton, 1990). An interview protocol (ANNEXURE C) was used to tap into the respondents' understanding of the need for integration, reasons for and effects of separation of structures for DRR and CCA, and the modes and mechanisms through which integration should take place. All interviews

were recorded and transcribed verbatim and initially grouped into core thematic areas and patterns. Secondly, a questionnaire with Likert type scales for the items emanating from the findings of the qualitative study (ANNEXURE D) was developed and circulated to government practitioners for disaster risk reduction and climate change adaptation in all SADC member states. A total of 35 respondents from nine SADC member states participated in the study. The participants were from Botswana, Madagascar, Malawi, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

All the respondents of the face-to-face and online survey were selected purposefully using non-probability and snowball sampling due to them working in the fields of disaster risk reduction (management and climate change (adaptation), thus valuing their knowledge, understanding and experience of working in these fields. A combination of data from both the face-to-face interviews and the online questionnaire was integrated using a Joint Display data strategy for comparing the results as outlined by Creswell and Clark (2011). As such, the various themes that emerged from the discussion of the qualitative study and online responses were pulled together to provide a comprehensive picture of the understanding and experiences of the respondents.

7.3 PRESENTATION OF RESEARCH FINDINGS OF THE QUALITATIVE STUDY

The first phase of this study applied qualitative data collection and analysis methods. Specifically, data was analysed using a qualitative descriptive approach and thematic analysis. Braun and Clarke (2006:79) define thematic analysis as a method for identifying, analysing and reporting patterns (themes) within data. Thematic analysis was selected for its requirement of low level of interpretation (Vaismoradi *et al.*, 2013), as it minimally organises and describes datasets in rich detail (Braun & Clarke, 2006). Moreover, thematic analysis also provides a flexible and useful tool to provide rich and detailed yet complex account of data (Braun & Clarke, 2006). In this approach, patterns of experiences are listed by quoting directly from some respondents and paraphrasing some of the common ideas as proposed by Aroson (1994). In this study a range of views were expressed as a result of diverse backgrounds and experiences of the respondents from different geographical contexts in the region as highlighted in section 7.3.1 below. These ranges of views and experiences are captured in the synthesised thematic discussion. Themes were identified by bringing together components of ideas and experiences which would rather be meaningless when viewed alone (Aroso, 1994). The relevance of themes identified in the study is based on the focus of the study, research questions, context and the theoretical framework within which the study is conducted (Bergman, 2010). In this study, patterns of views and experiences are considered themes because they captured important information in relation to the research question and represented some patterned responses or

meaning within the data set (Braun & Clarke, 2006). The themes that emerged from the discussion are pieced together to form a comprehensive picture of the respondent's collective views and experience as presented in the sections below.

7.3.1 Respondents' background information

Questions posed in this thematic area were focused on respondents' position, background in terms of qualifications and work experience. Respondents who participated in the face-to-face interviews ranged from public sector officers to Directors, Chief Directors and Chief Executive Officers of government departments and government agencies responsible for disaster risk reduction (management) and climate change (adaptation). Respondents had academic and work experience backgrounds ranging from development specialist, meteorology, environmental management and disaster management.

7.3.2 Thematic area 1: Understanding of the threat posed by climate change

Questions that contributed to the development of this theme revolved around the respondents' understanding of the threat posed by climate change in increasing disaster risk. This was considered important because it was anticipated that an understanding of the link between climate change and disaster risk would stimulate thinking on the necessity of integrating the structures for disaster risk reduction and climate change adaptation.

7.3.2.1 The role of organisation in climate change adaptation/ disaster risk reduction matters

Section 6.4 revealed that disaster risk reduction and climate change adaptation are carried out by different organisations within the SADC member states. The question on the role of the respondents' organisation in either disaster risk reduction or climate change adaptation was raised to verify whether the organisations are involved in both disaster risk reduction and climate change adaptation. All respondents were able to articulate the role of their organisations. The majority of the respondents went beyond articulating the mandates of their organisations and indicated their role in the other field (disaster risk reduction or climate change adaptation) as well. The responses below characterise some of the respondents' views.

"Disaster risk reduction forms a core component of the Long Term Adaptation Scenario Phase 2 that we are involved in and our input is by providing early warning and forecasting for disaster risk reduction. By planning better, we are able to reduce disasters and if we reduce the impacts of disaster we are adapting" (Climate change adaptation specialist).

“Our responsibility is to coordinate disaster management within the country to make sure that the country is prepared for disasters” (Disaster risk management practitioner).

“We are involved in disaster risk management through early warning and vulnerability assessments. Based on our forecasting we provide advisory to disaster management. We are actually not involved in adaptation implementation but rather our role in adaptation is mainly advisory to the different sectors. We are in the climate science and we only provide information” (Meteorological services official).

These statements do not only show that the respondents know and understand their roles and responsibilities, but also show that they are aware of the linkages that exist between disaster risk reduction and climate change adaptation. In a way they are concurring that their roles and mandates overlaps and goes beyond purely disaster (risk) management and climate change adaptation. It was encouraging to observe that the practitioners noted and understood the overlaps and as such were working together to address disaster risk.

7.3.2.2 Separation between risk posed by climate change and risk from natural hazards

In section 5.3 arguments have been presented that climate change is contributing to the increasing climate extremes and significantly exacerbating the adverse impacts of hydro and meteorological hazards. As a basis for establishing the need to integrate, respondents were asked to indicate whether their organisations distinguished between risk that emanates from climate change and risk that emanates from natural hazards when addressing disaster risk. This was to verify whether practitioners were engaging in cross-field activities or not. The majority of respondents indicated did not distinguish at all. A small number of respondents indicated that they distinguished between risk posed by natural hazards and risk posed by climate change. Amongst other things, the separation is assumed to be brought about by the fact that climate change adaptation only address climate related disasters while disaster risk reduction focuses on all kinds of hazards (Kohle *et al.*, 2016). The statement below captures the views of the respondents who do not distinguish.

“We deal with disaster risk across the board. We conduct risk mapping for all kinds of hazards and our work is informed by climate projections. We work quite a lot with meteorological services on early warning. So I can confidently say that in executing our duties in disaster risk management, we take cognisance of the changing climate” (Disaster risk management respondent).

Such responses show that some government organisations are considering the effects of climate change on disaster risk and this is shaping how they carry out their responsibilities. This prompted a question on whether the respondents' organisations consider the changing climate patterns when addressing disaster risk.

7.3.2.3 Consideration of changing climate patterns to effectively manage disaster risk

A number of scholarly publications highlight the fact that disasters and mainly those of hydro-meteorological origin are increasing as a result of climate change. Porfiriev (2015) argues that the conceptual basis of the role of climate change in increasing disaster risk provides a prerequisite and foundation for the integration of disaster risk reduction and climate change adaptation. The question on the consideration of the changing climate patterns when managing risk was asked to obtain the respondents' views on the linkages to build a case for integration. The findings in these question reveal that the majority of respondents understood the role which climate change and variability are playing in increasing disaster risk through extreme weather events. The respondents' understanding of this role and the way it influences how they address disaster risk is encapsulated by the following statements from government practitioners when asked if they consider the changing climate pattern in their daily work.

“Changes in climate are there for everyone to see, heat waves, floods, and the current droughts. These things were not happening like they are happening now when we grew up. So, considerations of climate change and climate variability are part of our agenda in dealing with disasters” (Environmental management respondent).

Such responses show a convergence between the respondents' views and scholarly literature. For instance, Porfiriev (2015:187) indicates that increased temperatures and significant precipitation fluctuations as a result of climate change provide for increased intensity and severity of hazardous events and disasters. The acknowledgement by practitioners in both these fields of the role that climate change is playing in increasing disaster risk is a step in the right direction towards integration of the structures. This is important because climate change is one of the most important elements contributing to disaster impacts.

7.3.2.4 Capacity and resources to deal with disaster risk

The UNFCCC (2008) acknowledges that both disaster risk reduction and climate change adaptation are poorly funded. Moreover, UNFCCC (2008) indicates that low staff capacity and high staff turnover rates hinder sustained and effective action. With this in mind, it was imperative to ask respondents whether their organisations had enough capacity and resources

to address disaster risk. Responses to the question of capacity and resources varied a great deal. Some respondents felt that there was not enough capacity and resources allocated to disaster risk reduction and climate change adaptation. Respondents in the fields of disaster risk reduction and climate change adaptation painted different pictures when explaining the availability of resources. Those in the field of disaster risk reduction felt that climate change was high on the agenda of everyone and therefore they were allocated more resources particularly financial resources. Those in the field of climate change adaptation feels that most of the resources allocated to climate change goes to mitigation and Clean Development mechanisms. However, a more general account of responses supports the assertion by the UNFCCC that disaster risk reduction and climate change adaptation are not allocated adequate resources. The following statements are a clear dissatisfaction by the interviewed practitioners.

“When it comes to capacity in terms of personnel and resources mainly funding we are always found wanting. As a result, our response to these issues are not adequate”.

One of the respondents in the disaster management field was satisfied with the capacity that his organisation has. The respondents indicated that they were not involved in the actual implementation of risk reduction measures as their main role was to coordinate the work of sector departments.

“We have the capacity to respond but we still need to operationalise other activities such as early warning so that we do not rely on Meteorological Services. It is for this reason that we are planning to have our own sections on adaptation and early warning within disaster management”.

The lack of dedicated resources from the national budget is seen as one of the inhibiting factors affecting operations of appropriate organisational, institutional systems and legislation. It is thus recommended that adequate resources, both financial, human and otherwise, be allocated to reduction of disaster risk through disaster risk reduction and climate change adaptation.

7.3.3 Thematic area 2: Reasons and rationale for establishing parallel structures

It was reflected in the conceptualisation of the study problem in chapter one that despite a great deal of attention given to the integration of disaster risk reduction and climate change adaptation to address disaster risk effectively, there are not many studies that sought to unravel the reasons or rationale for separating structures. The question on the reasons and rationale for establishing and keeping separate organisations for disaster risk reduction and climate change adaptation provided an opportunity to respond to voice their opinions based on their practical

experiences and theoretical understanding. Some of the reasons are captured in the following statements from respondents.

“The story of climate change is funny because it started as a science with only Meteorologist involved. People never thought it will become a developmental issue. If you look on our African continent most people who are in the climate change arena are meteorology scientist who are not implementers by the way, theirs is to generate scientific information”

“The reasons are historical because it all started with the UNFCCC and the Rio Convention. By then people had limited understanding of climate change and it was placed with meteorologist because they deal with weather and climate and they became focal points”

“Climate change was seen as an environmental problem and a science and policy makers never saw it broadly. So the separation is associated with the lack of understanding of the issues by policy makers who do not want to change the status quo. In my country climate change is being addressed by two different organisations and government is currently planning to establish an agency specifically for climate change. This is planned to happen besides the fact that there is no capacity assessment conducted in the existing organisations with the mandates for climate change”.

“With climate change there are great opportunities to access a lot of funding and on the other hand there are great opportunities to attend conferences and workshops all over the world while the situation is not the same in disaster risk management. This creates personal career ambitions than national interests. So talk about integration and those who are benefiting will defend with all they have to remain separate”

“The biggest problem with disaster risk reduction and climate change adaptation is that they subscribe to different international frameworks and to realise integration at country level it need to start at international level”.

“Agencies are mandated to deal with certain portfolios in government”

The reasons provided by the respondents including those captured in the statements above can be summarised as follows:

- (i) Functional structuring of government;
- (ii) Historical evolution of climate change and disaster management issues;

- (iii) Lack of knowledge and understanding of issues by political leaders;
- (iv) Careerism in the climate change arena; and
- (v) Different international frameworks widening the gaps.

Some of the reasons the reasons provided by the respondents converge with the reasons provided in the scholarly literature as presented in section 5.2 of this study. With the reasons for establishing separate structures solicited, it was important to unearth the effects of having separate structures as these might affect the integration.

7.3.4 Thematic area 3: The effects of establishing separate structures for disaster risk reduction and climate change adaptation

In this thematic area participants highlighted the practical effects of having parallel structures that they experience on a daily basis in executing their duties. Respondents were able to articulate some of the effects of having separate structures. However, the responses varied as few of the respondents feel that there are no negative effects (as highlighted in the statements below) as the organisations works well together.

“With the collaboration and the relationship that we have with those in disaster risk management, there are no effects. We are cooperating and coordinating our efforts, we participate in forums and they participate in our workshops and they inform our strategies. In fact, we have benefited a lot from their processes and we are playing a crucial role in informing their processes with the information that we provide”

The majority of respondents indicated that the separation of disaster risk reduction and climate change adaptations resulted in a number of effects. The effects of separating the structures are apparent in the following statements:

“Climate change came with a lot of opportunities mainly funding and as such people tend to protect their turf”.

“If you are addressing the same issue but you are working from different platforms, there can be a lot of polarisation of interventions to address the challenge”.

“Resources are spread all over and we are not even making an impact”

The effects that were highlighted by the respondents are summarised as follows:

- (i) Incoherent policies;
- (ii) Polarisation of interventions;
- (iii) Competing for same resources;
- (iv) Coordination becomes a nightmare;
- (v) Climate change governance is the main challenge; and
- (vi) Lack of climate resilient communities.

A follow-up question was asked as to whether these effects hindered the engagement of practitioners from both fields.

7.3.4.1 The effects hinder effective engagement of practitioners from both fields when addressing issues of common interest

In line with the UNFCCC's (2008) assertion that government compartmentalisation is a major constraint to integration, the majority of respondents agreed that these effects hindered effective engagement to address issues of common interest. The following statements bear testimony to the impact that these effects are having.

“Coordination becomes a nightmare as everyone is all over the place. As such something that can be achieved in five years can be achieved in 15 years”

“Our working relations are just cordial and not ideal. There is a lot of contestation on which is the rightful institution to coordinate climate change. Therefore, climate governance is the main challenge and the future looks bleak.”

With the majority of respondents considering the role of climate change in increasing disaster risk, the reasons of establishing and the effects of having separate structures established, it was important to get the respondents' views on the need for integrating structures for disaster risk reduction and climate change adaptation.

7.3.5 Thematic area 4: Understanding the imperative need to integrate disaster risk reduction and climate change adaptation

Chapter 5 of this study provided an analytical framework for the integration of structures for disaster risk reduction and climate change adaptation and identified integration as a continuum. In line with this analytical framework this question was mainly raised to verify if participants see a need to integrate and how this integration should take place. Respondents unanimously agreed that integration of organisations for disaster risk reduction and climate change

adaptation was important. This is important because both conceptually and practically matching the two fields requires a better and mutual understanding of the practitioners (Birkmann & Mechler, 2015).

Respondents raised concerns such as:

“It is so relevant and important to have similar issues housed at one place. This will assist in proper planning which will lead to building resilience of communities”

One respondent also voiced his admiration of the integrated structures for disaster risk reduction and climate change adaptation in Mauritius and the Seychelles.

7.3.5.1 Difficulty of developing a coherent strategy

Most participants were of the opinion that the differences in respective mandates, programmes and sets of measures on how to deal with climate change issues on the one hand and disaster risk reduction on the other provided great obstacles when developing a coherent strategy.

“There are a whole host of organisations which are involved in disaster response such as defence force and police and they do not engage in climate change adaptations issues. So the issue of integration can be very complicated”.

7.3.5.2 Joint funding for measures to reduce disaster risk

Whereas all respondents acknowledge the importance of joint funding for disaster risk reduction and climate change adaptation, they indicated that they do not have programmes and projects that are jointly funded. The indication is that the more they work closely to each other on issues of common interest and with improving relationship, it is feasible that programmes and projects be jointly funded in future. This view is evident in the response of one of the respondents.

“The biggest challenge is that disaster management is mainly reactive and adaptation is proactive. If disaster management is not emergency based and reactive, then there is a potential for joint funding”.

From the discussion on the topic of joint funding, the general agreement was that joint funding of disaster risk reduction and climate change adaptation was an area largely unexplored in government.

7.3.6 Thematic area 6: Inter-organisational arrangement in addressing disaster risk

It is important for organisations in disaster risk reduction to work with organisations for climate change adaptation (see chapter 5). The questions under this theme were asked to verify whether there was a working relationship between the organisations and if so how they were working together. It was important to identify the mechanisms used to engage if they converged with the scholarly literature. The findings in this theme are presented below.

7.3.6.1 Ways in which integration of disaster risk reduction and climate change adaptation should occur

On the question of how the disaster risk reduction and climate change adaptation structures can be brought towards becoming integrated structures and the possible ways of integrating risk reduction and climate change adaptation within programmes/organisations, respondents were able to indicate the ways that they used to engage with their counterparts and their views on the merging of structures. These included meetings, workshops and project-based activities. Most of these ways correspond with scholarly literature. For instance, Papathoma-Köhle *et al.* (2016) indicate that national platforms link disaster risk reduction and climate change adaptation in various ways including legislation, joint activity, plans, conferences, workshops, guidelines, risk mapping and urban and land use planning. There was consensus among respondents that there was no need for structural adjustments at this stage. This view is encapsulated in these statements that were made during the interviews.

“I am not sure about bringing the organisations together because it always brings people’s emotions and protectionism where people start thinking about their jobs. I think we should advocate more for working together than merging and moving into one room. Ad hoc as it maybe, we must create a structure of working together while we are housed in separate organisations”.

“Integration is very important, but we do not need to rush into bringing climate change adaptation under disaster risk reduction. Instead let us focus on mainstreaming into different sectors, develop appropriate frameworks to guide what is supposed to happen and the interactions”.

“We meet in forums with different stakeholders and therefore it is practically too early to talk about structural adjustments as the mechanisms we are using currently are sufficient enough to address the issues”.

Thus the findings reveal that the majority of respondents are against the merging of the organisations for disaster risk reduction and climate change adaptation. Within this some respondents felt that mainstreaming of disaster risk reduction and climate change adaptation would be more feasible than integration as most countries are still in early stages of development. This is because disaster risk reduction is viewed as a tool that can also be used to adapt to the impacts of climate change. Therefore, efforts should be channelled towards cooperation and coordination of activities. Whereas respondents did not have much theoretical background of the integration continuum, most of them felt that as much as it were ad hoc, and that the structures they were involved in were effective.

7.3.6.2 Formal or written agreements between organisations

Due to the raised issue of the ad hoc nature of the arrangements a follow-up question was asked to check whether the relationships between the organisations were formalised. Responses to this question varied with some respondents indicating that the relationship was formalised but failed to indicate how the arrangement was formalised. Other respondents indicated that there was nothing signed between the organisation and they worked together because there were mutual issues to be addressed. These respondents were sceptical of the sustainability of the arrangement in the long run and this is reflected in the following statement:

“The main problem is sustaining the ad hoc structures in the long term as it depends on people and their feelings. There is nothing binding in these structures and it much depends on personalities. There another problem is that there is a lot of changes in government and there is no continuity in participating in these structures when new officials are appointed”.

Despite this scepticism about the ad hoc nature of the arrangements, the interactions were central to the creation of the appropriate environment for accelerated uptake of the interdependent nature of issues by the organisations concerned.

7.3.6.3 An enabling environment for integrating disaster risk reduction and climate change adaptation

Having identified the ways in which integration should take place and how respondents are engaging with their counterparts, it was important to solicit the respondents' views on what would constitute an enabling environment for integration of organisations for disaster risk reduction and climate change adaptation to work. The following issues were highlighted as being important:

- (i) Empowerment of political leaders;
- (ii) Providing platform for dialogue;
- (iii) Addressing the will of senior officials;
- (iv) Providing relevant capacity and systems; and

Some of these factors identified by the respondents are in line with the assertion by the UNFCCC (2008) that enhanced risk reduction prompted by major climate related disasters would only be sustained in the long term when underpinned by minimum conditions of political, social, and economic stability within the context of good governance.

7.3.6.4 Merging/ structural adjustments of organisations for disaster risk reduction and climate change adaptation will assist in reducing disaster risk

Lastly respondents were asked their views on whether the integration of organisation for disaster risk reduction and climate change adaptation would lead to a reduction in disaster risk. Accounts of the respondent varied a great deal. Some respondents felt that if they were integrated they would make an impact in the ways that they address disaster risk and in the long run they would be able to deal with disaster risk effectively. Other respondents were not sure whether integration would lead to reduced disaster risk. What they were sure of is that resources would be utilised efficiently.

In general, respondents understood the need to integrate organisations for disaster risk reduction and climate change adaptation and were able to elaborate on the reasons for establishing and keeping organisations for disaster risk reduction and climate change separate. Moreover, they were able to articulate the effects of having separate structure. They also highlighted issues that must be addressed for integration to succeed. As indicated in the research methodology these findings were used to inform the development of instruments to collect quantitative data. An online questionnaire was developed and circulated to disaster risk reduction and climate change adaptation practitioners in all SADC member states. The findings from an online survey are presented below.

7.4 PRESENTATION OF FINDINGS OF THE QUANTITATIVE STUDY

Quantitative data was collected and analysed using Survey Analytics (see www.surveyanalytics.com). The programme was chosen and used because it offered the benefits of collecting data online. Both closed-ended and open-ended questions with Likert type scales were applied to collect quantitative data. The analysis in this phase of the study comprises descriptive statistics used to determine the relative prevalence and importance of

different dimensions as suggested by the qualitative study (Creswell & Clark, 2011). The findings of the online survey are presented below.

7.4.1 Respondents' Background

In opening the questionnaire, respondents (N=26 from Botswana, Madagascar, Malawi, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe) were requested to provide information regarding the name of their organisation, position, background in terms of the fields of study and work experience. Not all respondents opted to provide such information. The information of those who provided is captured in table 7.1 below. It must be noted that the organisations that respondents work for are omitted from the table purposefully to protect the identity of the respondents in line with the informed consent shared with the respondents. A total of 24 respondents from eight SADC member states participated in the online survey. The respondents' demographics and their backgrounds both academic and work experience are reflected in **Annexure E**

7.4.2 Distinction between risk posed by climate change and risk from natural hazards

As a basis for establishing the need to integrate, respondents were asked to indicate whether they distinguished between risk that emanates from climate change and risk that emanates from natural hazards when addressing disaster risk. The differences in responses to this question were very marginal. The findings of the study show that the majority of respondents (53%) indicated that their organisations distinguished between risk posed by climate change and risk from natural hazards as opposed to the 47% who indicated that their organisation does not distinguish between the risks.

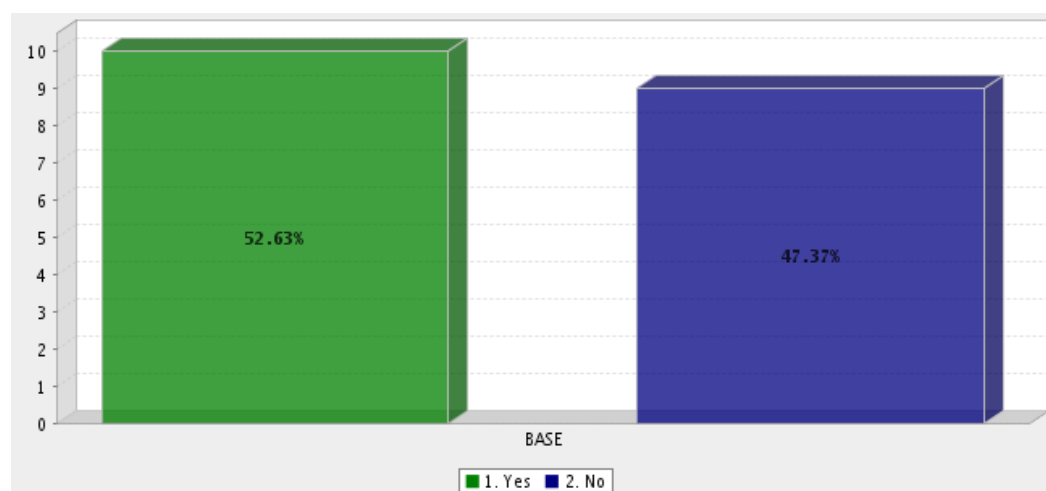


Figure. 23: Distinction between risk posed by climate change and risk from natural hazards

In a question to substantiate the choice of their answer, those who responded in the affirmative indicated that their DRR did not include climate change. These are areas that fall under two different ministries. Other indicated that climate risks were associated with climate variables at extremes. Natural hazards focuses on the human-made and natural changes with direct impacts to livelihoods and therefore must be dealt with separately. Other statements made include “only climate change management is our main business”. One respondent acknowledged that the majority of hazards are hydro-meteorological and are linked to climate change and therefore there is no conscious strategy to separate the management of these from climate change adaptation. The main reason for the separation might be that “the two themes are handled by two different institutions who have their own strategies” as one of the respondents indicated.

The respondent who did not separate these functions (47%) indicated that both are considered at the same time because they are related and may mean the same thing. Some in this category indicated that climate change issues triggered disaster risks and therefore it was difficult to divorce the two issues. Statements such as “We don't separate they because we do believe that climate change (CC) or climate variability (CV) is also contributing to frequent severe weather conditions such as rampant heat waves and flash flood occurrence” were raised. Some respondents indicated that climate change is a factor in some of the hazards when doing risk assessments.

7.4.3 Capacity and resources to address disaster risk

Given the importance of capacity and resources in addressing disaster risk (UNFCCC, 2008), it was important to get the respondents' views regarding the capacity and resources to address disaster risk within their organisations. The findings reveal that the majority of respondent (50%) do not believe that their organisation possess sufficient capacity and resources to address disaster risk. The views of these respondents converge with the literature that both disaster risk reduction and climate change adaptation are poorly resourced and funded (see UNFCCC, 2008).

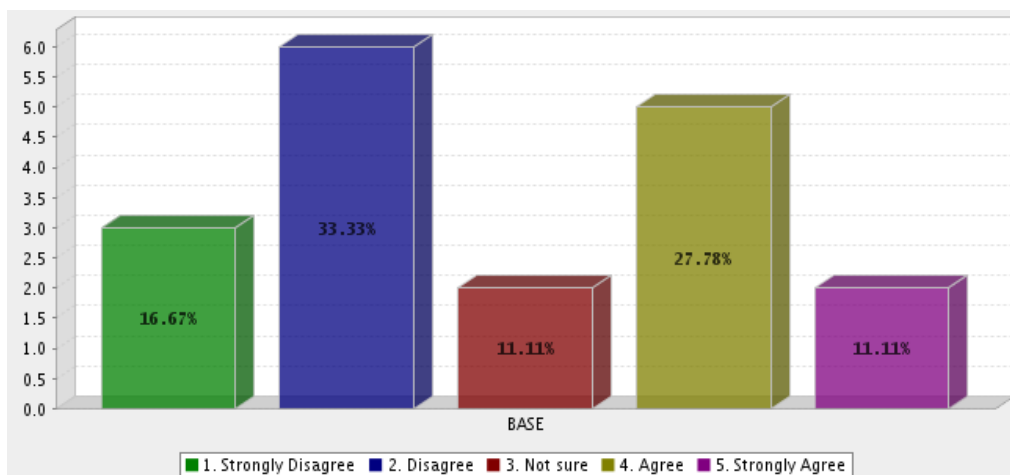


Figure. 24: Capacity and resources to address disaster risk

Only about 39 % of the respondents were of the view that their organisation possessed enough capacity. What is striking though is the 11% of those who are not sure whether their organisation possessed enough capacity to deal with disaster risk.

7.4.4 The role of climate change in increasing disaster risk

Respondents were requested to indicate whether they agreed or not that disaster risk is increasing as a result of climate change.

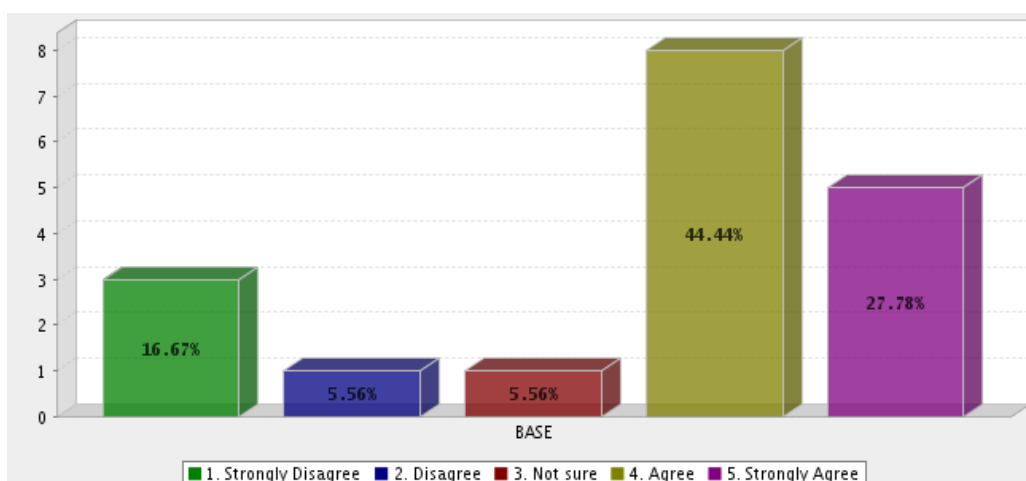


Figure. 25: The role of climate change in increasing disaster risk

The findings show that a combined total of 72 % of respondents agreed that climate change plays an important role in increasing disaster risk. Only a combined figure of 22% disagreed with this statement. Of importance in this group of respondents is the 16.67% that strongly disagreed with the statement. A small number of respondents indicated that they were not sure.

7.4.5 Correlation between extreme weather events and climate change

Arguments have been presented that climate change is exacerbating disaster risk through extreme and severe weather events (see section 5.3). In this study, the relationship that exists between extreme weather events and disaster risk is used as an entry point for the potential link between disaster risk reduction and climate change adaptation. Respondents were asked whether they agreed with the notion that disaster risk is increasing as a result of climate change.

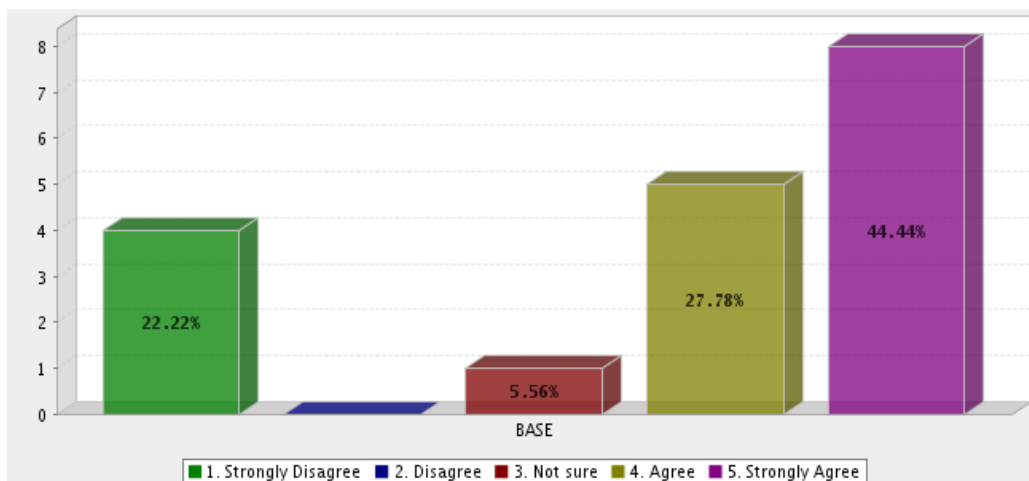


Figure. 26: Correlation between extreme weather events and climate change

A large number of respondents (44%) in the findings strongly agreed that there was a positive correlation between extreme weather events and climate change with merely 22% of the respondent strongly disagreeing. The results in this question positively correlate with the findings in in question 5 above.

7.4.6 Intensity, severity and of extreme weather events

A changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events, and can result in unprecedented extreme weather and climate events (IPCC, 2012). Respondents' views on such statements were sought to re-emphasise the role that climate change is playing in increasing disaster risk

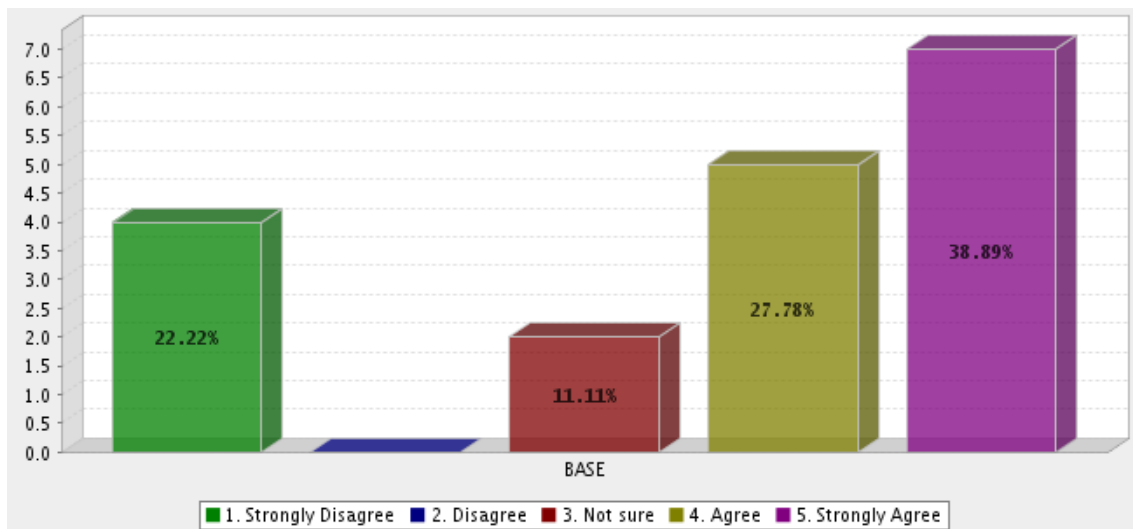


Figure. 27: Intensity, severity and of extreme weather events

The results in this question correlate with the results in questions 5 and 6 above in that 39% of respondents strongly agree with the statement while 22% disagree. However, there is an increase in the number of respondents who are not sure (11% against 5% in the previous two questions) about the statement.

7.4.7 Overlaps between disaster risk reduction and climate change adaptation

As a result of climate change adaptation and disaster risk reduction having similar aims and mutual benefits (Venton & LaTrobe, 2008), it was essential to verify whether respondents knew and understood the overlaps that exist.

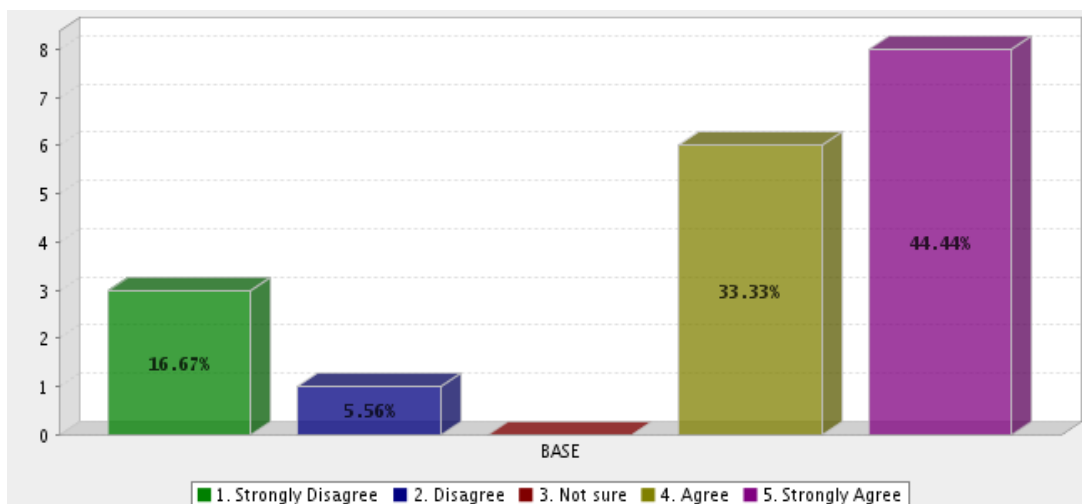


Figure. 28: Overlaps between disaster risk reduction and climate change adaptation

The results in this question show that an overwhelming combined 77% of respondents believe that there are major overlaps between disaster risk reduction and climate change adaptation. Such a positive response is crucial in building a case for integration. Only a combined 22% do not believe that there are major overlaps between disaster risk reduction and climate change adaptation.

7.4.8 Reasons for establishing separate organisations/institutions for disaster risk reduction and climate change adaptation

This is one of the major contributions of the study to the body of knowledge as the area is largely unexplored. Respondents were requested to rate the main reasons for separating the structures for disaster risk reduction and climate change adaptation.

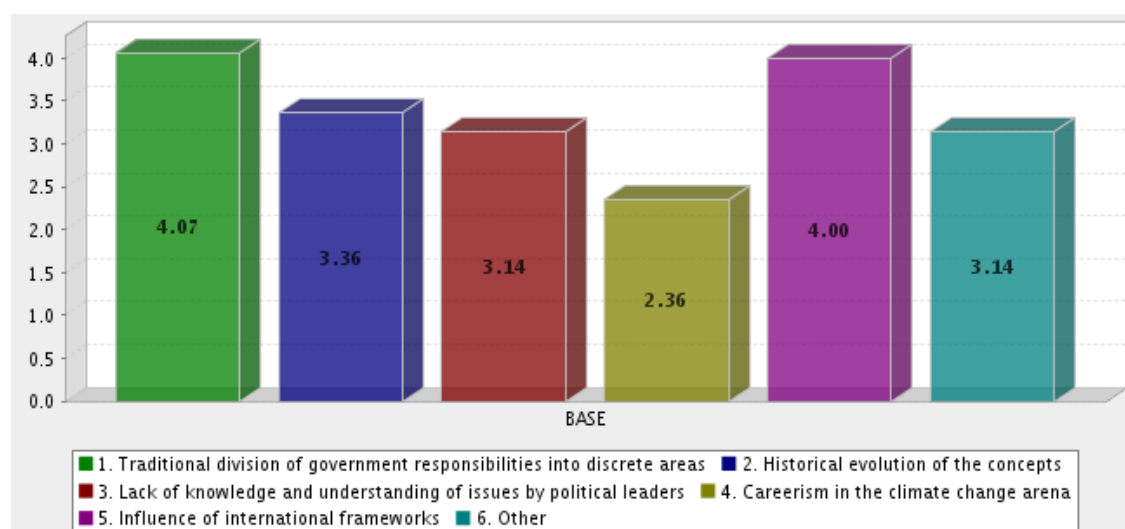


Figure. 29: Reasons for establishing separate organisations/institutions for disaster risk reduction and climate change adaptation

The results show that the traditional division of government into discrete areas (4.07) and the influence of international framework (4.0) ranks the highest among the reasons for separating organisations for disaster risk reduction and climate change adaptation. These are followed by historical evolution of the concepts (3.36), lack of knowledge and understanding of issues by political leaders (3.14) and those who believe that careerism in the climate change arena (2.36) is driving the separation. Respondents were able to identify and include other reasons for separation and these include a centralised system of climate change and DRR interventions by central government, which links to the traditional division of responsibilities by government, lack of understanding of the concept of disaster risk reduction and the role of technical and financial institutions who opt to fund the initiatives separately.

7.4.9 Effects of establishing separate organisations for disaster risk reduction and climate change adaptation

Respondents were requested to rate the effects of separating the structures for disaster risk reduction and climate change adaptation.

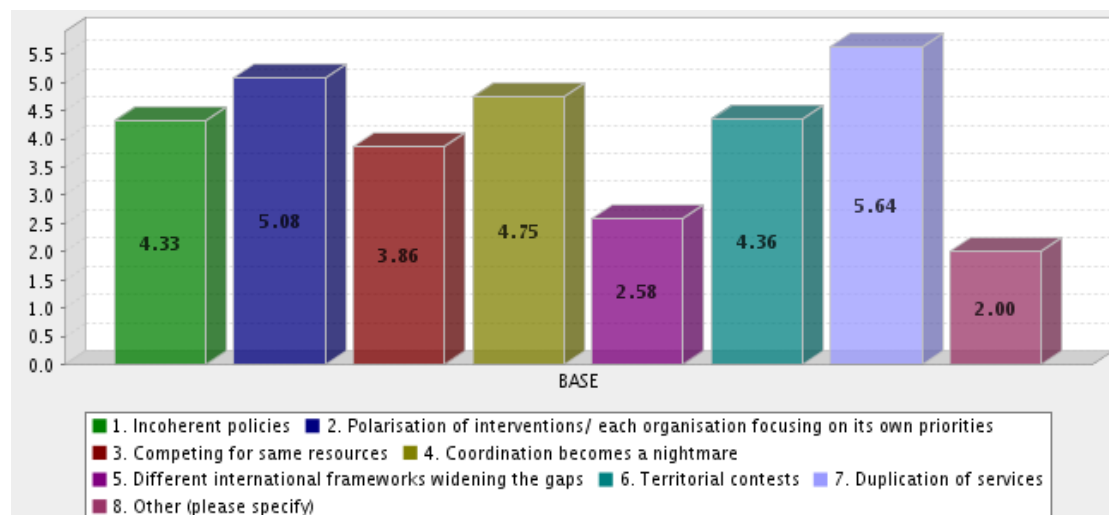


Figure. 30: Effects of establishing separate organisations for disaster risk reduction and climate change adaptation

The findings reveal that duplication of services (5.6) and polarisation of interventions (5.0) rank the highest among the effects of establishing and continuing to have separate structures for disaster risk reduction and climate change adaptation. On their tail is territorial contests (4.36), incoherent policies (4.33) and competing for the same resources (3.86). The least of the effects is the role played by international frameworks (2.58). Respondents were able to identify and highlight other effects which include many organisations dealing with disaster risk reduction and climate change adaptation, lack of national expertise in disaster risk reduction and climate change adaptation and separation of budgets which can be linked to competition for resources.

7.4.10 The effects and engagement in issues of common interest

Having established and rated the effects of having separate structures for disaster risk reduction and climate change adaptation it was crucial to follow up to find out whether the effects are hindering any efforts to address issues of common interest. The results show that a high percentage of respondents (53.33%) and a combined 66% agree that effects of establishing and continuing to have separate structures for disaster risk reduction and climate change adaptation hinder an effective engagement of both communities in addressing issues of common interest.

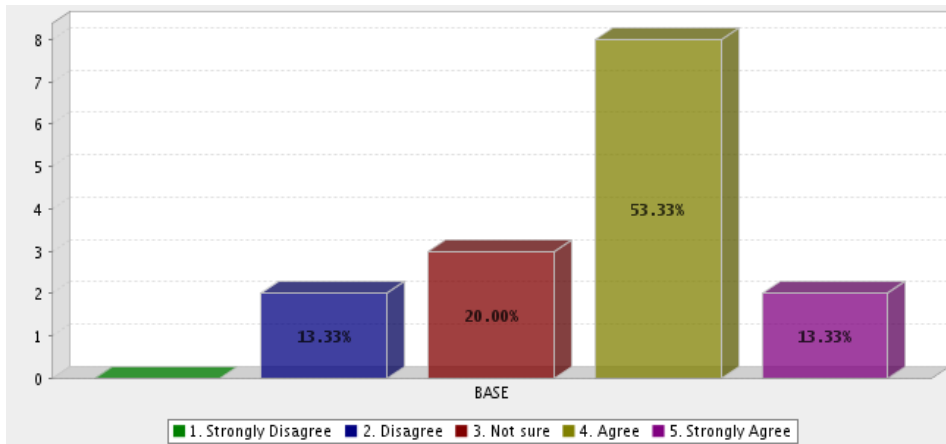


Figure. 31: The effects and engagement in issues of common interest

Only 13% of the respondents disagree that effects of establishing and continuing to have separate structures for disaster risk reduction and climate change adaptation hinder an effective engagement and 20% of the respondents were not sure.

7.4.11 Fragmentation of efforts to address disaster risk

An acknowledgement that fragmentation is one of the main problems of addressing disaster risk in a coherent manner is important to spur the redesign of services through service integration and coordination (Reitan, 1998). It was important to get the respondents' views regarding the involvement of many different stakeholder in addressing disaster risk.

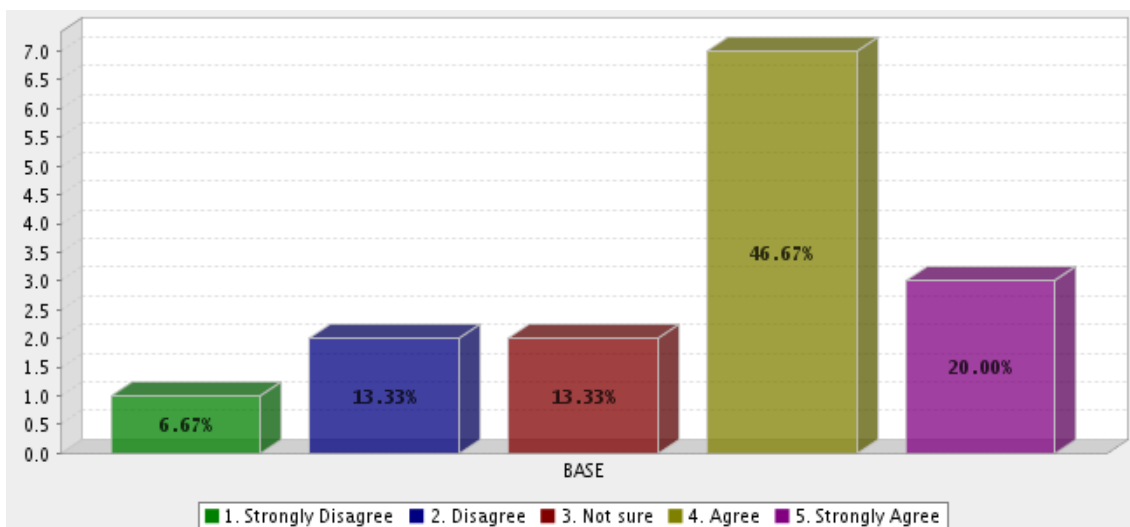


Figure. 32: Fragmentation of efforts to address disaster risk

The findings reveal that a combined majority of respondents (67%) agreed that the arrangement of many different actors belonging to different fields of expertise, organisations and institutions that follow different visions and objectives in addressing disaster risk enhanced fragmentation of efforts. On the other hand, only 20 % of respondents did not agree that the arrangement of many different actors belonging to different fields of expertise, organisations and institutions that followed different visions and objectives in addressing disaster risk and enhancing fragmentation of efforts, with 13 % of the respondents not sure.

7.4.12 Development of a coherent strategy

The question sought to find out whether respondents agreed or disagreed that differences in respective mandates, programmes and sets of measures on how to deal with climate change issues on the one hand and disaster risk reduction on the other provided great difficulty when developing a coherent strategy.

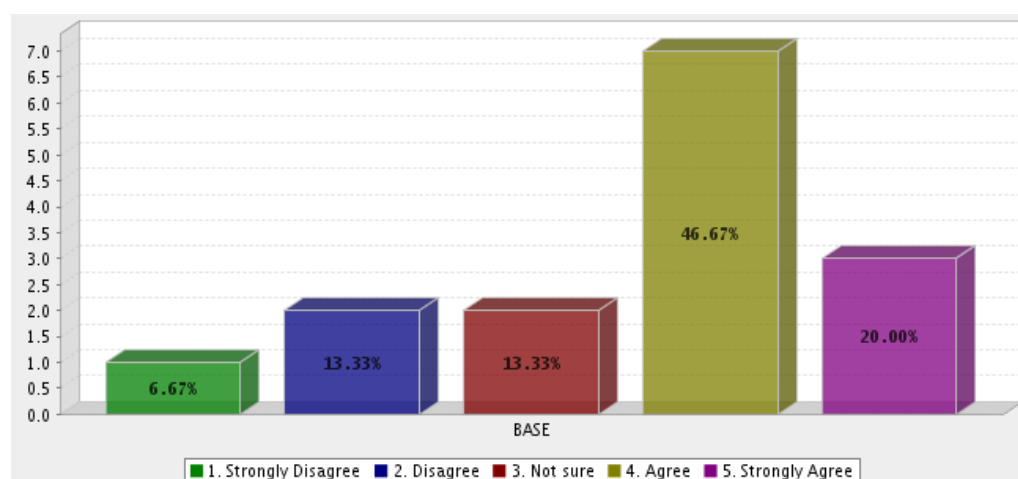


Figure. 33: Development of a coherent strategy

In line with responses on question 12, the results show that a large number of respondents (67%) agreed that differences in respective mandates, programmes and sets of measures on how to deal with climate change issues on the one hand and disaster risk reduction on the other provided great difficulty when developing a coherent strategy. Similarly, 20% did not agree while 13% were not sure.

7.4.13 The importance of integrating organisations for disaster risk reduction and climate change adaptation

In section 7.3.4 respondents unanimously agreed that integration of organisations for disaster risk reduction and climate change adaptation was important. Respondents in the online survey

were requested to indicate whether they agreed or not that it was important to integrate organisations for disaster risk reduction and climate change adaptation.

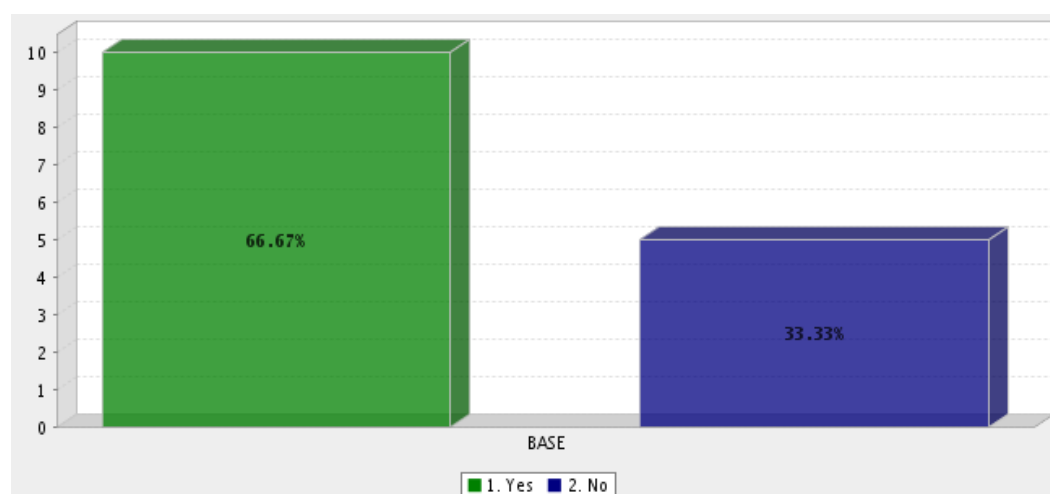


Figure. 34: The importance of integrating organisations for disaster risk reduction and climate change adaptation

The findings show that a larger majority of respondents (67%) indicated that it was important as opposed to 33% who believed it was not important. A number of reasons were cited for the necessity to integrate and these included similar effects and impact on the community and development, coping effectively and addressing the vulnerabilities of populations, easy advocacy for funding from donor agencies since there would be no competition, they would carry out a similar mandate, improving coherence and optimise resource utilisation and they both had to be approached with a developmental focus, both addressing common issues and providing better actions to strengthen communities' resilience.

Reasons for keeping them separate that were raised by respondents included the fact that many other areas of operation between climate change and disaster management did not have strong linkages, climate change adaptation did not necessarily address disaster risk reduction and climate change adaptation addressed specific climate-related hazards while disaster risk reduction addressed all kind of hazards.

7.4.14 Joint funding for measures to reduce disaster risk

Funding programmes and projects for disaster risk reduction and climate change adaptation jointly is an area that is largely unexploited. Respondents were asked to reflect whether it was important or not to have joint funding for measures to reduce disaster risk through disaster risk reduction and climate change adaptation.

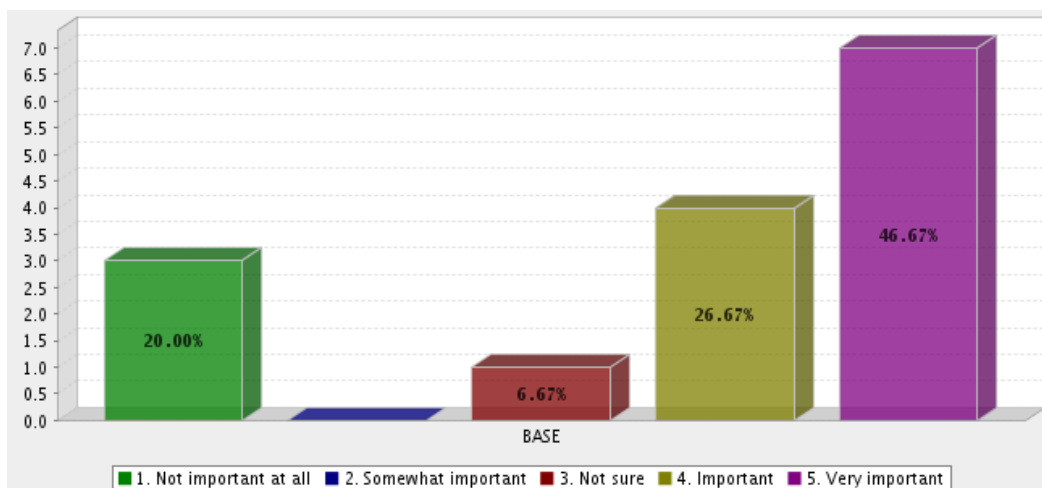


Figure. 35: Joint funding for measures to reduce disaster risk

The findings show that a large majority of respondents (73%) believed that joint funding for measures to address disaster risk were important as opposed to 20% of respondents who felt that it was not important and 7% were not sure.

7.4.15 Stage at which joint funding must be considered

As a follow-up, respondents were requested to indicate at which stage of funding joint funding had to be considered.

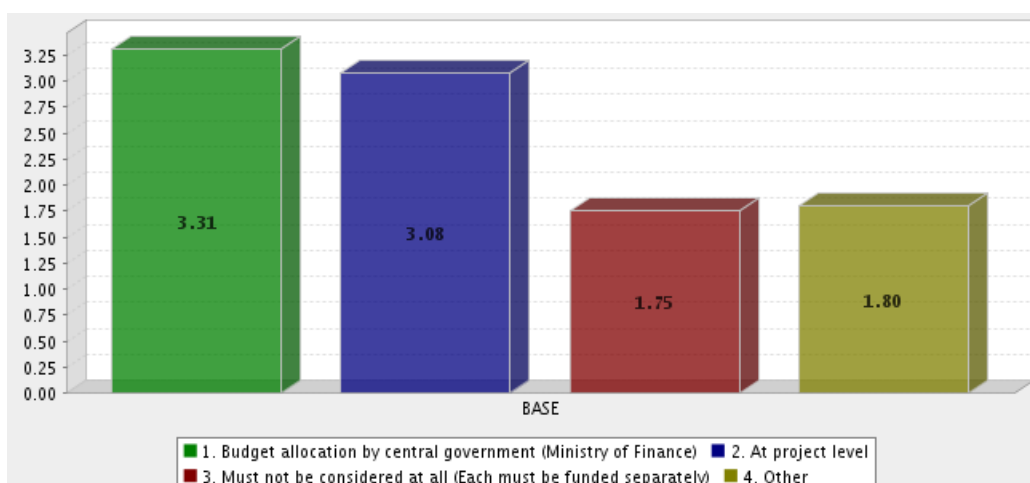


Figure. 36: Stage at which joint funding must be considered

The results show that budget allocation by central government and joint funding at project level scored the highest averages at 3.31 and 3.08 respectively. Those who feel that they must be funded separately averaged 1.75 on a scale of 1 – 5. Respondents were also able to specify the “Other,” which included funding from donors, taxation of commons and only responding financially if the disaster was beyond the capacity of the implementing institution.

7.4.16 Time spent on disaster risk reduction or climate change adaptation

Respondents were asked to reflect on the amount of their work that went to disaster risk reduction or to climate change adaptation.

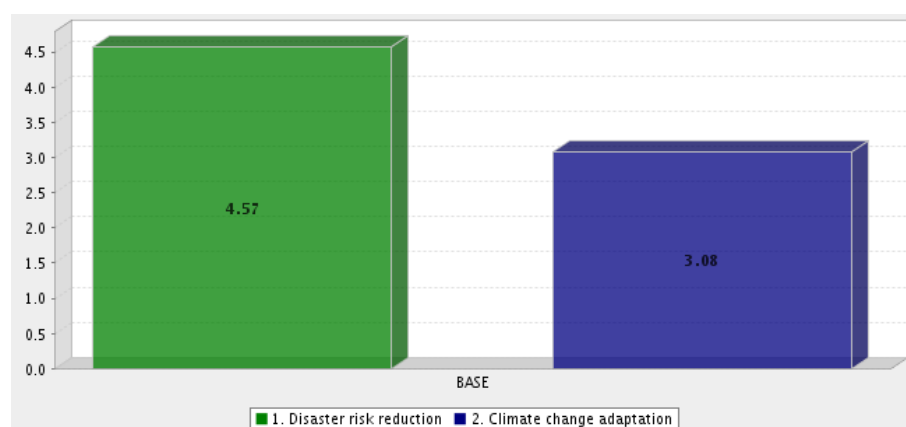


Figure. 37: Time spent on disaster risk reduction or climate change adaptation

It is assumed that as a result of a larger response from disaster risk reduction practitioners, the majority of respondents on average spent most of their time (79%) on disaster risk reduction related activities on a daily based as opposed to climate change adaptation (21%).

7.4.17 An enabling environment for integrating disaster risk reduction and climate change adaptation

As the majority of respondents indicated that integration was important, and having identified the factors that would enable the integration in the qualitative study, the online respondents were requested to rate the factors on a scale of 1 – 5.

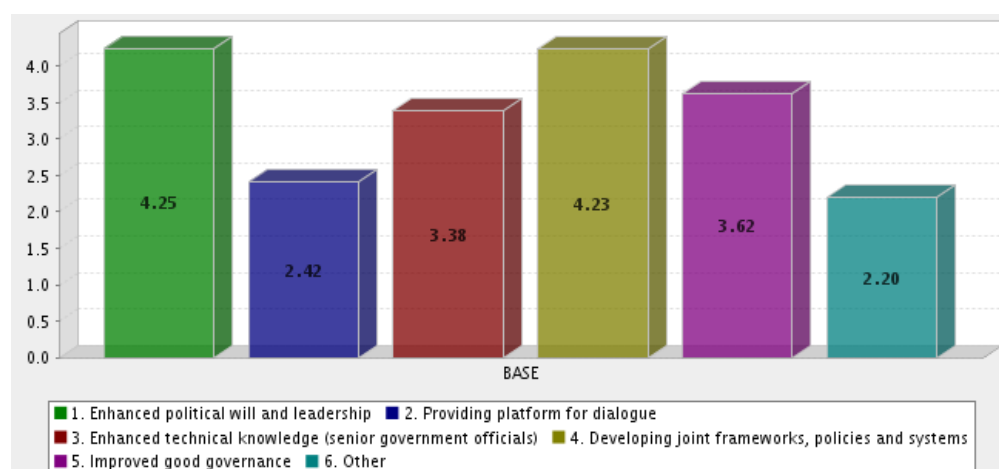


Figure. 38: An enabling environment for integration

The findings reveal that enhanced political will (5.25) and developing joint frameworks, policies and systems (4.23) scored the highest average regarding the enabling factors that will enable integration of disaster risk reduction and climate change adaptation. This was followed by good governance (3.62), technical knowledge by senior government officials (3.38) and providing a platform for dialogue (2.42) respectively. Respondents were able to identify other factors that would enable integration of disaster risk reduction and climate change adaptation, which includes:

- Building the institutional capacities;
- Knowledgeable workforce on disaster risk reduction and climate change adaptation issues;
- Integration reflected in global and regional frameworks; and
- Change of approach by government from response and emergency management to disaster risk reduction.

7.4.18 Formalisation of institutional arrangements

In this question respondents were asked whether integration of organisations for disaster risk reduction and climate change adaptation required formalised institutional arrangements.

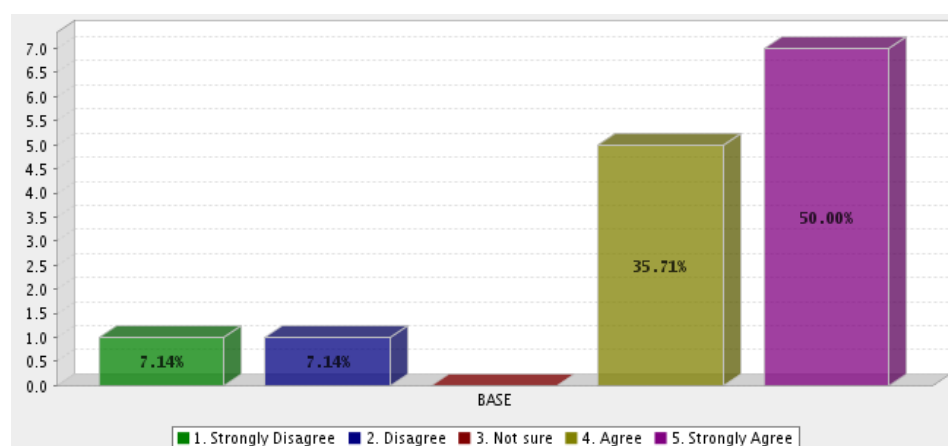


Figure. 39: Formalisation of institutional arrangements

The results show that a combined majority of respondents (86%) believe that integration of organisations for disaster risk reduction and climate change adaptation required formalised institutional arrangements. Only a combined total of 14 % of the respondents did not think it was necessary to formalise the institutional arrangements for the integration of disaster risk reduction and climate change adaptation.

7.4.19 Mechanism for engagement

Respondents were requested to rate the mechanisms or the ways that they used to engage with their counterparts in disaster risk reduction and or climate change adaptation.

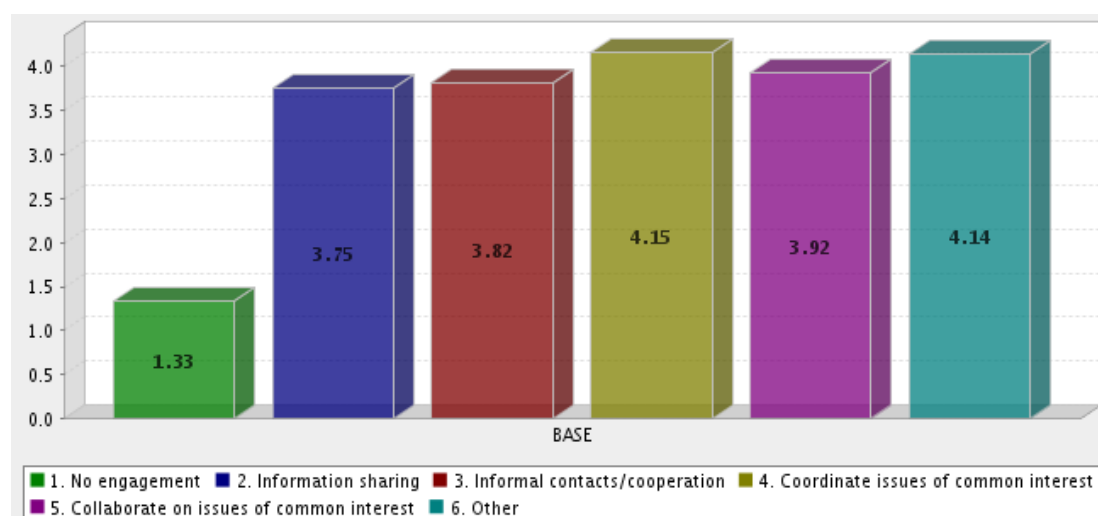


Figure. 40: Mechanisms for engagement

In revealing the mechanisms in which their institution used to engage with their counterparts in disaster risk reduction and/or climate change adaptation, all mechanisms were rated quite highly with the exception of no engagement averaging 1.33. This is quite revealing that there are organisations in disaster risk reduction and climate change adaptation that do not interact at all. Most respondents averaging 4.15 on a scale of 5 indicated that they coordinated issues of common interest. Surprisingly, a substantial average of 4.14 indicated that they used other ways. When asked what other ways they used to engage, the following were the main responses:

- We only engage with those we are comfortable with.
- We rely on both government and network membership with NGOs we have worked with before.
- We cooperate with the private sector on issues of early warning.
- We interact with nominated focal points.

7.4.20 Formal or written agreements between organisations

Due to the raised issue of the ad hoc nature of the arrangements raised in section 7.3.5.1, respondents were asked to indicate whether the relationships between the organisations were formalised or not.

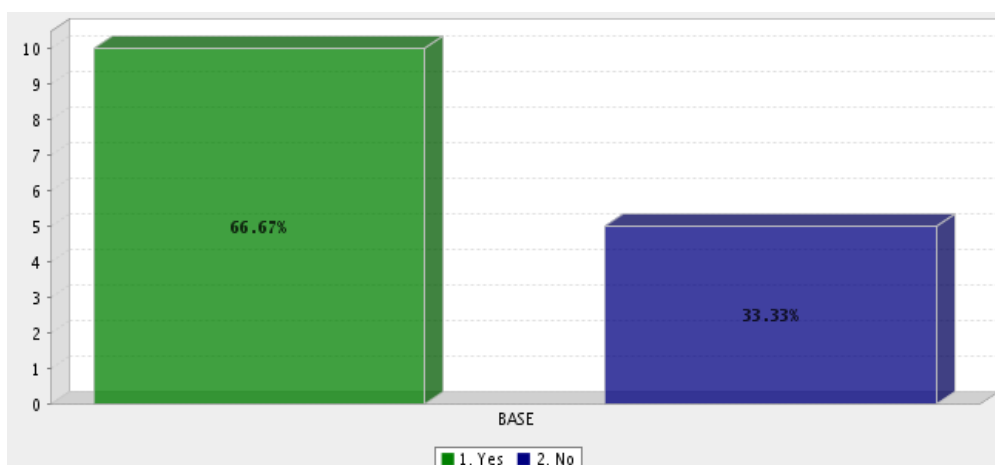


Figure. 41: Formal or written agreements between organisations

The findings reveal that a large number of respondents (67%) indicated that there were formal agreements between the organisations outlining how they should operate. A substantial number (33%) indicated that there were no formal agreements in place. Those who responded positively were requested to highlight the elements of the agreement in question 22. The elements highlighted include:

- Signed Memorandum of Understanding on disaster risk reduction collaborations and contracts of coordination;
- Joint planning on certain projects; participation in structures of common interests;
- Joint project implementation of disaster risk management and climate change adaptation from 2016-2020;
- Signed Agreement;
- Joint policy engagements, research analysis and engagements;
- Mandate of both included in disaster risk management policy and Act as well as regulations; and
- Service level agreements.

7.4.21 Shared or integrated responsibilities

Respondents were also asked to indicate whether they had any integrated or shared responsibilities. The results show that a majority of respondents (67%) were of the view that there are shared responsibilities between the organisations. Only 33% of the respondents indicated that there were no shared responsibilities.

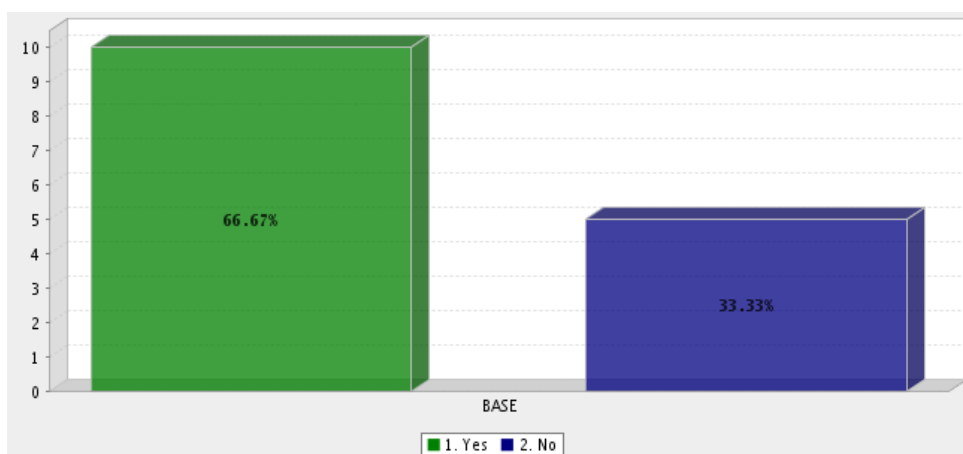


Figure. 42: Shared or integrated responsibilities

As a follow up respondents were requested to give examples of the shared responsibilities if their answer had been yes. The shared responsibilities that were reflected include:

- Training and capacity building Research and consultancy on specific disaster risk reduction issues;
- Development and implementation of education and training programmes;
- Project planning and funding;
- Adopting best practice for severe weather and flood emergency management guidelines. Development of hazard-specific standard operating procedures that promote good collaboration between the three partners;
- Working in collaboration to develop and implement an effective early warning system for weather and hydrological related hazards;
- Sharing of rainfall data for running Numerical Weather Prediction and Hydrological Models;
- Risks analysis vulnerability assessment.

7.4.22 Turf issues that affects your working relations

Respondents were asked whether they believed that there were any turf issues when addressing issues of common interest that affected their working relations. The findings reveal that a large number of respondents (79%) were sure that there were no critical turf wars that affected the working relations of organisations for disaster risk reduction and climate change adaptation with mere 20% indicating that there were critical turf wars.

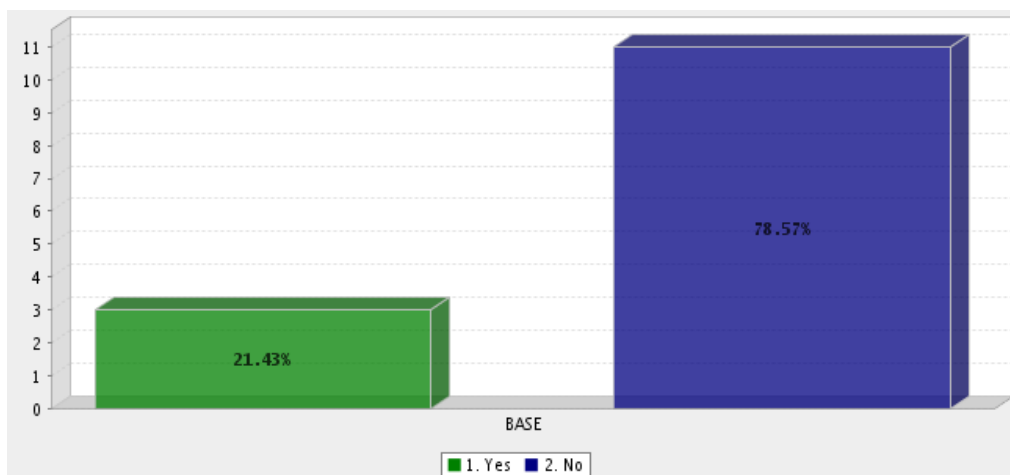


Figure. 43: Turf issues that affect your working relations

As a follow up respondents were requested to indicate the main areas where there were turf wars. The areas identified included communication, and especially to the public on early warnings. It was not clear which organisation was supposed to be the one to relay an early warning message public, and there was a lot of political influence on the work of disaster risk reduction and competition for resources. Furthermore, respondents were requested to indicate how these turf wars were resolved. Respondents reflected that these issues were resolved through development of clear roles and responsibilities, signing of Memorandum of Understanding and creating awareness among political leaders on the issues pertaining to disaster risk reduction and climate change adaptation.

7.4.23 Leadership (political and administrative) support

Respondents were asked to indicate whether their leaders, both political and administrative, supported their working relations with their counterparts in addressing disaster risk.

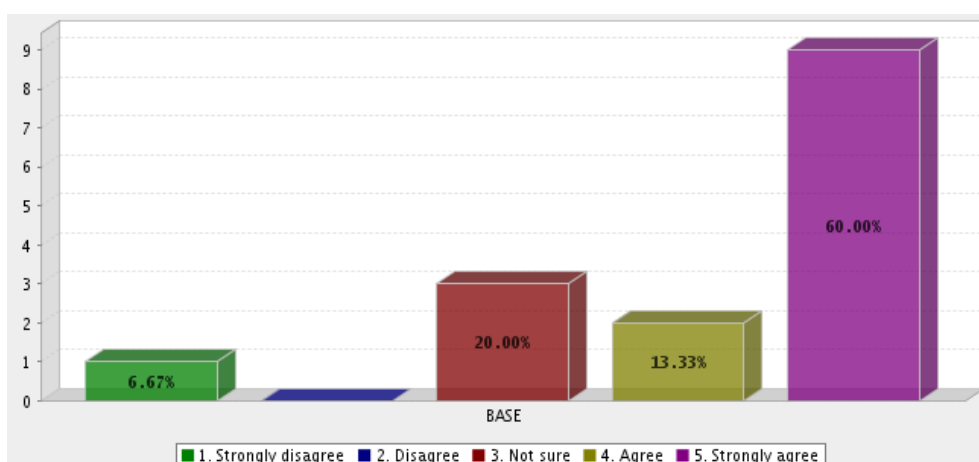


Figure. 44: Leadership (political and administrative) support

A large majority of respondents (60%) strongly agreed and a combined 63% agreed that their leaders supported their working relations with other organisations on issues of common interest. Only 7% of respondents strongly believed that they did not have support from their leaders, with a substantial number (20%) not sure whether their leaders supported their working relations with other organisations.

7.4.24 Merging/structural adjustments

Whereas most of the respondents in section 7.3.5.1 were against the idea of structural adjustment in integrating organisations for disaster risk reduction and climate change adaptation, respondents in the online survey were asked to indicate whether the merging of organisations would assist in reducing disaster risk.

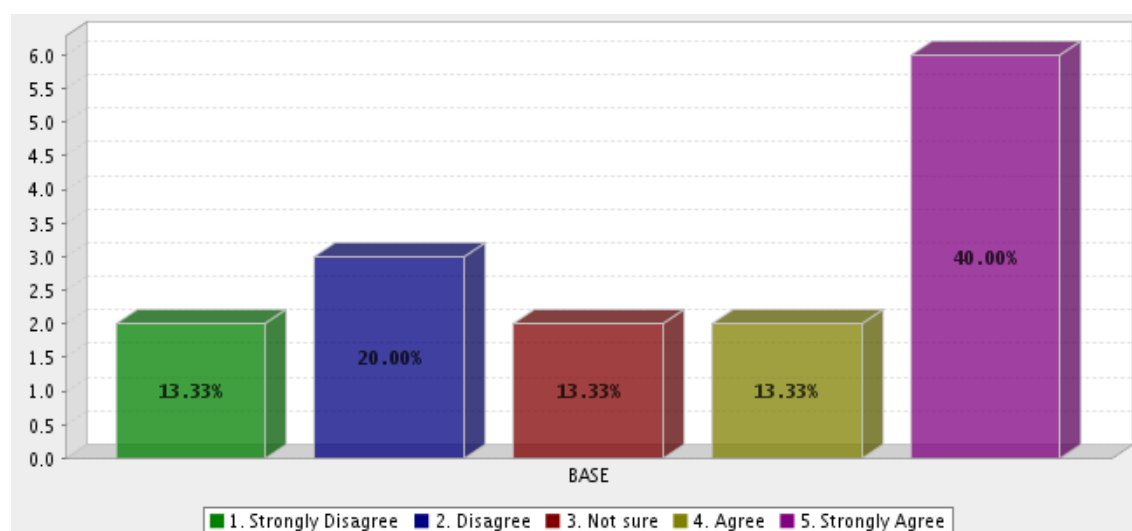


Figure. 45: Merging/structural adjustments

The majority of respondents (40%) strongly agreed and a combined 53% agreed that the merging of structures for disaster risk reduction and climate change adaptation would assist in the reduction of disaster risk. Most importantly, a high number of respondents (33%) did not believe that the merging of organisations for disaster risk reduction and climate change adaptation would lead to reduced disaster risk. Thirteen (13%) of respondent were in between as they were not sure. Those who agreed that merging would assist in reducing disaster risk were requested to explain how merging or structural adjustments should be done. The following are the main merging modes that have been identified by the respondents:

- Clearly define roles and responsibilities;
- Formal Memorandum of Agreement;
- Have common operating procedures;

- Form a whole new organisation that will drive disaster risk reduction and climate change adaptation;
- Development of joint frameworks (policy and legislative) for disaster risk reduction and climate change adaptation;
- Mutual cooperation framework; and
- Interventions must be holistic and done together with stakeholders.

The presentation and analysis of findings from the online survey were preceded by the presentation of the findings of the face-to-face interviews. This was necessitated by the fact that the study applied an exploratory sequential mixed-methods research design. This design requires that data be collected and analysed through qualitative approaches, and that the findings of the qualitative study inform the development of instrument for the collection of quantitative data. The analysis of both qualitative and quantitative data necessitates the integration of both data sets so as to have a complete picture of the study (Creswell & Clark, 2011). Creswell (2015) described integration as the place in mixed-methods research where the qualitative and the quantitative phases of on study intersect. The next section presents a discussion of joint findings.

7.5 DISCUSSION OF FINDINGS

The preceding section presented the findings of the quantitative study. The development of the quantitative study was informed by the findings of the qualitative study. Having analysed the data sets separately, it is important to merge and compare the two data sets (Creswell, 2015; Creswell & Clark, 2011). In this third phase of data analysis in mixed-methods research, the two data sets are connected to address how the quantitative analysis helps to generalise and extend the initial qualitative exploratory findings (Creswell, 2015; Creswell & Clark, 2011). The convergent data analysis approach for merging data and specifically side-by-side comparison is applied (Creswell, 2015). This method provides an easy to understand way on how the results from qualitative and quantitative approaches converge or diverge (Creswell, 2015).

Table.16: Joint display of findings: side-by-side comparison

		QUALITATIVE FINDINGS		QUANTITATIVE FINDINGS
THEME	SUB-THEME	FACE-TO-FACE INTERVIEWS	ONLINE SURVEY	
Understanding of the threat posed by climate change	When dealing with risk, does your organisation separate between risk posed by climate change and risk from natural hazards	Responses to this question varied with some indicating that they consider while others do not consider at all. Those who do not separate see disaster as disasters no matter what the cause.	The majority of respondents (53%) do not distinguish as opposed to 47% who distinguished when addressing risk	
	Climate change is not merely an environmental problem but rather a potent element in the deadly brew of disaster risk.	The findings reveal that the majority of respondents understood the role that climate change and variability is playing in increasing disaster risk through extreme weather events.	• 72% agree that climate change is a potent element with 22% disagreeing • 72% agree that there is a correlation between climate change and extreme weather event while 22% disagree • 67% agree that extreme events have become intense, unprecedented and unpredictable as a result of climate change	
	Capacity and resources to address disaster risk	Responses to the question of capacity and resources varied a great deal. Some respondents felt that there were not enough capacity and resources allocated to disaster risk reduction and climate change adaptation.	Fifty (50%) of respondents do not agree that the organisations they work for possessed enough capacity and resources, whilst 39 % believe that the organisation did have enough capacity and resources.	
Reasons and rationale for establishing parallel	The main reasons for establishing separate	Respondents were able to provide a number of reasons for establishing separate	The traditional division of government into discrete areas rated 4.07 and the influence of	

structures	organisations/institutions for disaster risk reduction and climate change	structures. The main reasons provided includes: - Historical evolution of climate change and disaster management issues, - Lack of knowledge and understanding of issues by political leaders, - Careerism in the climate change arena - Different international frameworks widening the gaps	international framework rated 4.0 as the main reasons for separation. Other reasons include historical evolution of the concepts (3.36), lack of knowledge and understanding of issues by political leaders (3.14), and careerism in the climate change arena (2.36). Other reasons cited by respondents included lack of understanding of the concept of disaster risk reduction and the role of technical and financial institutions that opted to fund the initiatives separately
The effects of establishing separate structures for disaster risk reduction and climate change adaptation	The effects of establishing and continuing to have separate organisations/institutions for disaster risk reduction and climate change adaptation	Respondents were able to highlight a number of effects and these are summarised as follows: - Incoherent policies - Polarisation of interventions, - Competing for same resources, - Coordination becomes a nightmare, - Climate change governance is the main challenge - Lack of climate resilient communities	Duplication of services (5.6) and polarisation of interventions (5.0) ranked highest among the effects. Other effects rated as follows: territorial contests (4.36), incoherent policies (4.33) and competing for the same resources (3.86). Other effects highlighted by respondents included many organisations dealing with DRR and CCA, lack of national expertise in the DRR and climate change and separation of budgets which links to competition for resources
	These effects have often hindered an effective engagement of both	The majority of respondents agreed that the these effects hindered effective engagement to address issues of common interest	A combined 66% agreed that effects were hindering effective engagement of both communities in addressing issues of common

	communities in addressing issues of common interest		interest while only 13% disagreed with a substantial 20% not sure.
Understanding the imperative need to integrate disaster risk reduction and climate change adaptation	There are major overlaps between disaster risk reduction and climate change adaptation.	Respondents unanimously agreed that integration of organisations for disaster risk reduction and climate change adaptation was important.	An overwhelming combined 77% of respondents believed that there were major overlaps between disaster risk reduction and climate change adaptation as opposed to only 22% that does not agree
	Joint funding for measures to reduce disaster risk	Respondents acknowledged the importance of joint funding for disaster risk reduction and climate change adaptation, they indicated that they did not have programmes and projects that were jointly funded.	An overwhelming majority of respondents (73%) believed that joint funding for measures to address disaster risk was important as opposed to 20% of respondents who felt that it was not important and 7 % who were not sure.
Inter-organisational arrangement in addressing disaster risk	Ways in which integration of disaster risk reduction and climate change adaptation should occur	Respondents were able to indicate the ways that they used to engage with their counterparts. These included meetings, workshops and project based activities. Respondents were also able to identify some of the ways in which integration had to take place. Even though they were not explicit in highlighting these ways, it revolved around coordination, collaboration and mainstreaming	All mechanisms were rated quite highly with the exception of no engagement averaging 1.33. Coordinated issues of common interest (4.15), Other (4.14) collaborate on issues of common interest (3.92), Informal contacts (3.82 and information sharing (3.75) The other ways that they use to engage, the following were the main responses: • We only engage with those we are comfortable with • We rely on both government and network membership with NGOs we

			have worked with before. • We cooperate with the private sector on issues of early warning • We interact with nominated focal points
	Formal or written agreements between your organisations	There were consensus that the organisations work on an ad hoc basis with nothing formalising the relationship	A huge number of respondents (67%) indicated that there were formal agreements between the organisation and a substantial high number (33%) indicated that they worked without any formal agreement
	The aspects of an enabling environment for integrating disaster risk reduction and climate change adaptation	Respondents provided the main determinants to make integration of organisations for disaster risk reduction and climate change adaptation to work. The following issues were highlighted as important: - Empowerment of political leaders, - Providing platform for dialogue, - Addressing the will of senior officials - Providing relevant capacity and systems	Enhanced political will (5.25) and developing joint frameworks, policies and systems (4.23) ranks high on the factors that will enhance integration. The other factors rated as follows: good governance (3.62), technical knowledge by senior government officials (3.38) and providing platform for dialogue (2.42) respectively. Other factors identified by respondents include, • Building the institutional capacities • Knowledgeable workforce on CCA and DRR issues • Integration reflected in global and regional frameworks • Change of approach by government

			from response and emergency management to disaster risk reduction
	Merging/ structural adjustments of organisations for disaster risk reduction and climate change adaptation will assist in reducing disaster risk	The findings revealed that the majority of respondents were against the merging of the organisations for disaster risk reduction and climate change adaptation. They indicated that merging of structures would not necessarily lead to reduced disaster risk	A combined 53% agreed that the merging of structures for disaster risk reduction and climate change adaptation would assist in the reduction of disaster risk as opposed to (33%). However, if they were to merge, they highlighted the following to be important: • Clear definition of roles and responsibilities • Formal Memorandum of Agreement • Have common operating procedures • Creating a new organisation • Development of joint frameworks (policy and legislative) for disaster risk reduction and climate change adaptation • Mutual cooperation framework

From table 7.1 above, it is clear that there is convergence in most the face-to-face interviews findings and the online survey findings. In general, the accounts of respondents in the face-to-face interviews corresponded well with the findings of the online survey with the exception of a few areas where they diverged.

In Thematic area 1, there is convergence. The analysis shows that responses in the face-to-face interviewed varied with some indicating that they considered while others did not consider at all. This is supported by the results of quantitative results that showed that the difference between those who distinguished and those who did not was marginal, 53% against 47%. Moreover, the findings of the face-to-face interviews revealed that the majority of respondents understood the role that climate change and variability played in increasing disaster risk through extreme weather events. This is in line with the overwhelming majority in the survey. As such 72% agreed that climate change was a potent element with 22% disagreeing, 72% agreeing that there was a correlation between climate change and extreme weather events while 22% disagreed and 67% agreed that extreme events had become intense, unprecedented and unpredictable as a result of climate change. Similarly, the accounts of respondents in the face-to-face interviews regarding capacity and resources converged with the results of the online survey except that the difference margin was a little higher.

In Thematic area 2, there were consistencies between the accounts of the face to face interviews and the responses of the online survey. Respondents of the online survey were able to add other reasons for the separation of organisational disaster risk reduction and climate change adaptation and these included include lack of understanding of the concept of disaster risk reduction and the role of technical and financial institutions who opted to fund the initiatives separately. The ranking of the reasons from the online survey in the scale of 1 – 5 is as follows: the traditional division of government into discrete areas rated 4.07, the influence of international framework rated 4.0, historical evolution of the concepts rated (3.36), lack of knowledge and understanding of issues by political leaders rated (3.14), and careerism in the climate change arena rated (2.36).

Similar patterns of convergence are observed in Thematic area 3, which focuses on the effects of having separate structures for disaster risk reduction and climate change adaptation. Duplication of services (5.6) and polarisation of interventions (5.0) ranks the highest among the effects. Other effects rated as follows: territorial contests (4.36), incoherent policies (4.33) and competing for the same resources (3.86). Other effects highlighted by respondents included many organisations dealing with disaster risk reduction

and climate change adaptation, lack of national expertise in the disaster risk reduction and climate change and separation of budgets linking to competition for resources.

In Thematic area 4 Respondents unanimously agreed that integration of organisations for disaster risk reduction and climate change adaptation was important. This is in line with the findings of the online survey, which reflected that an overwhelming combined 77% of respondents believed that there were major overlaps between disaster risk reduction and climate change adaptation as opposed to only 22% who did not agree. Moreover, respondents in the face-to-face interviews acknowledged the importance of joint funding for disaster risk reduction and climate change adaptation, but indicated that they did not have programmes and projects that were jointly funded. In the quantitative study, an overwhelming majority of respondents (73%) believed that joint funding for measures to address disaster risk was important as opposed to 20% of respondents who felt that it was not important and 7% who were not sure.

In Thematic area 5, respondents of the qualitative study were able to indicate the ways that they used to engage with their counterparts. These included meetings, workshops and project-based activities. Respondents were also able to identify some of the ways in which integration had to take place. Even though they were not explicit in highlighting these ways, it revolved around coordination, collaboration and mainstreaming. On the other hand, all the mechanisms used to engage were rated quite highly with the exception of 'no engagement averaging' which rated 1.33. Coordinate issues of common interest rated (4.15), other rated (4.14), collaboration on issues of common interest rated (3.92), Informal contacts rated (3.82) and information-sharing rated (3.75). Respondents in the online survey were able to highlight the other ways that were used to engage and these included only engaging with those they were comfortable with, using networks with private sector and interaction with nominated focal points.

However, when it comes to the issues of formal or written agreement between the organisations, the accounts of the qualitative study and the results of the quantitative study are divergent. There was consensus in the face-to-face interviews that that the organisations do not have any formal or written agreement and the organisations work on ad hoc bases with nothing formalising the relationship. Conversely, an overwhelming number of respondents (67%) in the quantitative study indicated that there were formal agreements between the organisations with only 33% of respondents indicating that they worked without any formal agreement.

The inconsistencies in the findings did not end there, as in the consideration for the merging of structures, a large majority of respondents were against the merging of the organisations for disaster risk reduction and climate change adaptation and they believed that the merging of structures would not necessarily lead to reduced disaster risk. On the contrary, a combined 53% as opposed to (33%). of respondents in the quantitative study agreed that the merging of structures for disaster risk reduction and climate change adaptation would translate to the reduction of disaster risk.

With respect to the aspects of an enabling environment for integration disaster risk reduction and climate change adaptation, respondents in the face-to-face interviews provided the major determinants to make integration work. The same were rated in the online survey. Enhanced political will (5.25) and developing join frameworks, policies and systems (4.23) ranked high on the factors that would enhance integration. The other factors rated as follows: good governance (3.62), technical knowledge by senior government officials (3.38) and providing platform for dialogue (2.42) respectively. Additional factors identified in the online survey included building the institutional capacities, knowledgeable workforce on disaster risk reduction and climate change adaptation issues, integration reflected in global and regional frameworks and changes of approach by government from response and emergency management to disaster risk reduction.

The analysis of data in this study resulted in five inter-linked and interrelated thematic areas. The devastating impacts of extreme weather events give impetus to the discussion of the relationship between increased disaster risk and the changing weather patterns. The first theme, understanding the threat posed by climate change in increasing disaster risk was identified as an entry point for potential link between disaster risk reduction and climate change adaptation. This provided a basis for advocating the integration of disaster risk reduction and climate change adaptation. As such in the last two or so decades compelling arguments and reasons were present in the scholarship for the integration of disaster risk reduction and climate change adaptation. Having established the relationship that exists between extreme weather events and increased disaster risk, it was imperative to establish the reasons for separating the two field of practice (Theme2). Similarly, it was important to establish the effects that separation is having in addressing disaster risk (Theme 3).

Establishing the reasons and the effects of having separate structures for disaster risk reduction and climate change adaptation assisted in further strengthening the need to integrate the structures (Theme 4). With the need to integrate having been established, it was important to focus on how integration should take place (Theme 5).

7.6 CONCLUSIONS

The results of this study show substantial convergence in the findings of the two research methods that we applied as a sequential exploratory mixed-methods research approach. As such the quantitative findings were able to be generalised and give precision to the qualitative findings. Although the results of this study are only directly applicable in the studied context, they illustrate the visible need to integrate disaster risk reduction and climate change adaptation to address disaster risk effectively and efficiently.

Indeed, the empirical findings in this chapter re-emphasise the need for integrated approaches for disaster risk reduction and climate change adaptation. This is important given the magnitude of fragmentation of structures for disaster risk reduction and climate change adaptation. Respondents were able to provide reasons or a rationale for separating structures for disaster risk reduction and climate change adaptation. The effects as identified by the respondents were found to impede efforts to reduce disaster risk coherently through disaster risk reduction and climate change adaptation. Furthermore, participants were able to provide the ways in which integration of structures for disaster risk reduction and climate change should unfold and identified the factors that would provide a conducive environment for integration to take place. The ways in which integration should unfold as identified by the respondents are consistent with the modes of integration of the integration continuum as presented on section 5.4. These modes together with other considerations are used to build a model for integrating structures for disaster risk reduction and climate change adaptation within SADC as outlined below.

CHAPTER 8

TOWARDS A NORMATIVE INTEGRATIVE DISASTER RISK GOVERNANCE MODEL FOR SADC MEMBER STATES

8.1 INTRODUCTION

The preceding chapter has empirically unravelled some of the reasons or rationale for establishing and keeping separate structures for disaster risk reduction and climate change adaptation by the SADC member states. The chapter has also unearthed empirically the effects of having separate structures for disaster risk reduction and climate change adaptation in these countries. Moreover, the chapter provided the mechanism through which the structures for disaster risk reduction and climate change adaptation can be integrated. The identification of these ways is important because the structures for disaster risk reduction and climate change have developed in isolation with the consequence that disaster risk is not addressed efficiently and effectively. It is argued in this study that better disaster risk governance can be facilitated/achieved by integrating structures for addressing disaster risk reduction and climate change adaptation at national level of government, thus ensuring coherence in the governance of disaster risk.

An integration of structures for disaster risk reduction and climate change adaptation is anticipated to assist in the efficient use of resources, reduce duplication and addressing disaster risk effectively. The purpose of this chapter is to propose a model for integrating different organisations for purposes of addressing disaster risk through disaster risk reduction and climate change adaptation at national level within the SADC member states. This model is outlined below.

8.2 DISASTER RISK GOVERNANCE MODEL FOR INTEGRATION STRUCTURES FOR DRR AND CCA FOR SADC MEMBER STATES

The development of the model in chapter 8 builds on the theoretical foundations established in chapter 2, the analytical frameworks on integration in organisational studies as outlined in chapter 5 and the findings of organisations for disaster risk reduction and climate change adaptation within SADC member states as presented in chapter 6. The chapter also draws on the empirical findings as presented in chapter 7 of the study to propose a nuanced and detailed model (see figure 8.1 below) that will help facilitate organisational integration for disaster risk reduction and climate change adaptation by the SADC member states.

The ensuing discussion in this chapter focuses on the constructs of the model in order to provide an understanding to operationalise integration for the main coordinators for disaster risk reduction, meteorological services and climate change adaptation structures within the SADC member states. The model comprises five (5) constructs, A to E, in which block A consists of the main organisations coordinating disaster risk in each SADC member states as discussed in section 6.4, block B is the integration continuum with a focus on the distinguishing elements, C is the newly-formed structure if organisations in block A take an option of merging, block D is the sectors in which disaster risk reduction and climate change adaptation must be mainstreamed and block E consists of the enablers for integration to succeed.

The key to the model is constituted of the following elements:

- (i) A red line represents the functional relationship between the three divisions in A (section 6.4).
- (ii) Purple lines represent the progression of relationships between the three divisions in A in the integration mode (section 5.4)
- (iii) Green lines represent the structural adjustments of organisations in A if they opt to merge. Alternatively, the integration modes in B can be used for mainstreaming of disaster risk reduction and climate change adaptation into sector departments in Block D (section 5.4)
- (iv) Orange line – the newly-formed division in block C, which integrated must coordinate the mainstreaming disaster risk reduction and climate change adaptation into sectoral departments and policies in block D (section 7.3.5.1).
- (v) Blue line – the enablers in E must be put in place for the integrations modes in B to be effected, structural adjustments in C to happen and for mainstreaming of disaster risk reduction and climate change adaptation into sectoral departments in D (section 7.3.5.3).

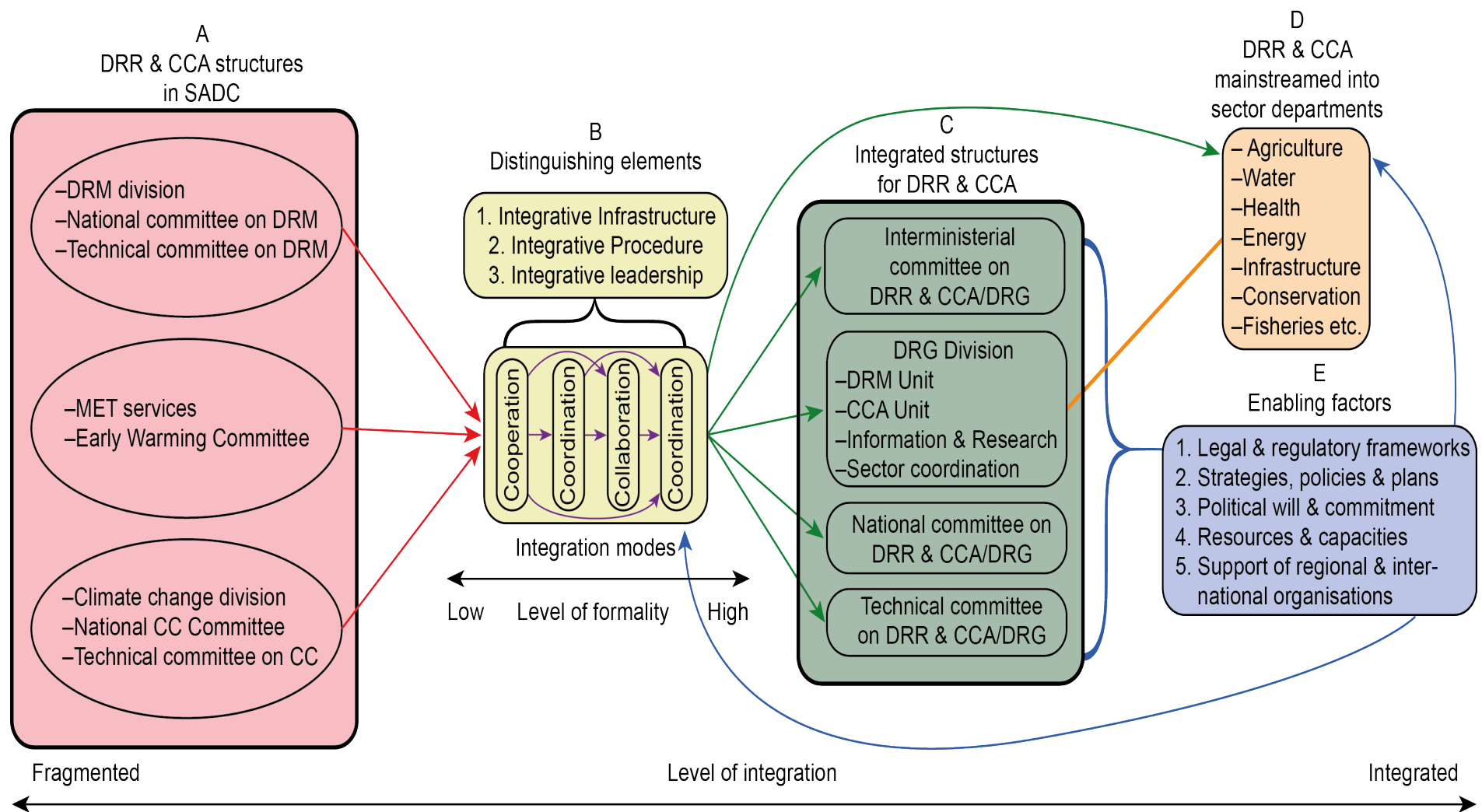


Figure. 46: Disaster risk governance model for integrating structures for DRR and CCA within SADC member states

8.2.1 The status quo: the main organisations for disaster risk reduction and climate change adaptation

An analysis of structures for disaster risk reduction and climate change adaptation within the SADC member states in section 6.4 shows that disaster risk is addressed through different structures at national levels in all but three countries. For the purposes of this model these structures are grouped into three main structures in block A. Firstly, in each country there is a division responsible for disaster risk reduction (and/or management), which is supported by a number of committees, forums and/or councils. Whereas the naming and configuration of this division varies across the member states, they are tasked with the responsibilities of planning, organising, coordinating and monitoring disaster risk reduction and management (including emergency management) activities. Secondly, the meteorological division is important in generating and providing early warning information, which is important for disaster risk reduction and adaptation to the impacts of climate change.

The analysis in section 6.4 also reveals that in some SADC countries like Botswana, Lesotho and Swaziland, units for climate change adaptation are located within the meteorological services, which makes the division important when considering disaster risk governance issues. Thirdly, there is a division that deals with climate change. The location and configuration of this division vary across the SADC member states. This division is also supported by a number of committees including the National Committee of Climate Change and the Technical Committee on Climate change, in executing its duties. What comes out clearly from the analysis is that adaptation to the impacts of climate change is not a prominent issue addressed by this division. With most countries still grappling with the adoption of climate change as a field, the division in most countries focuses on mitigation issues, developing national communication to the UNFCCC and the Clean Development Mechanism, and to a lesser extent National Adaptation Programmes of Action.

8.2.2 The integration modes and the distinguishing elements

An analytical framework developed in chapter 5 conceptualises integration as a continuum with modes ranging from informal contacts (cooperation), coordination, collaboration through to merging of the structures. In this model the modes are shown in block B. These modes are located at different points on the continuum depending on the level of intensity of linkages and degree of formality or informality that governs the integration activities (Keast & Mandell, 2012). Since there are several types of interactions to consider, the appropriate interaction for a particular situation must be chosen carefully based on the objectives of integration (MacNamara, 2012:391).

8.2.3 Proposed Integrated structures for SADC member states

The last mode of integration in the continuum, block B, is merging of structures, which brings together distinct and independent organisations or components thereof to constitute a unified whole (Barki & Pinsonneault, 2005:165) in block C. The model proposed considers both the political leadership and technical (administrative) components as important to contribute to the reduction in disaster risk. The proposed integrated structures are designed with due regard for the existing configurations of structures for disaster risk reduction and climate change adaptation within the SADC member states. In the model presented in figure 8.1, fragmented organisations for disaster risk governance are unified to form the following the structure as indicated below.

8.2.3.1 Inter-ministerial Committee on Disaster Risk Reduction and Climate Change Adaptation

This committee must be constituted by different ministers whose portfolios or sectors are affected by disaster risk from natural hazards and those that are climate-related. This should be the highest political and decision-making body on all matters related to disaster risk reductions and climate change adaptation. The committee must be convened by the head of the ministry in which the division for disaster risk governance is located. The committee must be responsible for the sanctioning of the joint development of policies and legislation for disaster risk reduction and climate change adaptation. The committee must also serve as a focal point for disaster risk governance.

8.2.3.2 Division for Disaster Risk Reduction and Climate Change Adaptation

The proposed model advocates the creation of a disaster risk governance division, which will consist of different units including the unit for disaster risk reduction, climate change adaptation, unit for policy and legislation development, unit for coordinating sectoral mainstreaming of disaster risk reduction and climate change adaptation and the unit of information and research. This division will be the functional structure for disaster risk governance at the national level of government. As in most of the SADC member states, this division must be located in an office with higher authority like the office of the president, deputy president, prime minister or deputy prime minister. The location of this division in such offices must not be symbolic but rather be afforded the necessary status for effective and efficient functioning in addressing disaster risk. The unit for disaster risk reduction will drive all the activities and responsibilities related to preparedness, response and recovery.

8.2.3.3 National Committee on Disaster Risk Reduction and Climate Change Adaptation

This committee must comprise the senior representatives of the relevant national departments whose ministers serve on the inter-ministerial committee on disaster risk governance. This committee must serve to provide a mechanism for all the relevant role players to consult one another and coordinate their activities on disaster risk reduction and climate change adaptation issues (Government of South Africa, 2005).

8.2.3.4 Technical Committee on Disaster Risk Reduction and Climate Change Adaptation

The Technical Committee is a multi-sectoral technical advisory body composed of professionals and specialists from various sector departments and from supporting local, regional and international partners. UNISDR (2009) indicates that effective routes to address disaster risk requires diverse means and expertise with the different fields of science joining forces to produce well suited solutions to risk related problems. The main function of the committee should be to advise the division and the National Committee on all disaster risk reduction and climate change adaptation operational issues and activities. The establishment of this committee is crucial as the use of scientific and technical knowledge is an essential foundation for the reduction of disaster risk (UNISDR, 2009).

8.2.4 Mainstreaming of disaster risk reduction and climate change adaptation into sectorial policies

In the proposed model, over and above the integration of the organisation for disaster risk reduction and climate change adaptation, disaster risk reduction and climate change adaptation must be mainstreamed into the most vulnerable sectors in terms of climate risk and natural hazards and these include agriculture, water resources, health, land use, environment, and finance and planning (block D). The proposed unit for sector coordination within the newly-formed division of Disaster Risk Reduction and Climate Change Adaptation in block C must be tasked with the duty of establishing focal point in each of these sectors to make sure that disaster risk reduction and climate change are mainstreamed.

8.2.5 Integration enablers

Theoretical approaches of inter-organisational relationships are largely assumed to reflect free choice, produce benefits for all parties, and only continue when there are ongoing mutual benefits (Budd, 2015). Such relationships take place in complex economic, legal, social, and

political contexts (Budd, 2015). This sub-section presents the factors assumed to be important in the successful implementation of the integration model in block E.

8.2.5.1 Legal and regulatory frameworks

Successful implementation of the integration modes or inter-organisational relations in public administration must be mandatory or be based on necessity (Oliver, 1990) rather than being voluntary (Babiak, 2007; Oliver, 1990; Whetten, 1981). Oliver (1990) argues that mandates from higher authority such as legislation provide the impetus for inter-organisational relations that would otherwise not have happened voluntarily. Edelman (1990:1402) considers the legal environment as a central determinant of organisational change and emphasises the legitimacy and survival over efficiency and control as the imperatives that define the form of organisational governance. Dawes and Prefontaine (2003) argue that most often this legitimacy begins with a basis in law or regulation.

The ultimate authority governing organisations actions is the legal norms of larger social system in which organisations function (Galaskiewicz, 1985). The importance of legal and policy regulations lies in that they facilitate relationship building, risk reduction and trust development in inter-organisational settings (Yang & Maxwell, 2011). Laws and regulations provide the basis for promoting and enforcing certain rights and obligations of groups and individuals (UNDP, 2012). Moreover, the anticipated repercussions on non-compliance determine the likelihood that mandated relations occur (Oliver, 1990). This mandatory relationship might increase the commitment of the organisations in inter-organisational relations, which will be evidenced by the frequency and nature of interactions between the organisations (Babiak, 2007). Legislative and regulatory mandates for integrating structures for disaster risk reduction and climate change adaptation should provide opportunities for joint policy and planning.

8.2.5.2 Strategies, policies and plans

Strategies, policies and plans are among the principal ways that government can use to promote integration of disaster risk reduction and climate change adaptation (Forino *et al.*, 2015). Government should avoid separation and target common goals to increase the effectiveness against climate and climate change-related hazards. In their study, Howes *et al.* (2015) found that all plans and policies must be underpinned by consistent legislation that provides clear policy intent and appropriate directions for action. As such they suggest that integration of disaster risk reduction and climate change adaptation requires a broad and ambitious review to amend relevant legislation to make them consisted or to create new ones. As reflected in chapter 6 most of the countries within SADC are still in their early stages of

developing and adopting adaptive strategies, policies and plans. In the same vein most governments are repealing and adopting emergency and disaster management based policies and strategies towards disaster risk reduction. Governments of the SADC member states must take advantage of these developments and work towards linking the strategies, policies and plans.

8.2.5.3 Political will and commitment

Integration of organisations for disaster risk reduction will only succeed if there is a strong political and institutional will and commitment towards integration (Begum *et al.*, 2014). As such government must show an increasing level of political interest and commitment for the integration of structures for disaster risk reduction and climate change adaptation to be realised. Considerations of political context is important because it is a place of formally institutionalising the survival of organisation, guaranteeing access to resources needed by the organisations (Galaskiewicz, 1985).

Political commitment will be easier to maintain if disaster risk governance is framed as a subject of public discourse and if citizens start to demand public security and regard themselves as being entitled to a minimum level of safety from disaster risk (UNDP, 2012). The signing of project documents and even the passing of legislation by politicians are only steps in an ongoing process (UNDP, 2012). As such possible indicators of political commitment may be the launching of reform processes or the formulation of legislation that combines both disaster risk reduction and climate change adaptation.

8.2.5.4 Resources and capacities

For institutional arrangements for disaster risk governance to be effective, they need to have authority and recognition, and their legitimacy and relevance must be established with access to sufficient capacity and resources (Aysan & Lavell, 2014). As such resources are essential to inter-organisational initiatives and therefore leadership must recognise the importance of adequate resources in integrations initiatives. Whetten (1981) argues that the critical components of a successful mandated relationship are justifying the linkages to the implementers and providing them with sufficient resources. The capacities need to include the ability to manage complex processes that help to achieve responsiveness, participation, transparency, and accountability (Aysan & Lavell, 2014). Whilst these may be specifically allocated for risk reduction and emergency relief and recovery, the scarcity of resources suggests that integration of disaster risk reduction and climate change adaptation and budgets will increase effective resource utilisation (UNDP, 2012).

8.2.5.5 Support of regional and international organisation

The analysis of the structures for disaster risk reduction and climate change adaptation within SADC member states as presented in section 6.4 reveals that regional and international organisations are playing a critical role in the implementation of disaster risk reduction and climate change adaptation measures. Whereas the analysis suggests that they are doing this in a fragmented manner in that they support disaster risk reduction and climate change adaptation initiatives separately, their contribution to risk reduction is worth noting. Taking advantage of their influence in most of this SADC member states, representatives of these organisations must drive the agenda for integrating structures for disaster risk reduction and climate change adaptation.

8.3 CONCLUSION

The chapter presented and outlined a comprehensive yet generic model for integrating structures for disaster risk reduction and climate change adaptation within SADC member states. The proposed model is in an explorative form in that its implementation can be site-specific and context-based. The model is comprehensive because it considers all the main organisational issues addressed in disaster risk in each SADC member state, provides the different modes of integration while considering the level of integration intensity, proposes structural configurations and suggest integrated structures and considers different enablers that will help facilitate integration. Moreover, the model proposed is flexible in the sense that depending on the particularities of a member state, the involved organisations may opt to cooperate, coordinate, collaborate or ultimately coadunate their efforts. The model is generic in the sense that it is not tailored for any specific country but rather can be adopted and implemented under different circumstances. Thus due to particularities in each country constituting the SADC region, countries can opt to adopt different modes of integrating their efforts. It is anticipated that the proposed model will provide insights for practitioners and researchers alike who would like to empirically test the integration of structures for disaster risk reduction and climate change adaptation. By proposing a model for integrating structures for disaster risk reduction and climate change, this chapter addressed the first objective, and focuses on the convergence of the practices of disaster risk reduction and climate change adaptation.

CHAPTER 9

CONCLUSIONS AND RECOMMENDATIONS: INTEGRATING PARALLEL STRUCTURES FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

9.1 INTRODUCTION

This study contributes to an understanding of efforts to integrate disaster risk reduction and climate change adaptation. The study provides new knowledge pertaining to the reasons behind separating organisations for disaster risk reduction and climate change and the effects of housing them separately. This is important because most disaster risk reduction and climate change adaptation structures in governments mostly operate in isolation. Practitioners addressing disaster risk through disaster risk reduction and climate change adaptation are affiliated to separate organisations and institutions both internationally and nationally. Whereas international organisations and frameworks are important in reducing disaster risk and adapting to the impacts of climate change and whereas the provision of risk reduction, including adaptation goods and services is widely recognised as a multi-level governance challenge, the state particularly at national level still holds the ultimate responsibility due to its considerable political power and legal mandates to protect its citizens (Jones *et al.*, 2014). As such, the state is the main and most powerful actor in reducing the risk of disaster emanating from both climate change and other natural hazards, due to its enforcing power and its capacities for institution-building and enforcement.

Focusing on SADC member states, the study analyses the extent of integration of disaster risk reduction and climate change adaptation organisations. A desk-top analysis of organisations and institutions for disaster risk reduction and climate change adaptation in SADC member states (chapter 6) shows that structures for disaster risk reduction and climate change adaptation are affiliated to different ministries in all but three countries. Empirical research results in chapter 7 established the reasons or rationale for and the effects of affiliation to different ministries and in affirming the analytical framework provided in chapter 5, highlighted the ways in which integration of the structures should take place. Further than the discussions on the findings as outlined in chapter 7, in this chapter attention will be drawn to the contribution of the theoretical and empirical studies to the practice of disaster risk governance with specific focus on integration of structures for disaster risk reduction and climate change adaptation. This will be achieved through the verification of the achievement of the objectives of the study. What is important though is that the structuring of the thesis took cognisance of addressing all the objectives of the study.

The purpose of this chapter is to provide evidence that the objectives of the study have been achieved, to indicate how the study contributes to the body of knowledge in this field and to provide conclusions and recommendations on ways to integrate disaster risk reduction and climate change adaptation structures. The chapter commences by outlining an overview of the thesis chapters. This is then followed by an assessment of the achievement of the overall objective of the study and the assessment of the achievement of individual objectives of the study. Moreover, the chapter assesses the contribution of the study to the body of knowledge of disaster risk governance. The chapter then identifies areas for further research. Subsequently, the chapter provides recommendations on potential options for integrating structures for disaster risk reduction and climate change by SADC member states. The chapter concludes by providing an overall conclusion of the study.

9.2 OVERVIEW OF THE CHAPTERS

Chapters in this study are placed in a sequence and the context aligned to ensure a link between the chapters in order to fully address the objectives of the study. Chapter 1 of the study provided an overview. The chapter conceptualises the problem of fragmentation between organisations addressing disaster risk through risk reduction and climate change adaptation. Thus the chapter identifies the clear need and justification for the integration of these structures. To fully address the problem, the study identifies five study objectives and five research questions, in which case it is anticipated that addressing these objectives and the questions would achieve this purpose. The chapter also outlines the central theoretical statements in which the study is grounded. The methodology used in carrying out the study is also outlined in detail in chapter 1. The chapter concludes by providing the layout of chapters of the study.

Chapter 2 lays the foundation of the study by presenting a discussion on organisations and the theories behind them. This was made important because organisations are the vehicles through which collective action is carried out in modern societies. Moreover, the word *structures* used in this study is used to refer to organisation. As such acquiring knowledge and understanding on how organisations operate will assist in framing how organisations dealing with climate change adaptation and disaster risk reduction should be structured to substantially reduce the risk posed by climate change. Whereas there are many and varied theories of organisation, the study identifies the three main groups, classical theories, the neoclassical theories and the postmodernist theories as important for the study and are therefore briefly highlighted. The chapter also identifies the important role played by institutions within the society. In this chapter institutions are distinguished from organisations and the study is aligned to the views that though different, organisations and institutions are two facets of the same phenomenon. In this regard, institution equates to organisations and their working rules. Due to the complex

environment in which contemporary organisations operate, the chapter briefly highlights complexity theory. In doing so the chapter expounds the view that in order to adapt to the complex environment, organisations must become complex adaptive systems. In anticipation and preparation of a discussion of the governance of disaster risk reduction and climate change respectively in chapter 3 and chapter 4, this chapter closes by introducing the concept of governance due to the importance of different governance arrangement in addressing complex issues. The discussion of governance was made necessary because governance structures hold authoritative positions and are authorised to make decisions on policies, regulations and laws on behalf of the society.

Chapter 3 focuses the discussion on the governance of disaster risk reduction. The central argument in this chapter is that nations are failing to reduce disaster risk substantially owing to institutional and governance factors. The chapter highlights the different disaster risk reduction paradigms and also illuminate the impacts of disaster too provide the basis and justification for the consideration of governance for risk reduction. In this chapter the concept of multi-level governance is introduced to analyse the location of actors for disaster risk reduction and their respective roles. In closing the chapter provides a framework depicting governance dimensions, of which if adhered to, this will aid reduction in disaster risk. The status quo on the governance of disaster risk is that disaster risk reduction and climate change adaptation are addressed by separate organisations. Having discussed the governance of disaster risk reduction in chapter 3, it was imperative to focus the discussion in chapter 4 on the governance of climate change adaptation.

While acknowledging the importance of individuals in adaptation to the impacts of climate change, chapter 4 emphasises the importance of organisations, thus focusing a discussion on how organisations and institutions shape adaptation action. The chapter identifies decision-making as important to implement adaptation plans and measures and highlights the different ways in which adaptation decision can be made. In this sense the chapter advocates collaborative decision-making. The chapter demonstrated that adaptation to the impacts of climate change is a complex endeavour, which cannot be addressed by a single individual, organisation or by applying a single framework. The complex nature of climate change requires coordination across sectors and between different levels. In this regard a number of frameworks or approaches including adaptive co-management, multi-level governance, public goods theory, collaborative and network governance frameworks and adaptive capacity frameworks were highlighted. The chapter further highlighted that the use of decision-making approaches and the application of multi-level and network frameworks must be complemented by the use of

appropriate frameworks to build the adaptive capacity of the society. In this regard the chapter unpacks the determinants of adaptive capacity to assist in realising adaptation

Chapter 5 provides an analytical framework for the integration of structures for disaster risk reduction and climate change adaptation. Firstly, the chapter identifies the classical theories of organisations, particularly bureaucracy as the main source of separation according to functional lines in organisations. The chapter argues that strategic decisions have been taken at various points in the history of public administration to organise the public sector on functional grounds in order to improve management, better performance management and greater political control (Perri 6 *et al.*, 2002). However, these have had unintended consequences of functional fragmentation, necessitating integration considerations. Moreover, the chapter considers the factors that make the practices of disaster risk reduction and climate change adaptation compatible. With much of the literature on integration of the two practices focusing on conceptual linkages, this chapter moves beyond the conceptual linkage of disaster risk reduction and climate change adaptation by clarifying the concept of integration using concepts developed within organisational theories. While some scholars equate integration to mainstreaming, this chapter conceptualises integration as a continuum with modes ranging from cooperation or informal contacts through to merging of structures. This conceptualisation takes cognisance of the fact that circumstances are different and therefore certain circumstances will only require cooperation between the organisations for disaster risk reduction and climate change adaptation, while others will require coordination, collaboration or even merging of the structures.

Chapter 6 provides a desktop analysis of structures for disaster risk reduction and climate change adaptations in the SADC member states. The chapter opens by conceptualising the concept of regional integration and its drivers on the African continent before delving into a discussion on SADC as a region. Furthermore, the chapter provides a background to the SADC as a region and as an organisation highlighting the main structures of the organisation. The essence of the chapter is provided in section 6.4 which provides an overview of institutional and organisational arrangements for disaster risk reduction and climate change adaptation in each SADC member states. The chapter profiles each country in terms of hazards the country faces, organisation for addressing disaster risk through disaster risk reduction at national level and the policy and legislative framework for both disaster risk reduction and climate change adaptation. The analysis shows that in all countries but three have disaster risk reduction and climate change adaptations are still operating in parallel and still using separate policy and legislative frameworks.

Chapter 7 provides an analysis and interpretation of the findings of the study. The methodology used is briefly presented in this chapter to complement the methodology presented in chapter 1. Before discussing the findings of the study, the chapter presents the findings of the online survey sourced through the use of Survey Analytic tool. These findings together with the findings of the face to face interviews are then discussed thematically. Three major themes emerged from these findings, viz. the reasons for establishing and continuation of having separate structures for disaster risk reductions and climate change adaptation, the effects of having separate structures and the ways in which integration of the structures should unfold. Whereas some countries in the analysis of structures in SADC as highlighted in chapter 6 have already made advances in bringing the two within one organisations, most respondents feel that countries in the region are not yet ready to make structural adjustments to address disaster risk.

Based on the theoretical grounding in chapter 2, by building on the analytic framework developed in chapter 5, by taking consideration of the main structures coordinating disaster risk reduction and climate change adaptation in each SADC member state (chapter 6) and considerations of empirical findings in chapter 7, chapter 8 proposes a model for integrating the structures for disaster risk reduction and climate change adaptation by SADC member states. In this model, organisations for disaster risk reduction and climate change adaptation may opt to cooperate, coordinate, collaborate and/or merge. Of particular importance is that for the integration to take place, certain enablers must be put in place.

9.3 ACHIEVEMENT OF THE OVERALL OBJECTIVE OF THE STUDY

This study purposed to unravel the reasons for and the effects of the isolation of disaster risk reduction and climate change adaptation and to provide a model to aid integration of disaster risk reduction and climate change adaptation structures in each SADC member state. The study developed a normative model for the integration of structures for disaster risk reduction and climate change in order to enhance governance of disaster risk so as to effectively reduce the risk posed by climate change and other natural hazards. The development of the model took into considerations the national particularities of each country in the SADC and provided a continuum of integration.

By addressing the individual objectives of the study and answering each study question and through the development of a normative model in chapter 8, the main objective of the study was addressed. This was done through a study of the literature as evidenced in chapters 2 to 6 and empirical research, whose findings are outlined and discussed in chapter 7. Below, the chapter demonstrates how each of the individual objectives was addressed.

9.4 ACHIEVEMENT OF INDIVIDUAL OBJECTIVES

The success of the study was premised on the achievement of five objectives, formulated to complement one another in order to achieve the main purpose of the study. To realise the objectives of the study, chapters were placed in a sequence and the context aligned to ensure a link between the chapters. The achievement of each individual objective as presented in chapter 1 of the study is outlined below:

Objective 1: To investigate, assess and discuss the theories/practices of disaster risk reduction and climate change adaptation and their integration thereof

The first objective of the study was addressed through chapters 2 to 5. As the focus of the study was on structures for disaster risk reduction and climate change adaptation, a proper conceptualisation of the term structure was made necessary and this brought into the picture conceptualisation of organisations, organisational theories, and the demarcation of the environment in which organisations operate. A focus on organisations and organisational theory in chapter 2 is based on the premise that acquiring knowledge and understanding on how organisations operate will assist in framing how organisations dealing with climate change adaptation and disaster risk reduction should be structured to substantially reduce the disaster risk including risk posed by climate change. In this study, the word structure was congenially to refer to organisations mainly public sector organisations and institutions and specifically government departments and ministries as conceptualised.

A number of theories including classical, modern and post-modern and related theories such as institutional theory and complexity theory are discussed in chapter 2 to build a strong foundation for the study. As indicated in chapter 5, the classical theory of organisation is identified as the main cause of the separation between structures for disaster risk reduction and climate change adaptation. The concept of governance is introduced at the end of chapter two to provide a basis for discussion of the governance of disaster risk reduction and climate change adaptation in chapter 3 and chapter 4 respectively.

The continued differences in application and understanding of disaster risk reduction and climate change adaptation domains at national necessitate outlining the current status quo of governance in these domains and this is presented in chapters 3 and 4 respectively. In both cases, disaster risk reduction and climate change adaptation are recognised as multi-level governance challenges as the impacts and the respective measures cut across government levels, sectors and societal domains. Seeing that the two domains continue to operate in

parallel, an analysis of structures for disaster risk reduction and climate change adaptation in each member states of SADC becomes necessary as outlined in the discussion of objective 2.

The separation of disaster risk reduction and climate change adaptation and the resultant location within separate government structures do not add to the good governance of the complex problems shared by these two foci. As such chapter 5 of this study provides an analytical framework for the integration of these two fields of practice. The chapter opens by identifying the classical theories of organisations, particularly the traditional division of responsibilities into discrete areas to have strongly contributed to the location of disaster risk reduction and climate change adaptation in different ministries and administrative units. The chapter argues that the literature that advocates for the integration of disaster risk reduction and climate change adaptation falls short of achieving this objective in that it does not provide modalities of how integration should take place. Rather the literature focuses on those elements that make the two compatible with much attention to similarities, differences, areas of convergence and the challenges for integration. The analytical framework provided in this chapter conceptualises integration as a continuum ranging from informal contacts between practitioners through to merging of the structures. This is so because some cases of integration might require limited and loose contacts, coordination and/or collaboration between the organisations involved, while others might require merging between government departments or the sections thereof dealing with disaster risk reduction and climate change adaptation to form one entity with its own statutory status and appropriate authority. This issue of how integration should take place is further confirmed by the empirical study in section 7.3.4. Moreover, chapter 8 proposes a model for integrating the structures for disaster risk reduction and climate change adaptation by SADC member states as a means of bringing the two together.

Objective 2: To critically review existing structures for disaster risk reduction and climate change adaptation in each country of the Southern African Development Community

In the conceptualisation of the study and in addressing the first objective, it came out clearly that disaster risk reduction and climate change adaptation continue to function in parallel and are thus pitted against each in both policy and practice as discrete issues with limited overlaps. Seeing that this is the case in most countries, it was important to analyse the situation in the SADC countries to lay a foundation particularly for the empirical research to ascertain the reasons for and effects of separating the structures in each SADC member states. The objective was addressed through a desktop analysis of the structures for disaster risk reduction and climate change adaptation in each country constituting the SADC region in chapter 6

above. In cases where available information is limited, additional information was sourced from key informants in each country to fill in the information gaps. Building on the concept of integration discussed in chapter 5, chapter 6 opens by conceptualising regional integration, a concept which has become a global phenomenon. It is important to clarify this concept because currently most if not all countries of the world are affiliated to a regional cooperation organisation.

The analysis of structures for disaster risk reduction and climate change adaptation in each member state of SADC has assisted in providing a better understanding of how disaster risk is being addressed in the region. The analysis shows that SADC member states are characterised by diverse institutional, policy and legislative frameworks for the governance of disaster risk including risk posed by climate change. These are integrated into the government administrative machinery with disaster management, risk reduction and climate change adaptation carried out by several institutions including government ministries and national departments/organs in collaboration with humanitarian organisations and international partners. Furthermore, research institutions are playing a key role providing key findings and new information pertaining to disaster risk reduction and climate change adaptation. As indicated elsewhere in this study an analysis of structures for disaster risk reduction and climate change adaptation in each SADC member states laid a foundation to establish the reasons for and effects of having separate structures as discussed in objective 3 and objective 4 below.

Objective 3: To ascertain the reasons and rationale for establishing parallel structures for disaster risk reduction and climate change adaptation in Southern African Development Community

The literature review in section 5.2 and the empirical research in chapter 7 uncovered varied reasons for establishing parallel structures and continued application of disaster risk reduction and climate change adaptation measures by different ministries and government departments. Chief amongst these reasons is the historical evolution of the domains, where disaster risk reduction emerged from emergency management and disaster management and climate change emerged as a science and environmental issues. This line of reasoning is in line with the arguments as presented in section 5.2 of the study in which the classical theory of organisation and mainly bureaucracy is cited as the main reason for the separation of the structures for disaster risk reduction and climate change adaptation. The division of labour coupled with the introduction of professionalism and specialisation in the public sector resulted in administrative “silos” that are constructed around policy domains ignoring related policy problems (Steurer, 2007; Steurer & Berger, 2010). In this sense bureaucracy implies sectoral

specialisation or departmentalisation rather than policy integration (Steurer & Berger, 2010). It represents an unambiguous structure of departments, each headed by a minister who is responsible for all the actions of the departmental sub-units (Steurer, 2007; Steurer & Berger, 2010). Thus this objective was fully addressed through the empirical research in chapter 7 and the study of the literature in chapter 5, specifically in section 5.2. Moreover, the empirical research in chapter 7 was also meant to address objective 4 of the study, and the achievement of this objective is highlighted below.

Objective 4: To critically evaluate the concrete effects of having parallel structures for disaster risk reduction and climate change adaptation in Southern African Development Community

Having disaster risk reduction and climate change adaptation addressed through separate structures affects how those organisations operate, how resource allocation is done and their impacts on recipient communities. It is argued in Section 5.2 that organisational structures with functional division is able to meet the needs of differentiation and division of labour to improve efficiency whilst it brings fragmentation to public services and lays down the causes of fragmented government. As Zurn and Faude (2013) argue the problems of fragmentation arise from fragmentation of governance systems along sectoral lines. Section 5.3 identifies negative effects of fragmented governance to include but not limited to: each concerned organisation focusing on its own priorities leaving others to pick up the pieces; duplication of services which causes waste and confusion of service recipients; lack of knowledge on what the organisation is doing, contradictory and redundant programmes and conflicting goals. This fragmentation has been cited as the major government failure in tackling the so-called “wicked” problems and cross-sectoral problems.

Moreover, through empirical research, a number of effects of addressing disaster risk through different structures of disaster risk reduction and climate change adaptation have been identified. If not similar, there is a direct link between the identified effects and the effects of fragmented governance as identified in section 5.3. It is thus safe to conclude that this objective was addressed through the literature study in chapter 5 and empirical study in chapter 7.

Objective 5: To develop potential strategic options for integrated disaster risk reduction and climate change adaptation structures for SADC countries.

This objective was addressed through the development of an analytical framework for integrating structures for disaster risk reduction and climate change adaptation in chapter 5.

Moreover, the objective was addressed through the development of a normative model for integrating the structures for disaster risk reduction and climate change adaptation by SADC member states as proposed in chapter 8. In the model, organisations for disaster risk reduction and climate change adaptation may opt to cooperate, coordinate, collaborate and/or merge to form a new entity.

9.5 CONTRIBUTION OF THE STUDY TO THE BODY OF KNOWLEDGE OF DISASTER RISK GOVERNANCE

The study demonstrated that governance of disaster risk is fragmented, and in Chapter 1 the need for integrating structures for disaster risk reduction and climate change adaptation was identified. Moreover, the chapter identified gaps in the scholarship with regard to this integration, specifically, the scholarship that promotes the integration of structures for disaster risk reduction and climate change adaptation falls short of achieving this objective because: (1) It does not confirm the reasons for their separation, (2) does not identify the effects of housing disaster risk reduction and climate change adaptation in different structures and (3) to a limited extent, provide the ways in which integration should take place. The theoretical and empirical study has revealed that the structures for disaster risk reduction and climate change adaptation continue to exist and operate in parallel in most SADC member states and globally. What comes out clearly in this study is that there is a need to understand integration as a continuum for integration to succeed. The study has therefore contributed in a number of ways into the body of knowledge on disaster risk governance:

- (i) It provided the theoretical basis through the literature study, on the integration of disaster risk reduction and climate change adaptation;
- (ii) For the first time in the history of disaster risk governance, the study provided the theoretical and empirical reasons for locating disaster risk reduction and climate change adaptation in different departments/ ministries in government;
- (iii) It identified the effects of having disaster risk reduction and climate change adaptation located at different departments/ ministries in government;
- (iv) It provided an analytical framework for integration of structures for disaster risk reduction and climate change adaptation and highlighted how this can be implemented;
- (v) It provided the model for integrating structures for disaster risk reduction and climate change adaptation by the SADC member states

The study also revealed further areas of research to further practical integration of disaster risk reduction and climate change adaptation for effective and efficient reduction and governance of disaster risk. These areas are highlighted in the section below.

9.6 RECOMMENDATIONS: POTENTIAL OPTIONS FOR INTEGRATING DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION STRUCTURES IN SADC MEMBER STATES

It has been argued in chapter 5 that the overlapping domains of organisations addressing disaster risk reduction and climate change adaptation present the need and opportunities for those organisations to engage in inter-organisational relations. Inter-organisational integration can take many different forms ranging from management hierarchy, which has to do with the top-down coordination of the organisation; to market competition, which deals with contractual relations between organisations and voluntary cooperation and collaboration between organisations that are not part of the common hierarchy. It has also been argued in this study that the effective integration disaster risk reduction and climate change adaptation will demand changes in mind-set of those involved in order to take up new challenges. Below is a list of recommendations emanating from the empirical research and the study of the relevant literature.

Recommendation 1: A focus on cooperation, coordination and collaboration

Most participants in the study are of the view that it is practically too early to consider a fully integrated or merged structure or institutional adjustment for countries in the SADC region. It is argued that the region is still developing and the region faces more pressing challenges such as poverty. It is further argued that as much ad hoc as it may be, these countries must focus on improved communication, cooperation, coordination and collaboration. In most if not all SADC member states there are structures or forums where officials from structures for disaster risk reduction and climate change adaptation meet to discuss and address issues of common interest. Some organisations for instance are involved in the exchange of information such as early warning information.

However, this is contradictory to the information sourced through the analysis of structures as carried out in chapter 6, in which disaster risk reduction and climate change adaptation are housed in the same ministry or focal point organisation in countries such as Mozambique, Seychelles and Madagascar. Seeing that some of the countries within the region have already moved into institutional adjustment, it becomes necessary to have a second recommendation as outlined in section 8.6.2 below.

Recommendation 2: Merging of organisations or parts thereof

Whereas some cases of integration might require limited and loose contacts, coordination and/or collaboration between the organisations involved, as recommended above, this recommendation calls for re-adjustments or re-orientation of the structures or organisations for effective, efficient and appropriate responses. This will involve merging between government departments or the sections thereof dealing with disaster risk reduction and climate change adaptation to form one entity with its own statutory status and appropriate authority. In this regard, integration will involve the organisational re-layout where a part or whole or two or more organisations are merged to create a new organisation in which climate change adaptation sits within disaster risk reduction. This embedding of climate change adaptation into disaster risk reduction is important because tools and strategies are long established and have been used to adapt to natural hazards even before climate change into the picture. As such disaster risk reduction is a tool through which adaptation can effectively take place.

Recommendation 3: Mainstreaming of climate change adaptation into disaster risk reduction

From the empirical research and the study of literature, a certain number of respondents and scholars advocate the mainstreaming of climate change adaptation issues into disaster risk reduction while others advocate for the mainstreaming of both into sector department as an alternative to integration. For instance, Begum *et al.* (2014) indicate that many of the adaptation measures such as vulnerability assessments, sectoral and national planning, capacity-building and response strategies are directly supportive of disaster risk reduction. Moreover, it is argued that climate change adaptation needs to be mainstreamed into disaster risk reduction owing to the long history and successes of disaster risk reduction both at national and subnational levels. Particularly at community level, the focus of disaster risk reduction is based upon experiences for which a full range of tools and methodologies have been developed. Using these tools, strategies and methodologies many communities have for centuries coped with different hazards including climate extremes. A number of authors including Forino *et al.* (2015); Kelman and Gailard (2010); Mercer (2010) and Kelman *et al.* (2015) advocate the integration of climate change adaptation into core disaster risk reduction operations in order to attain simultaneous benefits for the social system coping with climate extremes and change.

Recommendation 4: Joint planning, funding and implementation of programmes and projects.

Until now, funding for disaster risk reduction and climate change adaptation have evolved independently. Incoherent funding structures have been identified in the literature on integration of disaster risk reduction and climate change as a major limiting factor in addressing disaster risk effectively and efficiently. Therefore, governments must establish joint funding mechanisms in order to enhance reduction in disaster risk through capacity building programmes, preventative measures, and preparedness for climate change related disasters.

Recommendation 5: Political will and leadership

Attention to political will and leadership are greatly needed for the integration of structures for disaster risk reduction and climate change adaptation because the implementation of the activities in these fields largely depends on it. Political will and commitment have been identified in this study as one of the enablers for integration to take place. It is thus highly recommended that political leaders show strong will and commitment towards integration for the integration of disaster risk reduction and climate change adaptation structures to happen.

Recommendation 6: Institutional capacity building

Integration of disaster risk reduction and climate change adaptation is an emerging field and therefore there is an urgent need to build capacity and in particular institutional capacity for linking the fields.

Recommendation 7: Information, awareness and advocacy

The findings of this study suggest that there is a lack of understanding among political leadership on the issues surrounding disaster risk. This creates an apparent need to raise more awareness and education about the role that climate change is playing in increasing disaster risk through extreme events and the need to integrate the two fields. Information sharing, awareness and advocacy will enhance the importance of integration disaster risk reduction and climate change amongst government stakeholders. Messages communicated should include the benefits that will be attained through integration such as reduced resources burden reduction in duplication and increased resilience of communities (Begum *et al.*, 2014).

Recommendation 8: Integration of disaster risk reduction and climate change through policy and legislative frameworks

As they venture into review to amend relevant or develop new policies and legislation SADC member states must consider integrating disaster risk reduction and climate change adaptation issues. This will go a long way towards bringing those involved closer to each other and engage in other issues such as joint planning and programming.

Recommendation 9: Consideration of climate risk in addressing disaster risk

A large number of respondents in this study (72%) agreed that climate change is a potent element in the deadly brew of disaster risk. Forino *et al.* (2015) point out that climate change intensifies some of the hazards affecting social systems and weakens resilience in facing disasters and uncertainty. It does so by increasing climate extremes and exacerbates adverse impacts (Birkmann & Mechler, 2015). It is thus recommended that structures addressing disaster risk through disaster risk reduction and climate change within SADC member states start considering the role that climate change is playing in increasing disaster risk. These considerations will assist in the development of suitable interventions.

Recommendation 10: Establishment of a fund to assist member states to address DRR and CCA in a coherent manner.

In line with the agreement of the SADC Ministers responsible for Disaster Risk Management and Ministers of Finance, in their meeting on June 26, 2015, it is recommended that the SADC Secretariat establish a regional disaster preparedness and response fund to assist member states to effectively implement joint disaster risk reduction and climate change adaptation programmes and initiatives.

9.6 LIMITATIONS OF THE STUDY

The development of a governance perspective involves recognising the roles of supra-national and sub-national states and non-state actors and their complex interactions in the process of governing. This holds true for disaster risk and climate change governance alike. Moreover, the provision of risk reduction, including adaptation goods and services, is widely recognised as a multi-level governance challenge because the impacts and respective measures cut across government levels, sectors and societal domains. As complex societal problems, disaster risk reduction and climate change adaptation necessitate the involvement of actors located at different spatial and geographic levels, since they cannot be addressed through linear policy-

making, nor fit into hierarchical decision-making. This study is limited by the focus of integration of structures for disaster risk reduction and climate change at national level. More research need to be done on the integration of organisation for disaster risk reduction and climate change adaptation at subnational levels.

9.7 AREAS OF FURTHER RESEARCH

Whereas this study contributed to the knowledge on the integration of disaster risk reduction and climate change adaptation, it is important to continue improving the synergies between disaster risk reduction and climate change adaptation in different context using different means. As such a number of areas for further research emerged during the theoretical and empirical perspectives of the study. The areas for further research are outlined below.

- (i) Evaluate the effectiveness and efficiency of integrated structures in countries such as Mozambique, the Seychelles and Mauritius. This research can focus on the relationship between organisational integration, organisational performance and implementation efforts;
- (ii) Test the full understanding of the concepts of cooperation, coordination and collaboration used in the integration continuum by practitioners of disaster risk reduction and climate change adaptation within the SADC member states,
- (iii) Tailor the model for specific countries within SADC to suit their particularities,
- (iv) Demonstrate empirically that the integration of organisations for disaster risk reduction and climate change contributes to reduced disaster risk.
- (v) Integrate disaster risk reduction and climate change adaptation at sub-national levels.

9.8 CONCLUSIONS

Given that both disaster risk and the impacts of climate change are on the rise, the need for coherent response strategy to address the risk becomes increasingly apparent. This study provided a detailed insight into the integration of disaster risk reduction and climate change adaptation with a particular focus on organisation and governance. The study employed both the study of literature and empirical research. Through a review of literature and participants' contributions, the study re-emphasises the need for integrating structures for disaster risk reduction and climate change adaptation. An analysis of structures for disaster risk reduction and climate change adaptation within SADC member states shows that the structures are

integrated to some degree as three (3) of the fifteen SADC member states, Mozambique, Mauritius and the Seychelles, have a merged structure and in the rest of the countries, the organisations are cooperating, coordinating efforts or collaborating. The study established, theoretically and empirically, the reasons for and effects of locating disaster risk reduction and climate change adaptation in different departments/ ministries in government.

Furthermore, the study was able to establish empirically the ways in which integration should unfold. This was found to be consistent with the integration modes suggested in the academic literature. These modes were used as a basis for the development of a model for integrating separate structures for disaster risk reduction and climate change adaptation within SADC member states. The successful implementation of the model hinges on five enablers: **firstly, Legal and regulatory frameworks** are important to reinforce integration. As such the implementation of the integration modes or inter-organisational relations in government must be mandatory rather than voluntary. **Secondly, strategies, policies and plans** must be used to promote integration of disaster risk reduction and climate change adaptation. **Thirdly**, government must show a high level of **political interest and commitment** for the integration of structures for disaster risk reduction and climate change adaptation to be realised. **Fourthly**, for institutional arrangements for disaster risk governance to be effective, they need to have authority and recognition, and their legitimacy and relevance must be established with **access to sufficient capacity and resources**. **Lastly, regional and international organisations** must continue playing a supportive role in the implementation of disaster risk reduction and climate change adaptation measures in an integrated manner.

The limitations of the study combined with the infinite nature of research on the subject provided an opportunity for the study to propose further areas of research. The study has contributed to the body of knowledge on disaster risk governance in a number of ways: it provided the theoretical basis through the literature study, on the integration of disaster risk reduction and climate change adaptation; for the first time in the history of disaster risk governance, the study provided theoretical and empirical reasons for locating disaster risk reduction and climate change adaptation in different departments/ ministries in government. This includes, historical evolution of climate change and disaster management issues, lack of knowledge and understanding of issues by political leaders, careerism in the climate change arena, different international frameworks widening the gaps, lack of understanding of the concept of disaster risk reduction and the role of technical and financial institution who opt to fund the initiatives separately.

The study was also able to unravel the effects of having separate structures, including incoherent policies, polarisation of interventions, competing for same resources, coordination nightmare, governance challenges, lack of climate resilient communities, many organisations dealing with disaster risk reduction and climate change adaptation, lack of national expertise in the disaster risk reduction and climate change adaptation and separation of budgets. Moreover, the study was able to provide an analytical framework for integration structures for disaster risk reduction and climate change adaptation and highlighted how this can be implemented. Most importantly, the study proposed a model, which will assist SADC member states in their efforts to integrate structures for disaster risk reduction and climate change adaptation.

BIBLIOGRAPHY

- Aall, C., Carlsson-Kanyama, A., & Hovelsrud, G. 2012. Local climate change adaptation: missing link, Black Jack or blind alley? *Local Environment*, 17(6-7): 573-578.
- Abrahamsson, M & Becker, P. 2010. Scoping study for partner driven cooperation in disaster risk management between Sweden and Botswana, MSB and NDMO.
- Adam, T. 2014. Advancing the application of systems thinking in health. *Health Research Policy and Systems*, 12:50.
- Adger, W. N. 2010. Social capital, collective action, and adaptation to climate change. In *Der klimawandel* (pp. 327-345). VS Verlag für Sozialwissenschaften.
- Adger, W. N. 2003. Social capital, collective action, and adaptation to climate change. *Economic Geography*, 79(4):387-404.
- Adger, W. N. 2001. Scales of governance and environmental justice for adaptation and mitigation of climate change. *Journal of International Development*, 13(7):921-931.
- Adger, W.N., Agrawala, S., Mirza, M.M.Q., Conde, C., O'brien, K., Pulhin, J., Pulwarty, R., Smit, B & Takahashi, K. 2007: Assessment of adaptation practices, options, constraints and capacity. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 717-743.
- Adger W.N., Nigel W., Arnell N.W. & Tompkins, E.L. 2004. Successful adaptation to climate change across scales. *Global Environmental Change*, 15 (2005) 77–86.
- Adger, W. N., Arnell, N. W., & Tompkins, E. L. 2005. Successful adaptation to climate change across scales. *Global Environmental Change*, 15(2):77-86.
- Adger N., Brown K., & Hulme M. (Eds.), 2009. Global Environmental Change: Human and policy dimensions. *Global Environmental Change*, 19(1):89–99.
- Adger, W.N., Huq, S., Brown, K., Conway, D. & Hulme, M. 2003. Adaptation to climate change in the developing world. *Progress in Development Studies*, 3(3):179-195.

African Development Bank, 2013a. Democratic Republic of Congo – 2013 – 2017 Country Strategy Paper, Regional Department Centre (ORCE/ CDFO).

African Development Bank Group, 2013b. Kingdom of Lesotho: Country Strategy Paper 2013 – 2017, SARD Department

African Development Bank, 2009. Botswana Country Governance profile, Regional Department South.

African Union (AU). 2004. *Africa regional strategy for disaster risk reduction*. Ethiopia: African Union.

Aggarwal, V. K., & Dupont, C. 2008. Collaboration and coordination in the global political economy, In Ravenhill, J.(ed.), *Global political economy, Second edition*. Oxford, UK: Oxford University Press

Agrawal, A. 2010. Local institutions and adaptation to climate change. In Mearns, R., & Norton, A. (Eds.), *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World*. The World Bank, Washington, DC

Agrawal, A., & Ribot, J. 1999. Accountability in decentralisation: a framework with South Asian and West African cases. *The Journal of Developing Areas*, 33(4):473-502.

Ahrens, J. 2011. Governance, Development, and Institutional Change in times of Globalisation, In Ahrens, J., Caspers, R., & Weingarth, J. (Eds.), *Good Governance in the 21st Century: Conflict, Institutional Change, and Development in the Era of Globalisation*. Cheltenham, UK: Edward Elgar Publishing.

Ahrens, J., Caspers, R., & Weingarth, J. (Eds.), 2011. *Good Governance in the 21st Century: Conflict, Institutional Change, and Development in the Era of Globalisation*. Cheltenham, UK: Edward Elgar Publishing.

Ahrens, J. & Rudolph, P. M. 2006. The importance of governance in risk reduction and disaster management. *Journal of Contingencies and Crisis Management*, 14(4):207-220.

Akol C., Banda, B., Allieu, A., Gnegne, Y., Osaliya, R., Closset, M., Kinda, S.R., Kumar, A., Kabubi, J., Ait- Chellouche, Y., Dia A., Baranes, S., Dampha, A., Wanambwa, L., Masamvu, K., Moatlhaping, S., Siwela, B. & Ibrahim, M. 2014. Regional Assessment and Good Practice Synthesis Report on Mainstreaming and Implementing Disaster Risk Reduction and Management in Africa. Economic Commission for Africa (ECA) and the United Nations Office

for Disaster Risk Reduction (UNISDR)

Aldrich, H. 1999. *Organisations evolving*. New York: Sage.

Allen, Robert Loring. 1963. Review of the theory of economic integration by Bela Balassa. *Economic Development and Cultural Change*, 11 (4): 449- 454.

Amendola, A., Linneroth-Bayer, J., Okada, N., & Shi, P. 2008. Towards Integrated Disaster Management: Case Studies and Trends from Asia. *Natural Hazards*, 44: 163 – 168.

Amenta, E., & Ramsey, K.M. 2010. Institutional Theory. In Leicht, K.T & Jenkins, J.C (eds.). *Handbook of Politics: State and Society in Global Perspectives, Handbook of Sociology and Social Research*, Springer Science and Business Media

Amagoh, F. 2008. Perspectives on organisational change: systems and complexity theories. *The Innovation Journal: The Public Sector Innovation Journal*, 13(3): 1-14.

Amundsen, H., Berglund, F., & Westskog, H. 2010. Overcoming barriers to climate change adaptation: a question of multilevel governance? *Environment and Planning C: Government and Policy*, 28(2010): 276-289.

Anderson, C.L. 2012. *Analysis of integrating disaster risk reduction and climate change adaptation in the US Pacific Islands and Freely Associated States*. Hazards, Climate, and Environment Program Social Science Research Institute, University of Hawaii, Mānoa.

Anderson, M.B., 1985. A re-conceptualisation of the linkages between disasters and development. *Disasters*, 9(1985): 46–51.

Anderson, P. 1999. Perspective: Complexity theory and organisation science. *Organisation science*, 10(3): 216-232.

Andrei, L. C. 2012. The economic integration: Concept and end of process. *Theory of Applied Economics*, 19(10): 55 - 70

Armitage, D. 2007. Governance and the commons in a multi-level world. *International Journal of the Commons*, 2(1): 7-32.

Aronson, J. 1995. A pragmatic view of thematic analysis. e *Qualitative Report*, 2(1): 1-3.

Atarodi, M. R. & Ferdosipour, A. 2014. Explaining Critical factors for successful Holistic Government. *Journal of Social Issues and Humanities*, 2(9): 36-41.

Awesti, A. 2007. The European Union, New institutionalism and types of multi-level governance. *Political Perspectives EPRU*, 2(8):1-23.

Axelsson, R., & Axelsson, S. B. 2006. Integration and collaboration in public health—a conceptual framework. *The International Journal of Health Planning and Management*, 21(1): 75-88.

Axline, W. A. 1977. Underdevelopment, dependence and integration: The politics of regionalism in the Third World. *International Organisation*, 31(01): 83-105.

Aysan, Y & Lavell, A. 2014. *Disaster risk governance during the HFA implementation period: UNDP thematic review*. Background paper prepared for the Global Assessment Report on Disaster Risk Reduction 2015, UNDP.

Baas, S., Ramasamy, S., Depryck, J.D. & Battista, F. 2008. *Disaster Risk Management Systems Analysis - A Guide Book*. Food and Agriculture Organisation of the United Nations, Rome.

Babiak, K. 2007. Determinants of inter-organisational relationships: The case of a Canadian non-profit sport organisation. *Journal of Sport Management*, 21(3): 338.

Bache, I., & Flinders, M. 2004. *Multi-level governance*. Oxford: Oxford University Press.

Baker, G., Gibbons, R. & Murphy, K. J. 2002. Relational contracts and the theory of the firm. *Quarterly Journal of Economics*, (2002): 39-84.

Baker, G., Gibbons, R. & Murphy, K. J. 1997. Implicit contracts and the theory of the firm (No. w6177), National Bureau of Economic Research.

Baker, I., Peterson, A., Brown, G., & McAlpine, C. 2012. Local government response to the impacts of climate change: An evaluation of local climate adaptation plans. *Landscape and Urban Planning*, 107(2): 127-136.

Bakker, K., del Moral, L., Downing, T., Giansante, C., Garrido, A. & Iglesias, E. 1999. *Societal and Institutional Responses to Climate Change and Climatic Hazards: Managing Changing Flood and Drought Risk (SIRCH)*. K. Bakker (Ed.). University of Oxford, Environmental Change Unit.

Bakvis, H., & Juillet, L. 2004. *The horizontal challenge: Line departments, central agencies and leadership*. Canada School of Public Service, Canada.

- Bang, H. N. 2013. Governance of disaster risk reduction in Cameroon: the need to empower local government: original research. *Jamba: Journal of Disaster Risk Studies*, 5(2):1-10.
- Banks, N. & Hulme, D. 2012. The role of NGOs and civil society in development and poverty reduction. *Brooks World Poverty Institute Working Paper*, (171).
- Barki, H. & Pinsonneault, A. 2005. A model of organisational integration, implementation effort, and performance. *Organisation Science*, 16(2):165-179.
- Barry, F. 2007. *Structures and institutions of good governance: A view from Ireland*. Dublin: Trinity College.
- Bastedo, M.N. 2004. Open Systems Theory. In English, F.W. (ed.), *Encyclopaedia of Educational Leadership and Administration*, Vol. 2. Thousand Oaks, California: SAGE Publications.
- Batley, R. 2011. Structures and strategies in relationships between non-government service providers and governments. *Public Administration and Development*, 31(4): 306-319.
- Batley, R. & Rose, P. 2011. Analysing collaboration between non-governmental service providers and governments. *Public Administration and Development*, 31(4):230-239.
- Barnes, C. 2006. *Governments and civil society organisations: Issues in working together towards peace*. Discussion paper for strategy meeting, Global Partnership for the Prevention of Armed Conflict, October, European Centre for Conflict Prevention, The Hague.
- Bauer, A., & Steurer, R. 2014. Multi-level governance of climate change adaptation through regional partnerships in Canada and England. *Geoforum*, 51 (2014): 121-129.
- Bauer, A., Feichtinger, J., & Steurer, R. 2012. The governance of climate change adaptation in 10 OECD countries: Challenges and approaches. *Journal of Environmental Policy & Planning*, 14(3): 279-304.
- Beech, N. & Huxham, C. 2003. Cycles of identity formation in inter-organisational collaborations. *International Studies of Management and Organisation*, 33(3): 28-52.
- Becker, P. 2012. The importance of integrating multiple administrative levels in capacity assessment for disaster risk reduction and climate change adaptation. *Disaster Prevention and Management: An International Journal*, 21(2): 226-233.

Becker, P. 2011. *Scoping study for capacity development in disaster management between Tanzania and Sweden*. Disaster Management Department, Office of the Prime Minister, Tanzania MSB, Sweden.

Becker, P., Abrahamsson, M., & Hagelsteen, M. 2013. Parallel structures for disaster risk reduction and climate change adaptation in Southern Africa. *Jàmbá: Journal of Disaster Risk Studies*, 5(2): 5.

Begum, R. A., Sarkar, M. S. K., Jaafar, A. H., & Pereira, J. J. 2014. Toward conceptual frameworks for linking disaster risk reduction and climate change adaptation. *International Journal of Disaster Risk Reduction*, 10: 362-373.

Behera, A. 2002. Government - NGO Collaboration for Disaster Reduction and Response: The India (Orissa) Experience, Regional Workshop on Networking and Collaboration among NGOs of Asian Countries in Disaster Reduction and Response, 20-22 February 2002.

Bellamy, C. 1999. Joining-up government in the UK: Towards public services for an information age. *Australian Journal of Public Administration*, 58(3): 89-96.

Benn, S.I., & Gaus, G.F. 1983. Public and private in social life. London & Canberra: Croom Helm.

Benson, C., John Twigg, J., & Rossetto, T. 2007. *Tools for mainstreaming disaster risk reduction: Guidance notes for Development Organisations*. International Federation of Red Cross and Red Crescent Societies/ The prevention consortium, Geneva, Switzerland

Bell, S. 2002. *Institutionalism: Old and new*. In Summers, J., Woodward, D., & Parkin, A. (Eds.), *Government, politics, power and policy in Australia*, 7th ed. (pp. 363-380), NSW Australia: Pearson Education Australia.

Berardo, R. 2009. Processing complexity in networks: A study of informal collaboration and its effect on organisational success. *Policy Studies Journal*, 37(3): 521-539.

Bergman M.M. 2009. *Advances in Mixed Methods Research*. London: SAGE Publications.

Berkhout, F. 2012. Adaptation to climate change by organisations. *Wiley Interdisciplinary Reviews: Climate Change*, 3(1): 91-106.

Berman, R., Quinn, C., & Paavola, J. 2012. The role of institutions in the transformation of coping capacity to sustainable adaptive capacity. *Environmental Development*, 2(2012): 86-100.

- Berrang-Ford, L., Ford, J. D., Lesnikowski, A., Poutiainen, C., Barrera, M. & Heymann, S. J. 2014. What drives national adaptation? A global assessment. *Climatic Change*, 124(1-2): 441-450.
- Betsill, M., & Bulkeley, H. 2007. Looking back and thinking ahead: a decade of cities and climate change research. *Local Environment*, 12(5): 447-456.
- Betsill, M. M. & Bulkeley, H. 2004. Transnational networks and global environmental governance: The cities for climate protection programme. *International Studies Quarterly*, 48(2): 471-493.
- Betts, 2011. Contingency theory: Science or technology? *Journal of Business and Economic Research*, 1(8):123 – 130.
- Bhavnani, R., Owor, M., Vordzorgbe, S. & Bousquent, F. 2008. *Report on the status of disaster risk reduction in the sub-Saharan Africa region*. UNISDR Africa, Kenya, Nairobi
- Biesbroek, G. R., Swart, R. J., Carter, T. R., Cowan, C., Henrichs, T., Mela, H., Morecroft, M.D. & Rey, D. 2010. Europe adapts to climate change: Comparing national adaptation strategies. *Global Environmental Change*, 20(3): 440-450.
- Birkmann, J. 2011. First - and second-order adaptation to natural hazards and extreme events in the context of climate change. *Natural Hazards*, 58 (2011): 811 – 840.
- Birkmann, J. & Mechler, R. 2015. Advancing climate adaptation and risk management. New insights, concepts and approaches: What have we learned from the SREX and the AR5 processes? *Climatic Change*, 133(1):1-6.
- Birkmann, J. & Von Teichman, K. 2010. Integrating disaster risk reduction and climate change adaptation: key challenges – scales, knowledge and norms. *Sustainability Science*, 2010.
- Birkmann, J., Von Teichman, K., Aldunce, P., Bach, C., Binh, N.T., Garschagen, M., Kanwar, S., Setiadi, N., & Thach, L.N. 2009. Addressing the challenge: recommendations and quality criteria for linking disaster risk reduction and adaptation to climate change, In Birkmann J, Tetzlaff G, Zentel K.O (eds) DKKV publication series, No. 38, Bonn.
- Björnberg, K.E., & Hansson, S.O. 2011. Five areas of value judgement in local adaptation to climate change. *Local Government Studies*, 37(6): 671-687.

- Boholm, Å., Corvellec, H., & Karlsson, M. 2012. The practice of risk governance: Lessons from the field. *Journal of Risk Research*, 15(1): 1-20.
- Boje, D. M. 2000. Phenomenal complexity theory and change at Disney: Response to Letiche. *Journal of Organisational Change Management*, 13(6): 558-566.
- Bollin, C., Cárdenas, C., Hahn, H. & Vatsa, K. S. 2003. *Disaster risk management by communities and local governments*. New York: Inter-American Development Bank.
- Bongo, P.P., Chipangura, P., Sithole, M. & Moyo, F. 2013. A rights-based analysis of disaster risk reduction framework in Zimbabwe and its implications for policy and practice. *Jàmbá: Journal of Disaster Risk Studies* 5(2), Art. #81, 11 pages.
- Boston, J. & Gill, D. 2011. *Joint or shared accountability: Issues and options*. Working Paper 11/03, Institute of Policy Studies, Wellington, New Zealand
- Börzel, T. 1997. What's so special about policy networks? An exploration of the concept and its usefulness in studying European governance. *European Integration Online Papers*, 1(16).
- Bouwer, R. P., Crompton, E., Faust, P.H. & Roger A.P. Jr. 2007. Disaster Management: Confronting Disaster Losses. *Science*, 318 (2)
- Bovaird, T. 2008. Emergent strategic management and planning mechanisms in complex adaptive systems: the case of the UK Best Value initiative. *Public Management Review*, 10(3): 319-340.
- Bowen, K. J., Ebi, K., Friel, S. & McMichael, A. J. (2013). A multi-layered governance framework for incorporating social science insights into adapting to the health impacts of climate change. *Global Health Action*, 6.
- Boyle, J., Runnal, D. & Sawyer, D. 2014. *Institutional arrangements for climate finance*. The Centre for International Governance Innovation, CIGI Papers.
- Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2): 77-101.
- Bräutigam, D. A., & Knack, S. 2004. Foreign Aid, Institutions, and Governance in Sub-Saharan Africa. *Economic Development and Cultural Change*, 52(2): 255-285.

Brennen, J. 2009. The practice of mixed methods research strategy: Personal, professional and project considerations, In Bergman M.M. 2009. *Advances in Mixed Methods Research*. London: SAGE Publications.

Breslin, S, Higgott, R & Rosamond B. 2002. *Regions in comparative perspective*. CSGR Working Paper No. 107/02, Centre for the Study of Globalisation and Regionalisation (CSGR), University of Warwick, Coventry, United Kingdom.

Briassoulis, H. 2004. Policy integration for complex policy problems: What, why and how. *Greening of Policies: Inter-linkages and Policy Integration, Berlin, 3-4*.

Broekhuijsen, M. 2009. Towards a resilient future: Experiences with community managed disaster risk reduction and climate change adaptation. The Hague: Cordaid.

Brooks, N. 2003. *Vulnerability, risk and adaptation: A conceptual framework*. Tyndall Centre for Climate Change Research, Working Paper 38

Brown H.C.P. 2011. Gender, climate change and REDD+ in the Congo Basin forests of Central Africa. *International Forestry Review* 13(2): 163 – 176

Brown, R. 2011. *Parliamentary role and relationship in effectively addressing climate change issues – Swaziland*. A study commissioned and supported by the International Institute for Environment and Development (IIED) in partnership with European Parliamentarians for Africa (AWEPA)

Brown, D., Rance Chanakira, R., Chatiza, K., Dhliwayo, M., Dodman, D., Masiwa, M., Muchadenyika, D., Prisca Mugabe, P. & Zvigadza, S. 2012. *Climate change impacts, vulnerability and adaptation in Zimbabwe*. IIED Climate Change Working Paper No. 3, October 2012.

Bryman, A. 2006. Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1): 97-113.

Bryson, J. M., Crosby, B. C., & Stone, M. M. 2006. The design and implementation of Cross-Sector collaborations: Propositions from the literature. *Public Administration Review*, 66(s1): 44-55.

Budd, J.W. 2015. *Power and interests in inter-organisational relations: Implications of broadened conceptual framework*. Paper prepared for the 13th International Conference in

Commemoration of Prof Marco Biagi Employment Relations and Transformation of the Enterprise in the Global Economy, University of Minnesota.

Bukenya, B., & Hickey, S. 2014. NGOs, Civil Society, and Development. In *The Handbook of Civil Society in Africa* (pp. 311-335). New York: Springer.

Bulkeley, H., Schroeder, H., Janda, K., Zhao, J., Armstrong, A., Chu, S. Y. & Ghosh, S. 2009. Cities and climate change: The role of institutions, governance and urban planning. *Change*, 28, 30.

Bureau of Statistics [Lesotho], 2013. *Lesotho Demographic Survey, 2011*, Vol. I, The Bureau of Statistics, Ministry of Development Planning. Lesotho, Maseru.

Burnes, B. 2005. Complexity theories and organisational change. *International Journal of Management Reviews*, 7(2): 73-90.

Burton, I., Dube, O.P., Campbell-Lendrum, D., Davis, I., Klein, R.J.T., J. Linnerooth-Bayer, J., Sanghi, A., & Toth, F. 2012. Managing the risks: international level and integration across scales. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation [Field, C.B., Barros, V., Stocker, T.F., Qin, D., Dokken, J.D., Ebi, K.L., Mastrandrea, M.D., Mach, K.J., Plattner, G.K., Allen, S.K., Tignor, M., & Midgley, P.M. (eds.)]. *A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change* (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 393-435.

Burton, M., Leroux-Rutledge, E & Godfrey, A. 2010. *Democratic Republic of Congo talks climate: The public understanding of climate change*, BBC World Service Trust, London.

Bussell, R & Malcomb, D. 2014. Natural disasters in Malawi and Mozambique: Capacity and Cooperation. In Institutional capacity for natural disasters: Case studies in Africa, Bussell, J (ed.), Student Working Paper No.6, Climate Change and African Political Stability, The Robert S. Strauss Center for International Security and Law, University of Texas, Austin

Buzan, B., & Albert, M. 2010. Differentiation: A sociological approach to international relations theory. *European Journal of International Relations*, 16(3): 315-337.

Bwalya, S.M. 2010. *Climate change in Zambia: Opportunities for adaptation and mitigation through Africa bio-carbon initiative: A report of the Centre for International Forest Research Southern Africa*, Regional Office Lusaka, Zambia

Callahan, R. 2007. Governance: The collision of politics and cooperation. *Public Administration Review*, 67(2): 290-301.

Campbell, S.P. & Hartnett, M. 2005. *A framework for improved coordination: Lessons learned from the International development, peacekeeping, peacebuilding, humanitarian and conflict resolution communities*. National Defence University, Washington DC, 31.

Cairney, P. 2012. Complexity theory in political science and public policy. *Political Studies Review*, 10(3):346-358.

Cardona, O.D., & Carreño, M.L. 2011. Updating the indicators of disaster risk and Risk management for the Americas. *Journal of Integrated Disaster Risk Management*, 1(1).

Carey, J. M. 2000. Parchment, equilibria, and institutions. *Comparative Political Studies*, 33(6-7):735-761.

Cash, D. W., Adger, W. N., Berkes, F., Garden, P., Lebel, L., Olsson, P., Pritchard, L & Young, O. 2006. Scale and cross-scale dynamics: governance and information in a multilevel world. *Ecology and Society*, 11(2): 8.

Cash, D., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N. & Jäger, J. 2002. *Salience, credibility, legitimacy and boundaries: Linking research, assessment and decision making*. Faculty Research Working Papers Series - RWP02-046, John F. Kennedy School of Government, Harvard University.

Casini, L. 2007. Models of public administration: Comparative analysis of administrative organisation, in Formez, *Innovazione amministrativa e crescita. Rapporto con raccomandazioni*, Ricerca Giannini-Formez II Fase, Volume VIII, *International Comparisons*, Rome, Formez, 2007: 19-48.

Central Intelligence Agency (2015). Democratic Republic of Congo. *The World Fact book*. Langley, Virginia: Central Intelligence Agency. Available on <https://www.cia.gov/library/publications/the-world-factbook/geos/cg.html>. Accessed 14 December 2015.

Central Statistical Office (CSO) [Zambia], Ministry of Health (MOH) [Zambia], and ICF International. 2014. *Zambia Demographic and Health Survey 2013-14*. Rockville, Maryland, USA: Central Statistical Office, Ministry of Health, and ICF International.

Centre for Environmental Policy and Advocacy (CEPA), 2012. Policy Framework for Climate Change Adaptation and Disaster Risk Reduction in Malawi: A Review of Key Policies and Legislation, Analytical Report. CEPA Blantyre, Malawi.

Centre for Research on the Epidemiology of Disasters (CRED). 2015. The Human Cost of Natural Disasters 2015: A Global Perspective. CRED, Brussels, Belgium. Available on: http://emdat.be/human_cost_natdis, accessed, February 2016.

Chagutah, T. 2010. Climate change vulnerability and adaptation preparedness in Southern Africa – Zimbabwe Country Report, Heinrich Böll Stiftung Southern Africa (HBS): Cape Town, South Africa.

Chavance, B. 2012. John Common's organisational theory of institutions: A discussion. *Journal of Institutional Economics* 8(1): 27 – 47

Chen, G & Tjosvold, D. 2008. Organisational values and procedures as antecedents for goal interdependence and collaborative effectiveness. *Asia Pacific Journal of Management*, 25(1): 93-112.

Cheng, J. H. 2011. Inter-organizational relationships and information sharing in supply chains. *International Journal of Information Management*, 31(4), 374-384.

Cheng, E. W., Li, H., Love, P. E. & Irani, Z. 2004. Strategic alliances: A model for establishing long-term commitment to inter-organizational relations in construction. *Building and Environment*, 39(4): 459-468.

Chikoto, G.L & Sadiq, A.A. 2012. *Zimbabwe's emergency management system: A promising development*. In McEntire, D. (Ed.), *Comparative Emergency Management: Understanding disaster policies, organisations and initiatives from around the world*. Available on: <http://www.training.fema.gov/EMIWEB/edu/CompEmMgmtBookProject.asp>, accessed December, 2015.

Chishakwe, N. 2010. Southern African sub-regional framework on climate change programmes report. Report ontributing to the comprehensive framework of climate change programmes in Africa facilitated by the African Ministerial Conference on Environment (AMCEN).

Christensen, T. & Lægreid, P. 2008. The challenge of coordination in central government organisations: The Norwegian case. *Public Organisation Review*, 8(2): 97-116.

- Christensen, T. & Lægreid, P. (eds.). 2007a. *Transcending new public management: the transformation of public sector reforms*. Aldershot: Ashgate.
- Christensen, T. & Lægreid, P. 2007b. The whole-of-government approach to public sector reform. *Public Administration Review*, 67(6): 1059-1066.
- Christensen, T. & Lægreid, P. 2006. The whole-of-government approach—regulation, performance, and public-sector reform. Working Paper 6, 2006. Stein Rokkan Centre for Social Studies, UNIFOB AS
- Christensen, T., Laegreid, P., Roness, P.G. & Rovic, K.A. 2007. *Organisation theory and the public sector: Instrument, culture and myth*. London: Routledge.
- Christoplos, I., Anderson, S., Arnold, M., Galaz, V., Hedger, M., Klein, R.T.J., & Le Goulven, L. 2009. *The human dimension of climate adaptation: The importance of local and institutional issues*. Commission on Climate Change and Development, Stockholm, Sweden.
- Cilliers, P. 2002. Why we cannot know complex things completely. *Emergence*, 4(1-2): 77-84.
- Cilliers, P. & Spurrett, D. 1999. Complexity and post-modernism: Understanding complex systems. *South African Journal of Philosophy*, 18(2): 258-274.
- Cimato, F. & Mullan, M. 2010. *Adapting to climate change: Analysing the role of government*. Department for Environment, Food and Rural Affairs (DEFRA), London, UK.
- Ciplet, D., Roberts, J.T. & Khan, M. 2013. The politics of international climate adaptation funding: Justice and divisions in the greenhouse. *Global Environmental Politics*, 13(1): 49-68.
- Clarke, D. & Mahul, O. 2011. *Disaster Risk Financing and Contingent Credit: A Dynamic Analysis*. Policy Research Working Paper 5693, World Bank.
- Clegg, S.R. 1990. *Modern organisations: Organisation studies in the Postmodern world*. London: SAGE Publications.
- Cohen, C., & Werker, E. D. 2008. The political economy of “natural” disasters. Working Paper 08-040, Harvard Business School, Boston MA
- Col, J., 2007. Managing disasters: The role of local government. *Public Administration Review*, 67(1): 114–124.

Corfee-Morlot, J., Cochran, I., Hallegatte, S. & Teasdale, P. J. 2011. Multilevel risk governance and urban adaptation policy. *Climatic Change*, 104(1): 169-197

Crawford, A., Hove, H. & Parry, J. 2011. Review of Current and Planned Adaptation Action: Middle Africa - Angola, Cameroon, Central African Republic, Chad, Republic of the Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon and São Tomé e Príncipe, Adaptation Partnership, International Institute for Sustainable Development

Creswell, J.W. 2015. *A concise introduction to mixed methods research*. Thousand Oaks, California: Sage Publications.

Creswell, J. 2009. *Research design: Qualitative, quantitative, and mixed methods approaches*. London: SAGE Publications.

Creswell, J.W. & Clark, V.L.P. 2011. *Designing and conducting mixed methods research*. Thousand Oaks, California: SAGE Publications.

Collins, K.M.T. 2010. Advanced sampling design in mixed methods research. In Tashakkori, A & Teddlie, C (eds.). *SAGE Handbook of Mixed Methods in social science and behaviour*, 2nd edition, London: SAGE Publications.

CONCERN, 2005. Approaches to Disaster Risk Reduction. Emergency Unit, *Concern Worldwide, Dublin*, available on http://dev.concernusa.org/media/pdf/2007/10/Concern_ApproachesToDRR%20paper%20-%20final.pdf, accessed August 2013

Cote, J. & Latham, C. K. 2006. Trust and commitment: Intangible drivers of inter-organisational performance. *Advances in Management Accounting*, 15: 293-325.

da Costa, K. 2014. *How law and regulation support disaster risk reduction: Madagascar country case study report*, International Federation of Red Cross and Red Crescent Societies June 2014, Geneva, Switzerland

Daft, R. L. 2010. Understanding the theory and design of organisations. South-Western CENGAGE Learning, 10th Edition.

Daft, R. L. 1992. Organizational theory and design. Fourth Edition. St. Paul, MN: West Publishing

- Dahal, D.R. 2005. Building state capacity for governance effectiveness in Nepal. *Readings on Governance and Development*, 5(2005):1-14.
- Dahlberg, E & Wingqvist, G.O. 2008. Namibia Environmental and Climate Change Policy Brief. SIDA INEC, Stockholm.
- Dan, S. 2013. Theorising coordination: Towards a novel theoretical framework. Paper presented at the European Group for Public Administration Annual Conference, Study group VI: *Governance of Public Sector Organisations*, Edinburgh, 11-13 September, 2013
- Danaher, A. 2011. *Reducing health inequities: Enablers and barriers to inter-sectorial collaboration*. Wellesley Institute. Toronto, Canada
- David, P. A. 1994. Why are institutions the 'carriers of history'? Path dependence and the evolution of conventions, organisations and institutions. *Structural Change and Economic Dynamics*, 5(2): 205-220.
- Davis, C.L. 2011. *Climate risk and vulnerability: A handbook for Southern Africa*. Council for Scientific and Industrial Research, Pretoria, South Africa, pp 92.
- Davies, M., Guenther, B., Leavy, J. Mitchell, T. & Tanner, T. 2009. *Climate Change Adaptation, Disaster Risk Reduction and Social Protection: Complementary Roles in Agriculture and Rural Growth?* IDS Working Paper 320, Institute of Development Studies, UK.
- Davies, M Katy Oswald, K & Mitchell, T. 2009. *Climate Change Adaptation, Disaster Risk Reduction and Social Protection*. OECD.
- Davies, M., Oswald, K., & Mitchell, T. 2009. *Climate Change Adaptation, Disaster Risk Reduction and Social Protection*. OECD.
- Davis, G.F. 2006. Mechanisms and the Theory of Organisations. *Journal of Management Inquiry*, 25(2):114 - 118
- Davis, G.F., & Marquis, C. 2005. Prospects for Organisation Theory in the early twenty-first century: Institutional fields and Mechanisms. *Organisation Science*, 16(4):332–343.
- De Bruin, K. C., Dellink, R. & Tol, R. S. 2010. International cooperation on climate change adaptation from an economic perspective. ESRI working paper, No. 323, The Economic and Social Research Institute (ESRI), Dublin, available at: <http://hdl.handle.net/10419/50142>, accessed October 2015

Depaoli, P., Sorrentino, M. & De Marco, M. 2013. Taking stock of Organisation and Performance in the public sector. *Dimensions*, 1(2):185.

Department for International Development (DFID), 2005. Natural disasters and disaster risk reduction measures: A desk review of costs and benefits – Draft Final Report, DFID, London.

Department for International Development (DFID), 2004. *Disaster risk reduction: a development concern. A scoping study on the links between disaster risk reduction, poverty and development*. London: Department for International Development.

Deressa, T.T., Hassan, R.M., & Ringler C. 2011. Perception of and Adaptation to Climate Change by Farmers in the Nile basin of Ethiopia. Climate Change and Agriculture. *Journal of Agricultural Science*, 149: 23 – 31

Dewulf, A. R. P. J. 2015. Editorial: The governance of adaptation to climate change as a multi-level, multi-sector and multi-actor challenge: A European comparative perspective. *Journal of Water and Climate Change*, 6(1): 1-8.

DiMaggio, C. 2013. *Introduction*. New York: Springer.

DiMaggio, P.J., & Powell, W.W. 1983. The iron-cage revisited: institutional isomorphism and collective rationality in organisational fields. *American Sociological Review*, 38 (2):147–60.

Dixit, A., McGray, H., Gonzales, J., & Desmond, M. 2012. Ready or Not: Assessing Institutional Aspects of National Capacity for Climate Change Adaptation. World Resources Institute, Washington, DC, USA

Djalante R. & Thomalla F. 2012. Disaster risk reduction and climate change adaptation in Indonesia: Institutional challenges and opportunities for integration. *International Journal of Disaster Resilience in the Built Environment*, 3(2): 166-180

Dodman, D., & Mitlin, D. 2015. The national and local politics of climate change adaptation in Zimbabwe. *Climate and Development*, 7(3):223-234.

Doelle, M., Henschel, C., Smith, J., Tollefson, C., & Wellstead, A. 2012. New governance arrangements at the intersection of climate change and forest policy: institutional, political and regulatory dimensions. *Public Administration*, 90(1): 37-55.

Docherty, J.R., Surles, R.C. & Donovan, C.M. 2001. Organisational Theory. In Talbott J.A., & Hales R.E (eds.), *Textbook of Administrative Psychiatry: New concepts for the changing Behavioural systems*, 2nd edition", American Psychiatric Publishing Inc.

Dovers, S. R. & Hezri, A. A. 2010. Institutions and policy processes: The means to the ends of adaptation. *Wiley Interdisciplinary Reviews: Climate Change*, 1(2): 212-231.

De Vos, A.S. 2008. *Research at grass roots for the social sciences and human services professions*. 3rd ed. Pretoria: Van Schaik.

De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. 2005. *Research at grass roots: for the social sciences and human service professions*. 3rd Ed. Pretoria: Van Schaik.

Duit, A. & Galaz, V. 2008. Governance and complexity—emerging issues for governance theory. *Governance*, 21(3): 311-335.

Dutra, L. X., Bustamante, R. H., Sporne, I., van Putten, I., Dichmont, C. M., Ligtermoet, E., ... & Deng, R. A. 2015. Organisational drivers that strengthen adaptive capacity in the coastal zone of Australia. *Ocean & Coastal Management*, 109(2015): 64-76.

Economic Commission for Africa, 2006. Assessing Regional Integration in Africa II: Rationalising Regional Economic Communities, A joint publication by the Economic Commission for Africa and the African Union, Addis Ababa, Ethiopia

Economic Commission for Latin America and the Caribbean, 2000. *A Matter of Development: How to reduce Vulnerability in the face of Natural Disasters*. Document prepared for the Confronting Natural Disasters: A matter of Development Seminar held in New Orleans on 25 and 26 March 2000.

Edelman, L.B. 1990. Legal Environments and Organisational Governance: The Expansion of Due Process in the American Workplace. *American Journal of Sociology*, 95(6): 1401-1440

Eisenack, K. & Stecker, R. 2010. An action theory of adaptation to climate change. Paper presented at the 2010 Berlin Conference on the Human Dimensions on Global Environmental Change.

Emerson, K., Nabatchi, T., & Balogh, S. 2012. An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, 22(1): 1-29.

- Engelbrecht, C.J., Engelbrecht, F.A. & Dyson, L.L. 2013. High-resolution model-projected changes in mid-tropospheric closed-lows and extreme rainfall events over southern Africa. *International Journal of Climatology*, 33(1): 173-187.
- Engle, N.L. 2011. Adaptive capacity and its assessment. *Global Environmental Change*, 21(2): 647-656.
- Engle, N.L. & Lemos, M. C. 2010. Unpacking governance: building adaptive capacity to climate change of river basins in Brazil. *Global Environmental Change*, 20(1): 4-13.
- Environmental Council of Zambia (ECZ). 2008. Zambia Environment Outlook Report 3. Nordic Development Fund and World Bank.
- Eppel, E., Matheson, A. & Walton, M. 2011. Applying Complexity Theory to New Zealand Public Policy: Principles for Practice. *Policy Quarterly*, 7(1): 48 - 55
- Ericksen, S., O'Brien, K. & Rosentrater, L. 2008. *Climate change in eastern and southern Africa - impacts vulnerability and adaptation*. Global Environmental Change and Human Security, Report 2008:2
- Esmark, A. 2009. The functional differentiation of governance: Public governance beyond hierarchy, market and networks. *Public Administration*, 87(2): 351-370.
- Etzioni, A. 1964. *Modern Organisations*. Foundation of Modern Sociology Series, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.
- Fakir, E. 2009. *The impact of democracy in Botswana: Assessing political, social and economic developments since the dawn of democracy*. Centre for Policy Studies, Johannesburg.
- Fankhauser, S. 2009. A perspective paper on adaptation as a response to climate change. *Copenhagen Consensus Centre, Copenhagen Business School, Denmark*.
- Fayol, H. 1949. *General and Industrial Management*. London: Pitman.
- Feeney, M.K., & Bozeman, B. 2007. Public values and public failures: Implications of the 2004 – 2005 Flu vaccine case. *Public Integrity*, 9(2): 175 - 190
- Fernandez, S., & Rainey, H. G. 2006. Managing successful organizational change in the public sector. *Public Administration Review*, 66(2): 168-176.

Ferris, E., & Petz, D. 2013. In the Neighbourhood: The Growing Role of Regional Organisations in Disaster Risk Management, Brookings-LSE Project on Internal Displacement. Available on <http://www.brookings.edu/research/reports/2013/02/regional-organizations-disaster-risk-ferris>. accessed May 2015

Few, R., Osbahr, H., Bouwer, L., Viner, D. & Sperling, F. 2006. Linking climate change adaptation and disaster risk management for sustainable poverty reduction, Synthesis report. A study carried out for the Vulnerability and Adaptation Resource Group.

Fimreite, A.L. & Lægreid, P. 2005. Specialisation and coordination: Implications for integration and autonomy in a multi-level system, Working Paper 7, Stein Rokkan Centre for Social Studies.

Fisher, S. & Surminski, S. 2012. The roles of public and private actors in the governance of adaptation: the case of agricultural insurance in India. Centre for Climate Change Economics and Policy(CCCEP), Working Paper No. 102. CCCEP, London, UK

Flingstein, N. 2001. *Organisations: Theoretical debates and the Scope of Organisational Theory*. Paper prepared for the Handbook of Sociology edited by Calhoun, C., Rojek, C & Turner, B. (Sage Press, forthcoming). California, USA

Folke, C., Pritchard, L., Berkes, F., Colding, J. & Svedin, U. 2007. The problem of fit between ecosystems and institutions: ten years later. *Ecology and society*, 12(1): 30.

Ford, J. D., Berrang-Ford, L., Lesnikowski, A., Barrera, M. & Heymann, S.J. 2013. How to track adaptation to climate change: a typology of approaches for national-level application. *Ecology and Society*, 18(3): 40.

Ford, J.D. & King, D. 2013. A framework for examining adaptation readiness. *Mitigation and Adaptation Strategies for Global Change*, 20(4): 505-526.

Forino, G., von Meding, J. & Brewer, G. J. 2015. A Conceptual Governance Framework for Climate Change Adaptation and Disaster Risk Reduction Integration. *International Journal of Disaster Risk Science*, 6(4): 372-384.

Forino, G., von Meding, J., Brewer, G., & Gajendran, T. 2014. Disaster risk reduction and climate change adaptation policy in Australia. *Procedia Economics and Finance*, 18, 473-482.

Fottler, M.D. 1981. Is Management really generic? *The Academy of Management Review*, 6(1):1 – 12

Fountain, J. E. 2007. *Challenges to organisational change: facilitating and inhibiting information-based redesign of public organisations*. National Centre for Digital Government, Harvard University

Fumpa-Makano, R. 2011. *Forests and Climate Change: Integrating Climate Change Issues into National Forest Programmes and Policy Frameworks*. Background Paper for the National Workshop, April 27-28, 2011, Tuskers Hotel, Kabwe, Lusaka, Zambia

Funder, M., Mweemba, C.E & Nyambe, I. 2013. *The climate change agenda in Zambia National interests and the role of development cooperation*. Danish Institute for International Studies (DIIS) Working Paper 2013:13, Copenhagen, Denmark

Furedi, F. 2007. The changing meaning of disaster. *Area*, 39(4): 482-489.

Furtado, B. A., Sakowski, P. A. M. & Tóvolli, M. 2015. A Complexity Approach for Public Policies (No. 0205).

Gajda, R. 2004. Utilising collaboration theory to evaluate strategic alliances. *American Journal of Evaluation*, 25(1): 65-77.

Gajduschek, G. 2003. Bureaucracy: Is it efficient? Is it not? Is that the question? Uncertainty reduction: An ignored element of bureaucratic rationality. *Administration and Society*, 34(6):700-723

Galaskiewicz, J. 1985. Inter-organisational relations. *Annual Review of Sociology*, 281-304

Gall, M., Cutter, S.L., & Nguyen K. 2014. *Governance in Disaster Risk Management* (IRDR AIRDR Publication No. 3), Beijing: Integrated Research on Disaster Risk.

Gao, X., Song, Y. & Zhu, X. 2013. Integration and coordination: Advancing China's fragmented e-government to holistic governance. *Government Information Quarterly*, 30(2): 173-181.

Gemmill, B., & Bamidele-Izu, A. 2002. The role of NGOs and civil society. *Global Environmental Governance: Options and Opportunities*, 77-101.

Geyer, R., & Rihani, S. 2010. *Complexity and public policy: a new approach to twenty-first century politics, policy and society*. London: Routledge.

Ghaus-Pasha, A. 2005. *Role of civil society organisations in governance*. In 6th global forum on reinventing government towards participatory and transparent governance (pp. 24-27).

Global Facility for Disaster Risk Reduction (GFDRR). 2010. *Post disaster needs assessment for Kingdom of Lesotho heavy rain and flood*, November-December, 2010.

Global Facility for Disaster Reduction and Recovery (GFDRR), 2009. *Disaster risk management programmes for priority countries*. GFDRR Secretariat, Washington, DC

Gortner H.F, Mahler, J., & Nicholson J.B. 1989. *Organisation Theory: A public perspective*. Brooks/ Cole Publishing Company, Pacific Grove, California.

Government of Angola, 2012. Initial National Communication to the United Nations Framework Convention on Climate, Ministry of Environment

Government of Angola, 2011. National Adaptation Programme of Action under the United Nations Framework Convention on Climate change, Ministry of Environment, Republic of Angola.

Government of Botswana, 2013. National Disaster Risk Reduction Strategy 2013 – 2018: Beyond vulnerability and towards resilience, National Disaster Management Office, Office of the President.

Government of Botswana, 2011. National progress report on the implementation of the Hyogo Framework for Action (2009 – 2011), National Disaster Management Office, Office of the President. Available on <http://www.preventionweb.net/english/countries/africa/bwa/> accessed 03 November 2015

Government of Botswana, 2009. National Disaster Risk Management Plan, National Disaster Management Office, Office of the President.

Government of Botswana, 2009. National Disaster Risk Management Plan, National Disaster Management Office, Office of the President.

Government of the Democratic Republic of Congo, 2006. National Action Programme of Adaptation to Climate Change in the Democratic Republic of Congo, Ministry of Environment

Government of the Democratic Republic of Congo, 2012. Plan d'organisation de secours en cas de catastrophe, Plan ORSEC, Democratic Republic of Congo.

Government of the Kingdom of Swaziland, 2005. The Constitution of the Kingdom of Swaziland Act, 2005 (Act No. 001 of 2005), Mbabane, Swaziland

Government of the Kingdom of Swaziland, 2006. Disaster Management Act, 2006 (Act No. of 2006), Mbabane, Swaziland

Government of Lesotho, 2012. Kingdom of Lesotho: Poverty Reduction Strategy Paper—National Strategic Development Plan 2012/13– 2016/17, Growth and Development Strategic Framework, Ministry of Finance and Development Planning, Lesotho, Maseru

Government of Lesotho, 2001. Climate change in Lesotho: A handbook for Practitioners, Lesotho Meteorological Services

Government of Lesotho, 1997. Disaster Management Act No. 2 of 1997, Lesotho Masaru

Government of Madagascar, 2010. Madagascar Constitution of 2010. William S. Hein & Co., Inc.

Government of Malawi, 2006. Malawi's National Adaptation Programmes of Action (Napa) Under the United Nations Framework Convention on Climate Change (UNFCCC), Environmental Affairs Department, Ministry of Mines, Natural Resources and Environment

Government of Malawi, 2011. Sector policies response to climate change in Malawi: A comprehensive Gap analysis, Ministry of Finance and Development Planning, National Climate Change Programme

Government of Malawi, 2012. National Climate Change policy, Environmental Affairs Department, Ministry of Environment and Climate Change Management, Lilongwe, Malawi

Government of Malawi, 2013. Malawi Strategy on Climate Change Learning, Environmental Affairs Department, Ministry of Environment and Climate Change Management, Lilongwe, Malawi

Government of Malawi, 2015. National Disaster Risk Management Policy, Ministry of Economic Planning and Development, Lilongwe, Malawi

Government of Mauritius, 2015. National Disaster Scheme. National Disaster Risk Reduction and Management Centre, Ministry of Environment, Sustainable Development, and Disaster and Beach Management, Port-Louis, Mauritius

Government of Mozambique, 1990. Constitution of Mozambique, 1990, Maputo, Mozambique

Government of Mozambique, 2007. National adaptation Programme of Action, Ministry for Coordination of Environmental Affairs (MICOA), Maputo, Mozambique

Government of Mozambique, 2015. Mozambique Pilot Program for Climate Resilience (PPCR) Report, Climate Change Coordination Unit (UMC), National Council of Sustainable Development, Climate Change Technical Assistance Project, Maputo, Mozambique

Government of Namibia, 2012. Disaster Management Act. No 10 of 2012, Government Gazette of the Republic of Namibia, Windhoek, Namibia.

Government of Namibia, 2011b. Namibia Second National Communication to the United Nations Framework Convention on Climate Change, Ministry of Environment and Tourism, Windhoek, Namibia

Government of Namibia, 2011a. National Disaster Risk Management Plan, Office of the Prime Minister, Disaster Risk Management Directorate, Windhoek, Namibia.

Government of Namibia, 2010. National Policy on Climate Change for Namibia, Ministry of Environment and Tourism, Windhoek, Namibia.

Government of Namibia, 2009. Proposed Climate Change Strategy and Action Plan, Ministry of Environment and Tourism, Windhoek, Namibia.

Government of Namibia, 1990. The Constitution of the Republic of Namibia, Windhoek, Namibia.

Government of Seychelles, 2015. Ministry of Environment and Energy available on <http://www.env.gov.sc/index.php/homepage/the-ministry>, accessed on 12 September 2015

Government of Seychelles, 2014. Disaster Risk Management Act 2014 (Act 15 of 2014, Supplement to official Gazette, Seychelles.

Government of Seychelles, 2013. Seychelles Damage, Loss, and Needs Assessment (DaLA) 2013 Floods - A report by the Government of Seychelles, Seychelles.

Government of Seychelles, 2011. Seychelles Second National Communication to the United Nations Framework on Climate Change, Ministry of Environment, Transport and Energy, Seychelles

Government of Seychelles, 2009. Seychelles National Climate Change Strategy, The Seychelles National Climate Change Committee, Seychelles.

Government of South Africa, 2011. National Climate Change Response White Paper, Department of Environmental Affairs and Tourism, Pretoria, Republic of South Africa.

Government of South Africa, 2005. National Disaster Management Framework.

Government of South Africa, 2004. A national climate change response strategy for South Africa, Department of Environmental Affairs and Tourism, Pretoria, Republic of South Africa.

Government of South Africa, 2002. Disaster Management Act 2002 (Act 57 of 2002). Pretoria, Republic of South Africa.

Government of the United Republic of Tanzania, 2012. The National Climate Change Strategy, Division of Environment, Vice-President's Office, Tanzania.

Government of the United Republic of Tanzania, 1977. The Constitution of the United Republic of Tanzania, 1977 (as Amended), Dar es Salaam, Tanzania.

Government of the United Republic of Tanzania, 2014. The Disaster Management Act, 2014, Bill Supplement No. 5 to the Gazette of the United Republic of Tanzania No. 4 Vol. 95 31 October, 2014, Government Printer, Dar es Salaam, Tanzania.

Government of the United Republic of Tanzania, 2009. Interim national progress report on the implementation of the Hyogo Framework for Action, Disaster Focal Point, Office of the Prime Minister, Tanzania.

Government of Zambia, 2013. The National Decentralisation Policy, Office of the President, Lusaka, Zambia.

Government of Zambia, 2010. Disaster Management Act, 2010, Government Printers, Lusaka, Zambia.

Government of Zambia, 2007. Formulation of the National Adaptation Programme of Action on Climate Change, Ministry of Tourism, Environment and Natural Resources, Lusaka, Zambia.

Government of Zambia, 2005. National Disaster Management Policy, Disaster Management and Mitigation Unit, Office of the Vice President, Lusaka, Zambia.

Government of Zambia, 1996. The Constitution of Zambia Act, 18 of 1996, Government Printers, Lusaka, Zambia.

Government of Zimbabwe, 2013. Constitution of Zimbabwe Amendment (No.20) Act, 2013, Harare, Zimbabwe.

Government of Zimbabwe 2013. Zimbabwe National Climate Change Response Strategy, Ministry of Environment and Natural Resource Management, Harare, Zimbabwe.

Government of Zimbabwe, 2012. Zimbabwe National Contingency Plan, December 20120 – November 2013, Department of Civil Protection, Harare, Zimbabwe.

Gray, M & Lalljee, B. 2012. Climate change in Mauritius: Considering the role of Institutions. *Western Indian Ocean Journal of. Marine Science*, 11(1): 99-111

Gregory, D., Johnson, R., Pratt, G., Watts, M.J. & Whatmore, S. (Eds.), 2011. *The Dictionary of Human Geography*. Wiley-Blackwell, West Sussex.

Groen, E.T & Jacobs, C. 2012. *Risk Mapping Zambia: Sector Disaster Risk Reduction & Emergency Aid*. CORDAID

Groth, L. 2012. *Approaches to Organisation Theory*. University of Oslo.

Grothmann, T., Grecksch, K., Winges, M. & Siebenhüner, B. 2013. Assessing institutional capacities to adapt to climate change: integrating psychological dimensions in the Adaptive Capacity Wheel. *Natural Hazards and Earth System Science*, 13(12): 3369-3384.

Gulbrandsen, L. H., Christensen, T., Davenport, D. & Garsten, C. 2007. *Accountability Arrangements in Transnational Standards Organisations: Instrumental Design and Imitation*. Paper prepared for the Amsterdam Conference on the Human Dimensions of Global Environmental Change, 24–26 May, 2007.

Gumbo, D. 2006. *Zimbabwe Country Case Study on Domestic Policy Frameworks for Adaptation in the Water Sector*. Paper prepared for Annex I Expert Group Seminar in conjunction with the OECD Global Forum on Sustainable Development on 28 March 2006

Gupta, A.K., Nair, S.S. & Sehgal, V.K. 2009. Hydro-meteorological disasters and climate change: conceptual issues and data needs for integrating adaptation into environment - development framework. *E-Journal Earth Science India*, 2 (II): 117 – 132

Gupta, A.K. & Nair, S. 2012. *Ecosystem Approach to Disaster Risk Reduction*. National Institute of Disaster Management, New Delhi,

Gupta, J., Termeer, C., Klostermann, J., Meijerink, S., van den Brink, M., Jong, P., Nooteboom, S. & Bergsma, E. 2010. The adaptive capacity wheel: a method to assess the inherent

characteristics of institutions to enable the adaptive capacity of society. *Environmental Science & Policy*, 13(6): 459-471.

Gustavsson, E., Elander, I. & Lundmark, M. 2009. Multilevel governance, networking cities, and the geography of climate-change mitigation: two Swedish examples. *Environment and Planning. C, Government & Policy*, 27(1): 59.

Hagen, R. 2001. Socialist society and functional differentiation. *Družboslovne razprave*, 17(37–38): 29-48.

Hajer, M., & Versteeg, W. 2005. Performing governance through networks. *European Political Science*, 4(3): 340-347.

Hajer, M. 2003. Policy without polity? Policy analysis and the institutional void. *Policy sciences*, 36(2): 175-195.

Hall, P. A., & Taylor, R. C. 1996. Political science and the three new institutionalisms, *Political Studies*, 44(5): 936-957

Handmer, J., Mustelin, J. Belzer, D., Dalesa, M. Edwards, J., Farmer, N., Foster, H. Greimel, B., Harper, M., Kauhiona, H., Pearce, S., Yates, L., Vines, K., & Welegtabit, S. 2014. *Integrated Adaptation and Disaster Risk Reduction in Practice. A Roundtable report*. RMIT University, Griffith University and the National Climate Change. Adaptation Research Facility, Brisbane, Australia.

Hannigan, J. 2012. *Disasters Without Borders: The International Politics of Natural Disasters*. 1st edition, Polity Press, Cambridge, UK

Hassan, R., 2010. The Double challenge of adaptation to climate change while accelerating development in sub-Saharan Africa. *Environment and Development Economics* 15: 661 – 685

Hansford, B., 2011. *Reducing risk of Disasters in our community*. Second edition of ROOTS 9, Tearfund. UK

Hanssen, G. S., Mydske, P. K. & Dahle, E. 2013. Multi-level coordination of climate change adaptation: by national hierarchical steering or by regional network governance? *Local Environment*, 18(8): 869-887.

- Hardy, C. & Phillips, N. 1998. Strategies of engagement: Lessons from the critical examination of collaboration and conflict in an inter-organisational domain. *Organisation Science*, 9(2): 217-230.
- Harman, G. & Harman, K. 2003. Institutional mergers in higher education: Lessons from international experience. *Tertiary Education and Management*, 9(1): 29-44.
- Harris, K., & Bahadur, A. 2011. *Harnessing synergies: mainstreaming climate change adaptation in disaster risk reduction programmes and policies*. Institute of Development Studies
- Hartzenberg, T. 2011. *Regional Integration in Africa, Trade Law Centre for Southern Africa (tralac)*. Staff Working Paper ERSD-2011-14, World Trade Organization, Economic Research and Statistics Division
- Hasan, H. 2014. Applying principles of Complexity Theory in practice. In H. Hasan (Eds.), *Being Practical with Theory: A Window into Business Research* (pp. 148-150). Wollongong, Australia.
- Hatch, M.J. & Cunliffe, A. L. 2012. *Organisation theory: modern, symbolic and postmodern perspectives*. Oxford University Press.
- Hatfield-Dodds, S., Nelson, R., & Cook, D. C. 2007. *Adaptive governance: An introduction, and implications for public policy*. In ANZSEE Conference, Noosan, Australia”.
- Hay, J.E. 2009. *Institutional and Policy Analysis of Disaster Risk Reduction and Climate Change Adaptation in Pacific Island Countries*. Final Report prepared for the United Nations International System for Disaster Reduction and the United Nations Development Programme
- Haynes, P. 2008. Complexity theory and evaluation in public management: A qualitative systems approach. *Public Management Review*, 10(3): 401-419.
- Heazle, M., Tangney, P., Burton, P., Howes, M., Grant-Smith, D., Reis, K. & Bosomworth, K. 2013. Mainstreaming climate change adaptation: An incremental approach to disaster risk management in Australia. *Environmental Science & Policy*, 33: 162-170.
- Heijmans, A. 2013. The everyday politics of disaster risk reduction in Central Java, Indonesia. *Disaster, Conflict and Society in Crises: Everyday Politics of Crisis Response*, (2013): 223.
- Heijmans, A. 2001. *Vulnerability: A Matter of Perception*. Benfield Grieg Hazard Research Centre, University College of London

- Helgeson, J. & Ellis, J. 2015. *The Role of the 2015 Agreement in Enhancing Adaptation to Climate Change*. Climate Change Expert Group No. 2015(1), OECD.
- Hilhorst, D. (ed.) 2013. *Disasters, conflict and society in crisis: everyday politics of crisis response*. Routledge Humanitarian Studies, Routledge, London.
- Hill, M. 2013. A Starting Point: Understanding Governance, Good Governance and Water Governance. In *Climate Change and Water Governance* (pp. 17-28). Springer Netherlands.
- Hill, M., & Engle, N. L. 2013. Adaptive capacity: tensions across scales. *Environmental Policy and Governance*, 23(3): 177-192.
- Hill, C., & Lynn, L. 2003. Producing human services. Why do agencies collaborate? *Public Management Review*, 5(1): 63-81.
- Hissom, A. 2009. Introduction to management technology. Kent state University
- Hodgson, G.M. 2006. What Are Institutions? *Journal Of Economic Issues*, XI(1):1 - 25
- Hodgson, E., & Rose, R. L. 2005. Human metabolism and metabolic interactions of deployment-related chemicals, *Drug Metabolism Reviews*, 37(1): 1-39.
- Hoffman, S.M., & Oliver-Smith, A. 2002. *Catastrophe & Culture: The Anthropology of Disaster*. First edition, School for Advanced Press seminar series, Santa Fe, New Mexico.
- Holloway, A. 2009. *Disaster risk in Africa: Dynamic discourse or dysfunctional dialogue?* Paper presented at Conference on Conceptualisation of Risk in Africa, University of Bayreuth, November 2008, and forthcoming publication 2009, accessed 21 October 2009, <http://www.h-net.org/announce/show.cgi?ID=162295>
- Holloway, A. 2003. Disaster risk reduction in southern Africa: Hot rhetoric—cold reality. *African Security Studies*, 12(1): 29-38.
- Homer-Dixon, T. 2010. *Complexity science and public policy*. Manion Lecture. National Arts Centre, Ottawa.
- Hooghe, L. & Marks, G 2003. Unravelling the central state, but how? Types of multi-level governance. *American Political Science Review*, 97(02): 233-243.
- Hooghe, L. & Marks, G. 2001. Types of multi-level governance. *European Integration Online Papers*, 5(11).

- Hord, S. M. 1986. A synthesis of research on organisational collaboration. *Educational Leadership*, 43(5): 22-26.
- Hori, T. 2015. Elements to enhance private sector engagement in disaster risk reduction in Central America. In Izumi, T., & Shaw, R. (eds.), *Disaster Management and Private Sectors: Challenges and Potentials*. Springer: Japan.
- Hori, T. & Shaw, R. 2011. Opportunities and Challenges of Incorporating Climate Change Threats into Disaster Risk Management Planning: A Case Study in Costa Rica. *Risk, Hazards & Crisis in Public Policy*, 2(2): Article 3.
- Hosny, A. S. 2013. Theories of Economic Integration: A Survey of the Economic and Political Literature. *International Journal of Economy, Management and Social Sciences*, 2(5): 133-155.
- Hove, H., Echeverría, D. & Parr, J. 2011. *Review of Current and planned adaptation action: Southern Africa – Botswana, Comoros, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia and Zimbabwe*. Adaptation Partnership, International Institute for Sustainable Development
- Hovik, S. & Hanssen, G. S. 2014. The impact of network management and complexity on multi-level coordination. *Public Administration*, 93(2): 506-523.
- Hovik, S., Naustdalslid, J., Reitan, M. & Muthanna, T. 2015. Adaptation to climate change: professional networks and reinforcing institutional environments. *Environment and Planning C: Government and Policy*, 33(1): 104-117.
- Howes, M., Grant-Smith, D., Reis, K., Bosomworth, K., Tangney, P., Heazle, M., Mcevoy, D. & Burton, P. 2013. *Rethinking disaster risk management and climate change adaptation*. National Climate Change Adaptation Research Facility, Gold Coast, pp. 63.
- Howes, M., Grant-Smith, D., Reis, K., Tangney, P., Bosomworth, K., Heazle, M., Mcevoy, D. & Burton, P. 2012. *The challenge of integrating climate change adaptation and disaster risk management - Lessons from bushfire and flood inquiries in an Australian context*. Urban Research Program, Issues Paper 17
- Howes, M., Tangney, P., Reis, K., Grant-Smith, D., Heazle, M., Bosomworth, K. & Burton, P. 2015. Towards networked governance: Improving interagency communication and collaboration for disaster risk management and climate change adaptation in Australia. *Journal of Environmental Planning and Management*, 58(5):757-776.

Huberman, B.A. & Glance, N.S. 1993. Evolutionary games and computer simulations. *Proceedings of the National Academy of Sciences*, 90(16): 7716-7718.

Hulthen, H. 2013. *A model of contextual factors and inter-organisational integration: A grounded theory study of two supply chains*. Lund University, Sweden

Huntjens, P., Lebel, L., Pahl-Wostl, C., Camkin, J., Schulze, R. & Kranz, N. 2012. Institutional design propositions for the governance of adaptation to climate change in the water sector. *Global Environmental Change*, 22(1): 67-81.

Huq, S & Reid, H. 2005. *Climate Change and Development Consultation on Key Researchable Issues*. Workshop Report: 22 - 23 April 2005 in Hotel Al Hafifa. International Institute for Environment and Development, UK.

Huxham, C. & Vangen, S. 2000. Leadership in the shaping and implementation of collaboration agendas: How things happen in a (not quite) joined-up world. *Academy of Management Journal*, 43(6): 1159-1175.

IDGEC, 1999. *Institutional Dimensions of Global Environmental Change*. IHDP Report No.9: Bonn.

INGC. 2009. *Synthesis report. INGC Climate Change Report: Study on the impact of climate change on disaster risk in Mozambique*. [van Logchem B and Brito R (ed.)]. INGC, Mozambique.

INGC and UNDP, 2010. *Disaster Risk Assessment in Mozambique: A Comprehensive Country Situation Analysis. Global Risk Identification Programme (GRIP)*. Bureau for Crisis Prevention and Recovery (BCPR). United Nations Development Programme (UNDP), Geneva, Switzerland

International Displacement Monitoring Centre (IDMC). 2015. *Global Estimates 2015 – People displaced by disasters*. International Displacement Monitoring Centre (IDMC), Norwegian Refugee Council, Geneva

International Federation of Red Cross and Red Crescent Societies (IFRC), 2015. *International Disaster Response Law (IDRL) in Malawi: A study on legal preparedness for regulatory issues in international disaster response*. IFRC, Geneva, Switzerland

International Federation of Red Cross and Red Crescent Societies, 2013. *International Disaster Response Law (IDRL) in Botswana: A study on legal preparedness for facilitating and regulating*

international disaster assistance. Botswana Red Cross Society and the International Federation of Red Cross and Red Crescent Societies, Geneva.

International Federation of Red Cross and Red Crescent Societies, 2012. *International Disaster Response Law (IDRL) in Mozambique: An analysis of the legal preparedness of Mozambique for facilitating and regulating international disaster response operations*. IFRC, Geneva, Switzerland

International Federation of Red Cross and Red Crescent Societies, 2007. *The Global Alliance for Disaster Risk Reduction: Building safer, resilient communities*. Geneva, Switzerland

International Federation of Red Cross and Red Crescent Societies (IFRC), 2002. *Bridging the gap: integrating climate change and disaster risk reduction*. Geneva, Switzerland

International Risk Governance Council (IRGC), 2005. IRGC White Paper No 1. *Risk Governance – Towards an Integrative Approach*. IRGC, Geneva, 2005.

International Training Centre of the ILO. 2006. *Disaster risk reduction: a call to action. Prepared with the international recovery platform (IRP) and UNISDR*. Issue No.3. Geneva, Switzerland

Immergut, E. M. 1998. The theoretical core of the new institutionalism, *Politics and Society*, 26(1998): 5-34

Inter-governmental Panel on Climate Change (IPCC), 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp

Inter-governmental Panel on Climate Change (IPCC), 2012: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor & P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.

Ishiwatari, M. 2013. *Disaster Risk Management at the National Level* (No. 448). Asian Development Bank Institute.

The World Conservation Union (IUCN) and International Institute for Sustainable Development, 2001. *Climate Change, Vulnerable Communities and Adaptation Task Force*. Report of the First Meeting, Gland, Switzerland

Ivanko, S. 2013. *Modern theory of organisation*. Faculty of Public Administration, University of Ljubljana.

Izumi, T. & Shaw, R. (Eds.) 2015. Overview and Introduction of the Private Sector's Role in Disaster Management. In Izumi, T., & Shaw, R. (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials*. Springer, Japan.

Jeggle, T. 2001. The Evolution of Disaster Reduction as an international strategy: Policy Implications for the future. In Rosenthal, U., Boin, R.A. & Comfort, L.K. 2001. *Managing Crises: Threats, Dilemmas, and Opportunities*. Illinois: Charles C Thomas Publishers.

Jennings Jr, E.T. & Ewalt, J.A.G. 1998. Inter-organisational coordination, administrative consolidation, and policy performance. *Public Administration Review*, 417-428.

Jennings Jr, E.T. & Krane, D. 1994. Coordination and welfare reform: The quest for the philosopher's stone. *Public Administration Review*, 341-348.

Jick, T.D. 1979. Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 602-611.

Johnson, D.A.K., & Abe, Y. 2015. Global overview on the role of private sector in disaster risk reduction: scopes, challenges and potentials. In Izumi, T. & Shaw, R. (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials*. Springer, Japan.

Johnson, R.B. & Onwuegbuzie, A. J. 2004. Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7): 14-26.

Johnson, R.B., Onwuegbuzie, A. J. & Turner, L.A. 2007. Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2):112-133.

Jones, S., Oven, K. J., Manyena, B. & Aryal, K. 2014. Governance struggles and policy processes in disaster risk reduction: A case study from Nepal. *Geoforum*, 57(2014):78-90.

Jordan, A., & Lenschow, A. 2008. Environmental policy integration: an innovation in environmental policy? *Innovation in Environmental Policy: Integrating the Environment for Sustainability*, 313.

- Juhola, S., Haanpää, S. & Peltonen, L. 2012. Regional challenges of climate change adaptation in Finland: examining the ability to adapt in the absence of national level steering. *Local Environment*, 17(6-7): 629-639.
- Kahn, M. E. 2005. The death toll from natural disasters: the role of income, geography, and institutions. *Review of Economics and Statistics*, 87(2): 271-284.
- Kaiser, F. M. 2011. *Interagency collaborative arrangements and activities: Types, rationales, considerations*. Arthur D. Simons Center for the Study of Interagency Cooperation.
- Kalenga, 2012. *Regional integration in SADC: retreating or forging ahead?* TRALAC Working Paper, D12WP08/2012. Stellenbosch: Trade Law Centre (TRALAC), South Africa.
- Kapucu, N. 2005. Inter-organisational coordination in dynamic context: Networks in emergency response management. *Connections*, 26(2), 33-48.
- Kapucu, N., Arslan, T. & Collins, M. L. 2010. Examining intergovernmental and inter-organisational response to catastrophic disasters: Toward a network-centred approach. *Administration & Society*.
- Kast, F.E. & Rosenzweig, J.E. 1972. General systems theory: Applications for organisation and management. *Academy of Management Journal*, 15(4): 447-465.
- Kato, T., Ellis, J., & Clapp, C. 2014. *The Role of the 2015 Agreement in Mobilising Climate Finance*. Climate Change Expert Group No. 2015(7), OECD.
- Katz, D. & Kahn, R.L. 1966. *The Social Psychology of Organisations*. New York: Wiley.
- Keast, R. & Mandell, M. 2014. The collaborative push: moving beyond rhetoric and gaining evidence. *Journal of Management & Governance*, 18(1):9-28.
- Keast, R., Brown, K. & Mandell, M. 2007. Getting the right mix: Unpacking integration meanings and strategies. *International Public Management Journal*, 10(1):9-33.
- Keast, R.L., Glasby, J. & Brown, K.A. 2009. Inter-agency working: good intentions and interaction dynamics. In *13th International Research Society for Public Management Conference (IRSPM XIII)*, 6–8 April 2009, Copenhagen Business School, Fredericksberg.
- Keating, A., Campbell, K., Mechler, R., Michel-Kerjan, E., Mochizuki, J., Kunreuther, H., Bayer, J., Hanger, S., McCallum, I., See, L., Williges, K., Atreya, A., Botzen, W., Collier, B., Czajkowski,

- J., Hochrainer, S. & Egan, C. 2014. *Operationalising Resilience against Natural Disaster Risk: Opportunities, Barriers and A Way Forward*. Zurich Flood Resilience Alliance.
- Kellett, J., & Mitchell, T. (Eds.) 2014. *The future framework for disaster risk reduction A guide for decision-makers*. Overseas Development Institute and Climate and Development Knowledge Network,
- Kellett, J. & Sparks, D. 2012. *Disaster Risk Reduction: Spending where it should count*. Version 1, Global Trends.
- Kelman, I., Gaillard, J. C., & Mercer, J. 2015. Climate change's role in disaster risk reduction's future: Beyond vulnerability and resilience. *International Journal of Disaster Risk Science*, 6(1): 21-27
- Kengoum F. 2015. *Adaptation policies and synergies with REDD+ in Democratic Republic of Congo: Context, challenges and perspectives*. Occasional Paper 135. Bogor, Indonesia: CIFOR.
- Keskitalo, C., Juhola, S., Westerhoff, L., Scholten, P. & Ashgate, L. 2013. Connecting multiple levels of governance for adaptation to climate change in advanced industrial states. *Water Governance as Connective Capacity*, Ashgate, Farnham, Surrey, 69-88.
- Khan, M. R., & Roberts, J. T. 2013. Adaptation and international climate policy. *Wiley Interdisciplinary Reviews: Climate Change*, 4(3): 171-189.
- Klijn, E.H. 2008. Complexity theory and public administration: What's new? Key concepts in complexity theory compared to their counterparts in public administration research. *Public Management Review*, 10(3): 299-317.
- Kooiman, J. (Ed.). 2003. *Governing as governance*. Thousand Oaks, CA.: Sage.
- Koppenjan, J., & Klijn, E.H. 2013. What can governance theory learn from complexity theory? Mirroring two perspectives. In *Keast, R., Mandell, M.P., & Agranoff, R. (Eds.) Network Theory in the Public Sector: Building New Theoretical Frameworks*. New York: Routledge, 2013 (pp. 187–206).
- Kravets, J. & Zimmermann, K. 2012. Inter-organisational Information Alignment: A conceptual model of structure and governance for cooperation. Americas Conference on Information Systems (AMCIS) 2012 Proceedings. Paper 6, available on <http://aisel.aisnet.org/amcis2012/proceedings/IssuesInIS/6>, accessed March 2014

Kunguma, O & Ncube, A. 2016. Combating HIV and/or AIDS: A challenge to Millennium Development Goals for disaster managers in the Southern African Development Community. *Jàmbá: Journal of Disaster Risk Studies*, 8(2), Art. #173: 10

Kuska, G.F. 2005. *Collaboration towards a more integrated National Ocean Policy: Assessment of Several US Federal Interagency coordination groups*. PhD.-Dissertation, University of Delaware.

Kunreuther H. 2001. Incentives for mitigation investment and more effective risk management: the need for public–private partnerships. *Journal of Hazard Matters*, 86(1–3): 171–185.

Lægreid, P. & Rykkja, L.H. 2014. Governance for complexity–how to organise for the handling of wicked issues. Uni. Research Rokkan Centre, Working paper 7-2014, The Stein Rokkan Centre for Social Studies, Bergen, Norway.

Laitinen, P. 2014. Disasters in North Kivu Province, Democratic Republic of Congo. *Emergency and Disaster Reports*, 1(4):1-52.

Lal, P.N., Mitchell, T., Aldunce, P., Auld, H., Mechler, R., Miyan, A., Romano, L.E., & Zakaria, S. 2012. “National systems for managing the risks from climate extremes and disasters”. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, & P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 339-392.

Lasco, R.D., & Delfino R.J.P. 2010. *Institutional and Policy landscapes of Disaster Risk Reduction and Climate Change Adaptation in Asia and the Pacific: Philippines*. A joint Project of the World Agroforestry Centre (ICRAF) Philippines and United Nations International Strategy for Disaster Risk Reduction (UNISDR).

Lassa, J.A. 2011. *Institutional Vulnerability and Governance of Disaster Risk Reduction: Macro-, Meso-and Micro Scale Assessment*. PhD dissertation, Universitäts-und Landesbibliothek Bonn, 2011

Lassa, J. A. 2009. *Understanding Polycentric Governance of Disaster Risk Reduction: An Introduction to a New Analytical Framework*. United Nations University Institute for Environment and Human Security, Bonn, Germany.

Lassa, J. A., Li, D. E., Rohi, R. & Sura, Y. B. 2013. Civil Society Roles in Governing Disaster Reduction at National and Local Levels in Indonesia. IRGSC Working Paper No. 6, available on <http://www.irgsc.org/pubs/wp.html>, accessed on April 2015

Latin American and Caribbean Economic System (SELA), 2011. *Guidelines for cooperation between governments and the private sector for disaster risk reduction: Approaches, achievements and challenges*. SP Di No. 17-11. Secretariat of SELA, Caracas, Venezuela.

La Trobe, S. & Faleiro, J. 2007. *Why advocate for disaster risk reduction*, TEARFUND, UK

Lavell, A. 2010. *Unpacking Climate Change Adaptation and Disaster Risk Management: Searching for the Links and the Differences: A Conceptual and Epistemological Critique and Proposal*. IUCN-FLACSO, International Union for Conservation of Nature - Latin American School of Social Sciences.

Lavell, A., Oppenheimer, M., Diop, C., Hess, J., Lempert, R., Li, J., Muir-Wood, R., & Myeong, S. 2012. *Climate change: new dimensions in disaster risk, exposure, vulnerability, and resilience*. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L., & Ebi, M.D.

Lawrence, P.R., & Lorsch, J.W. 1967. Differentiation and integration in complex organisations. *Administrative Science Quarterly* 12(1): 1 - 47

Lebel, L., Manuta, J. B., & Garden, P. 2011. Institutional traps and vulnerability to changes in climate and flood regimes in Thailand. *Regional Environmental Change*, 11(1): 45-58.

Lebel, L., Sinh, B., Garden, P., Hien, B., Subsin, N., Tuan, L., & Vinh, N. 2009. Risk reduction or redistribution? Flood management in the Mekong region. *Asian Journal of Environment and Disaster Management*, 1(1): 25-41.

Lebel, L., Anderies, J. M., Campbell, B., Folke, C., Hatfield-Dodds, S., Hughes, T. P., & Wilson, J. 2006. *Governance and the capacity to manage resilience in regional social-ecological systems*, Marine Sciences Faculty Scholarship. Paper 52. Available on http://digitalcommons.library.umaine.edu/sms_facpub/52

Leftwich, A. 2007. The political approach to institutional formation, maintenance and change: a literature review essay. Governance and Social Development Research Centre. Oxford Road: School of Environment & Development, University of Manchester, UK

Leftwich, A. 2006. What are institutions? *IPPG briefing paper*, 1.

Leftwich, A., & Sen, K. 2011. "Don't mourn; organise" institutions and organisations in the politics and economics of growth and poverty-reduction. *Journal of international Development*, 23(3): 319-337.

Leftwich A. & Sen, K. 2010. Beyond Institutions. Institutions and organisations in the politics and economics of poverty reduction: a thematic synthesis of research evidence. Research Programme Consortium on Improving Institutions for Pro-Poor Growth (IPPG). Available on: <http://www.ippg.org.uk/publications.html>, accessed November 2014.

Lemos, M. C., Agrawal, A., Eakin, H., Nelson, D. R., Engle, N. L. & Johns, O. 2013. *Building adaptive capacity to climate change in less developed countries*. Climate Science for Serving Society (pp. 437-457). Springer, Netherlands.

Leshaba, M. 2002. A critical analysis of Africa's efforts at regional integration. Policy brief 30. Centre for Policy Studies, Johannesburg.

Lesnikowski, A.C., Ford, J. D., Berrang-Ford, L., Barrera, M., Berry, P., Henderson, J., & Heymann, S. J. 2013. National-level factors affecting planned, public adaptation to health impacts of climate change. *Global Environmental Change*, 23(5): 1153-1163.

Lesotho Meteorological Services, 2001. *Climate change in Lesotho: A handbook for Practitioners*, Ministry of Natural Resources. Maseru.

Lesotho Office of the Auditor General, 2010. Performance audit report on awareness on disaster preparedness by disaster management authority within the Office of the Prime Minister, Office of the Auditor General, Lesotho, Maseru

Levchuk, G.M., Meirina, C., Levchuk, Y.N., Pattipati, K.R., & Kleinman, D.L. 2001. *Design and Analysis of Robust and Adaptive Organisations*. Command and Control Research and Technology Symposium (A2C2 session), June-July, Annapolis, MD.

Levy, D. L. 2000. Applications and limitations of complexity theory in organisation theory and strategy. *Public Administration and Public Policy*, 79(2000): 67-88.

Lewin, R., Parker, T. & Regine, B. 1998. Complexity theory and the organisation: Beyond the metaphor. *Complexity*, 3(4): 36-40.

Li, J., & Ye, T. 2012. Fragmented government: theories and facts in China, available on http://ted-dialogues.org/wp-content/uploads/2012/01/Li_paper.pdf, accessed 13 July 2014.

- Lian, K. K., & Bhullar, L. 2011. Governance on Adaptation to Climate Change in the ASEAN Region. *Carbon & Climate L. Rev.*, 82.
- Lim, W. K. 2011. Understanding risk governance: Introducing sociological neoinstitutionalism and foucauldian governmentality for further theorising. *International journal of disaster risk science*, 2(3): 11-20
- Llosa, S. & Zodrow I, 2011. *Disaster risk reduction legislation as a basis for effective adaptation. Global Assessment Report on Disaster Risk reduction*. United Nations. Geneva, Switzerland
- Lockwood, M., Raymond, C. M., Oczkowski, E., & Morrison, M. 2015. Measuring the dimensions of adaptive capacity: a psychometric approach. *Ecology and Society*, 20(1): 37.
- Longhi, S., & Nijkamp, P. 2007. *Economic Integration and Labour Markets: Ways Forward*. In *Regionalisation, Growth, and Economic Integration* (pp. 3-23). Physica-Verlag HD.
- Lorenz, S., Dessai, S., Forster, P. M., & Paavola, J. 2015. Adaptation planning and the use of climate change projections in Local Government in England and Germany. Sustainability Research Institute (SRI) papers, School of Earth and Environment, The University of Leeds, Leeds, UK.
- Love, P. E., Irani, Z., Cheng, E. and Li, H. (2002). A model for supporting inter-organizational relations in the supply chain. *Engineering Construction and Architectural Management*, 9(1): 2-15.
- Lubell, M. 2015. Collaborative partnerships in complex institutional systems. *Current Opinion in Environmental Sustainability*, 12(2015): 41-47.
- Lukamba, M.T. 2010. Natural disasters in African countries: what can we learn about them? *The Journal for Trans-disciplinary Research in Southern Africa*, 6(2): 478 – 495
- Lundin, M. 2007. Explaining cooperation: How resource interdependence, goal congruence, and trust affect joint actions in policy implementation. *Journal of Public Administration Research and Theory*, 17(4): 651-672.
- Lunduka, R.W., Phiri, M.A. R., Kambani, C. & Boyer C. 2010. *Malawi disaster risk reduction and climate adaptation research for CORDAID*. Final Report, Episcopal Conference of Malawi, Lilongwe.

Luu, D.N. 2012. *Background Report Law and Regulation for the Reduction of Risk from Natural Disasters in Namibia: A National Law Desk Survey, Disaster Law Programme*. International Federation of Red Cross and Red Crescent Societies (IFRC), Geneva, Switzerland

Maguire, S. & McKelvey, B. (1999). Complexity and management: Moving from fad to firm foundations. *Emergence*, 1(2), 19-61.

Mahmood, Z., Basharat, M. & Bashir, Z. 2012. Review of Classical Management Theories, *International Journal of Social Science and Education* 2(1): 512 - 522

Makumbe, J. 2009. *The impact of democracy in Zimbabwe: Assessing political, social and economic developments since the dawn of democracy*. Research Report 119, Centre for Policy Studies, Johannesburg, South Africa

Majam, T. & Theron, F. 2006. The purpose and relevance of scientific literature review: A holistic approach to research. *Journal of Public Administration* 41 (3.1).

Manson, S. M. 2001. Simplifying complexity: a review of complexity theory. *Geoforum*, 32(3): 405-414.

Manyatsi, A.M. & Mhazo, N. 2014. *A Comprehensive Scoping and Assessment Study of Climate Smart Agriculture (CSA) Policies in Swaziland*. A study commissioned by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN)

Manyena S.B. 2013. Subregional assessment on mainstreaming and implementing disaster risk reduction measures in Southern Africa, UNECA, SADC and UNISDR.

Manyena, S. B., Mavhura, E., Muzenda, C., & Mabaso, E. 2013. Disaster risk reduction legislations: Is there a move from events to processes? *Global Environmental Change*, 23(6): 1786-1794.

Mapuva, J. & Muyengwa-Mapuva, L. 2014. The SADC regional bloc: What challenges and prospects for regional integration? *Law, Democracy and Development*, 18: 22-36.

Maria, P.K., Catrin, P & Thomas, G. 2016. A Common Methodology for Risk Assessment and Mapping of Climate Change Related Hazards—Implications for Climate Change Adaptation Policies. *Climate* 4(1): 8.

- March, J. G., & Simon, H. A. 1958. *Organisations*. New York: John Wiley & Sons, Inc., Pp. 262.
- March, J., Friedberg, E., & Arello, D. 2011. Institutions and Organisations: Differences and Linkages from Organisation Theory. *Gestiony Politica Publica*, 20(2): 235 – 246
- Maripe & Maundeni, 2009. Natural Disasters and Development in Botswana: What can communities do to cushion themselves against the adverse effects of floods? University of Botswana. Available on: http://www.preventionweb.net/files/10643_MaripeandMaundenispaper.pdf, accessed November 2015
- Marks, G., Hooghe, L., & Blank, K. 1996. European Integration from the 1980s: State-Centric v. Multi-level Governance. *Journal of Common Market Studies*, 34(3):341-378.
- Markus, M. L., & Bui, Q. N. 2011. Governing Public Sector Inter-organisational Network Infrastructures-The Importance of Formal and Legal Arrangements. In *System Sciences (HICSS), 2011 44th Hawaii International Conference on* (pp. 1-10). IEEE.
- Maskrey, A. 1989. *Disaster Mitigation: A Community-based Approach*. Oxfam, Oxford.
- Massey, E. & Huitema, D. 2013. The emergence of climate change adaptation as a policy field: the case of England. *Regional Environmental Change*, 13(2):341-352.
- Matczak, P., Flachner, Z., & Werners, S. E. 2008. Institutions for adapting to climate change in the Tisza river basin. *Klima-21 Fuzetek, Klimavaltozas-Hatasok-Valasztok*, 55(1): 87-100.
- Mauritius Oceanography Institute (MOI) 2016. Tsunami Preparedness Map. Available on http://moi.govmu.org/research_projects.htm accessed 19 January 2016
- May, P.J. 1995. Can cooperation be mandated? Implementing intergovernmental environmental management in New South Wales and New Zealand. *Publius: The Journal of Federalism*, 25(1): 89-114.
- McAuley, J., Duberley, J. & Johnson, P. 2007. *Organisation Theory: Challenges and Perspectives*. London: Pearson Education Limited.
- Mcbean, G. & Ajibade, I. 2009. Climate change, related hazards and human settlements. *Current Opinion in Environmental Sustainability* 2009, 1:179–186
- McCarthy C. 2014. *Industrial policy in Southern Africa regional integration and development*. TRALAC Working Paper No. S14WP02/2014, Stellenbosch: TRALAC

McDonald, M., & Rosier, K. 2011. *Interagency collaboration: What is it, what does it look like, when is it needed and what supports it*. Australian Institute of Family Studies, Melbourne, Commonwealth of Australia.

McKelvey, B. 1999. Complexity theory in organisation science: Seizing the promise or becoming a fad? *Emergence*, 1(1): 5-32.

McNamara, M. 2012. Starting to untangle the web of cooperation, coordination, and collaboration: A framework for public managers. *International Journal of Public Administration*, 35(6): 389-401.

Meadowcroft, J. 2009. *Climate Change Governance, Background Paper to the 2010 World Development Report*. Policy Research Working Paper 4941, World Bank

Measham, T. G., Preston, B. L., Smith, T. F., Brooke, C., Gorddard, R., Withycombe, G. & Morrison, C. 2011. Adapting to climate change through local municipal planning: barriers and challenges. *Mitigation and Adaptation Strategies for Global Change*, 16(8): 889-909.

Mees, H. L., Driessen, P. P. & Runhaar, H.A. 2012. Exploring the scope of public and private responsibilities for climate adaptation. *Journal of Environmental Policy & Planning*, 14(3): 305-330.

Menard, C., & Shirley, M.M. (Eds.) 2008. *Handbook of New Institutional Economics*, 1st Edition. Springer-Verlag Berlin Heidelberg.

Meijerink, S., & Stiller, S. 2013. What kind of leadership do we need for climate adaptation? A framework for analysing leadership objectives, functions, and tasks in climate change adaptation. *Environment and Planning C: Government and Policy*, 31(2): 240-56.

Meijers, E. & Stead, D. 2004. *Policy integration: what does it mean and how can it be achieved?* A multi-disciplinary review. In Berlin Conference on the Human Dimensions of Global Environmental Change: Greening of Policies-Interlinkages and Policy Integration. Berlin.

Mele, C., Pels, J. & Polese, F. 2010. A brief review of systems theories and their managerial applications. *Service Science*, 2(1-2): 126-135.

Mendelsohn, R. 2006. The role of markets and governments in helping society adapt to a changing climate. *Climatic change*, 78(1): 203-215.

- Meneses, M.P & Santos, B.S. 2009. Mozambique: The rise of a Micro Dual State. *African Development*, XXXIV (3 & 4): 129 - 166
- Mendelsohn, R., Dinar, A. & Williams, L. 2006. The distributional impact of climate change on rich and poor countries. *Environment and Development Economics* 11: 159–178
- Mercer, J. 2010. Disaster risk reduction or climate change adaptation: Are we reinventing the wheel? *Journal of international Development* 22 (2010): 247 – 264
- Meyer, J.W. 2008. Reflections on Institutional Theories of Organisations. In Greenwood, R., Oliver, C., Sahlin, K. & Suddaby, R. (eds.), *Handbook of Organisational Institutionalism*. Thousand Oaks: Sage.
- Meyer, J.W., & Rowan B. 1977. Institutionalised Organisations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*, 83(2):340-363.
- Midgley, G.F., Chapman, R.A., Hewitson, B., Johnston, P., De Wit, M., Ziervogel, G., Mukheibir, P., Van Niekerk, L., Tadross, M., Van Wilgen, B.W., Kgope, B., Morant, P.D., Theron, A., Scholes, R.J. & Forsyth, G.G. 2005. *A Status Quo, Vulnerability and Adaptation Assessment of the Physical and Socio-economic Effects of Climate Change in the Western Cape*. Report to the Western Cape Government, Cape Town. CSIR Report No. ENV-S-C 2005-073. Council for Scientific and Industrial Research, Stellenbosch
- Miles, R.E., Snow, C.C., Meyer, A.D. & Coleman, H.J. 1978. Organisational strategy, structure, and process. *Academy of Management Review*, 3(3): 546-562.
- Mitchell, T., Guha-Sapir, D., Hall, J., Lovell, E., Muir-Wood, R., Norris, A., Scott, L., & Wallemacq, P. 2014. *Setting, Measuring and Monitoring Targets for Disaster Risk Reduction: Recommendations for post-2015 international policy frameworks*. ODI.
- Mitleton-Kelly, E. 1998. Organisations as complex evolving systems. In *OACES Conference, Warwick* (pp. 4-5).
- Mirza, M.M.Q. 2003. Climate change and extreme weather events: Can developing countries adapt? *Climate Policy*, 233–248.
- Mitchell, T., Ibrahim, M., Harris, K., Hedger, M., Polack, E., Ahmed, A., Hall, N., Hawrylyshyn, K., Nightingale, K. Onyango, M., Adow, M. & Mohammed, S. 2010. *Climate Smart Disaster Risk Management, Strengthening Climate Resilience*. Brighton: IDS.

Mitchell, T., & Van Aalst, M. 2008. *Convergence of disaster risk reduction and climate change adaptation*. Sussex, UK: Institute of Development Studies, University of Sussex.

Mitchell, T. Van Aalst, M., & Villanueva, P.S. 2010. *Assessing progress on integrating disaster risk reduction and climate change adaptation in development processes, Strengthening Climate resilience*. Discussion Paper 2, IDS, UK.

Moe, T. M. 2005. Power and political institutions. *Perspectives on Politics*, 3(2): 215-233.

Moe, T.M. 1994. Integrating Politics and Organisations: Positive Theory and Public Administration. *Journal of Public Administration Research and Theory*: 4(1):17 – 25.

Morgan, G. 1990. *Organisations in Society*. London: McMillan Press.

Morse, J. 2010. Procedure and practice of mixed methods research design: maintaining control, rigor and complexity. In Tashakkori, A & Teddlie, C (eds.). 2010. *SAGE Handbook of Mixed Methods in social science and behaviour*, 2nd edition, London: SAGE Publications.

Moser, S. C. & Ekstrom, J. A. 2010. A framework to diagnose barriers to climate change adaptation. *Proceedings of the National Academy of Sciences*, 107(51):22026 - 22031.

Mtisi, S. & Prowse, M. (Ed.) 2012. *Baseline report on climate change and development in Zimbabwe*. Government of Zimbabwe. Government of Zimbabwe, Harare, Zimbabwe

Mutai, H.K. 2011. Regional trade integration strategies under SADC and the EAC: A comparative analysis. *SADC Law Journal*, 1(2011): 81-98.

Mwanza, W. N. 2010. Africa's continental integration agenda: suggestions for African countries and regions. *Supporting regional integration in East and Southern Africa—Review of Select Issues*, 50-76.

Nabatchi, T., O'Leary, R., Assi, K. A., Choi, Y., & Walker, T. 2009. *Incentives for Collaboration in Networks: An Experimental Analysis of the Role of Performance Information*. Paper prepared for presentation at the 10th Public Management Research Association Conference, Columbus, Ohio, October 3-5, 2009.

Nachmany, M., Fankhauser, S., Townshend, T., Collins, M. Landesman, T., Matthews, A., Pavese, C., Rietig, K., Schleifer, P. & Setzer, J. 2014. *The GLOBE Climate Legislation Study: A Review of Climate Change Legislation in 66 Countries*. Fourth Edition. London: GLOBE International and the Grantham Research Institute, London School of Economics.

Næss, L.O., Bang, G., Eriksen, S. & Vevatne, J. 2005. Institutional adaptation to climate change: flood responses at the municipal level in Norway. *Global Environmental Change*, 15(2): 125-138.

Nakhooda, S., Norman, M., Barnard, S., Watson, C., Greenhill, R., Nella, A.C., Trujillo, C. & Banton, G. 2014. *Climate Change Finance: Is it making a difference?* A review of the effectiveness of Multilateral Climate funds, Overseas Development Institute.

National Bureau of Statistics, 2012. Population and Housing Census 2010 Report, Victoria, Mahe, Seychelles.

National Bureau of Statistics and Office of Chief Government Statistician, 2013. Population and Housing Survey, Dar es Salaam and Zanzibar, Tanzania.

National Disaster Management Agency (NDMA), 2015. National Emergency Response, Mitigation

National Statistical Office (NSO) & ICF Macro. 2011. Malawi Demographic and Health Survey 2010. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro.

Negasi, M.Y. 2009. Trade Effects of Regional Economic Integration in Africa: The Case of SADC, Trade and Industrial Policy Strategies, Services Sector Development and Impact on Poverty Thematic Working Group.

Nindi, S.J. 2012. Final Report on Institutional Capacity Needs and Entry Points for Mainstreaming Climate Change Adaptation into Development Planning in Tanzania, National Environment Management Council (NEMC)

North, D.C. 2008. Institutions and the performance of economies over time. In *Handbook of New Institutional Economics* (pp. 21-30). Springer: Berlin & Heidelberg.

North, D.C. 2003. *The Role of Institutions in Economic Development*. Gunnar Myrdal Lecture (1). United Nations Publications.

North, D.C. 1990. *Institutions, institutional change and economic performance*. Cambridge University Press.

Nunan, F., Campbell, A., & Foster, E. 2012. Environmental mainstreaming: The organisational challenges of policy integration. *Public Administration and Development*, 32(3): 262-277.

Nutt-Powel, T.E., Landers, S., Nutt-Powell, B.R., & Sorrell, L. 1978. *Towards a Theory of Institutional Analysis*. Paper prepared for the US Department of Energy, MIT Energy Laboratory Report – MIT-EL -78-020

Nye, J. S. & Donahue, J. D. (Eds.). 2000. *Governance in a globalising world*. Brookings Institution Press.

O'brien, K., Sygna, L., Leichenko, R., Adger, W.N., Barnett, J., Mitchell, T., Schipper, L., Tanner, T., Vogel, C. & Mortreux, C. 2008. *Disaster Risk Reduction, Climate Change Adaptation and Human Security*. Report prepared for the Royal Norwegian Ministry of Foreign Affairs by the Global Environmental Change and Human Security (GECHS) Project, GECHS Report 2008:3.

O'flynn, J. 2009. The cult of collaboration in public policy. *Australian Journal of Public Administration*, 68(1): 112-116.

Okereke, C., Baral, P. & Dagnet, Y. 2015. Options for Adaptation and Loss and Damage in a 2015 Climate Agreement. *Washington, DC: Agreement for Climate Transformation*, 12.

Okereke, C., Bulkeley, H. & Schroeder, H. 2009. Conceptualising climate governance beyond the international regime. *Global Environmental Politics*, 9(1): 58-78.

Olhoff, A. 2011. *Opportunities for integrating climate change adaptation and disaster risk reduction in development planning and decision making: Examples from Sub-Saharan Africa*. GAR.

Oliver, C. 1990. Determinants of inter-organisational relationships: Integration and future directions. *Academy of Management Review*, 15: 241-265.

Olsen, J. P. 2007. *Understanding institutions and logics of appropriateness: Introductory essay*. Centre for European Studies (ARENA Working Paper 13 (07)). Oslo, Norway: ARENA.

Olsen, J. P. 2006. Maybe it is time to rediscover bureaucracy. *Journal of Public Administration Research and Theory*, 16(1): 1-24.

Olsen, J.P. 1988. Administrative Reform and Theories of Organisation. In Campbell, C. & Peters, B.G. (eds): *Organising Governance: Governing Organisations*. Pittsburgh: University of Pittsburgh Press.

Olson, M. 1965. *Logic of collective action; public goods and the theory of groups*. Harvard University Press, Cambridge.

Olum, Y. 2004. *Modern Management Theories and Practices*. Paper presented at the 15th East African Central Banking Course, held on 12th July 2004, at Kenya School of Monetary Studies.

Omari, K. 2010. *Climate change vulnerability and adaptation preparedness in Southern Africa – a case study of Botswana*. Heinrich Böll Stiftung Southern Africa, Cape Town, South Africa.

Onwuegbuzie, A.J. & Leech, N.L. 2006. Linking Research Questions to Mixed Methods Data Analysis Procedures 1. *The Qualitative Report*, 11(3): 474-498.

Organisation for Economic Co-Operation and Development (OECD), 2012. The challenging role of NGO and civil society organisations in financing sustainable development”, In: Development Cooperation Report 2014: Mobilising resources for sustainable development, OECD Publishing

Organisation for Economic Co-Operation and Development (OECD), 2009a. Integrating Climate Change Adaptation into Development Co-operation, Policy Guidance, available on, www.oecd.org/document/40/0,3343,en_2649_34421_42580264_1_1_1_1,00.html, accessed 14 June 2013

Organisation for Economic Cooperation and Development (OECD), 2009b. *Integrating climate change adaptation into development*. Policy guidance, OECD.

Organisation for Economic Co-Operation and Development (OECD), 2009c. Report on Applications of Complexity Science for Public Policy: New Tools for Finding Unanticipated Consequences and Unrealised Opportunities, OECD Global Science Forum.

Osberghaus, D., Dannenberg, A., Mennel, T., & Sturm, B. 2010. The role of the government in adaptation to climate change. *Environment and Planning. C, Government & Policy*, 28(5): 834.

Ott, J.S., Shafritz, J.M. & Jang, Y.S. 2011. *Classic Readings in Organisation Theory*. Wadsworth CENGAGE Learning

Page, S. 2010. Integrative leadership for collaborative governance: Civic engagement in Seattle. *The Leadership Quarterly*, 21(2): 246-263.

Page, S. B., Stone, M. M., Bryson, J. M., & Crosby, B. C. 2015. Public value creation by cross-sector collaborations: A framework and challenges of assessment. *Public Administration*, 93(3): 715 - 732

- Pandey S.K. & Wright B.E. 2006. Connecting the dots in Public Management: Political Environment, Organisational Goal Ambiguity and the Public Manager's role Ambiguity. *Journal of Public Administration Research and Theory*, 16(2006): 511 - 532
- Panteli, N. & Sockalingam, S. 2005. Trust and conflict within virtual inter-organisational alliances: a framework for facilitating knowledge sharing. *Decision Support Systems*, 39(4): 599-617.
- Papathoma-Köhle, M., Promper, C & Glade, T. 2016. A Common Methodology for Risk Assessment and Mapping of Climate Change Related Hazards—Implications for Climate Change Adaptation Policies. *Climate* 4(8): 1 -23
- Parker, M. 1992. Post-Modern Organisations or Postmodern Organisation Theory. *Organisation Studies*, 13 (1): 1 – 17
- Parkinson, V. 2013. *Climate learning for African Agriculture: The case of Mozambique*. Working Paper No. 6, AGEMA Consultoria, Maputo Mozambique
- Parung, J., & Bititci, U. S. 2008. A metric for collaborative networks. *Business Process Management Journal*, 14(5): 654-674.
- Pelling, M. (Ed.), 2003. *Natural disasters and development in a globalising world*. Routledge, London & New York.
- Pelling, M. & Dill, K. 2006. Natural disasters as catalysts of political action. *Media Development*, 53(4):7.
- Pelling, M., & High, C. 2005. Understanding adaptation: what can social capital offer assessments of adaptive capacity? *Global Environmental Change*, 15(4): 308-319.
- Pelling, M., Maskrey, A., Ruiz, P., Hall, L., Peduzzi, P., Dao, Q. H., Mouton, F., Herold, C., & Kluser, S. 2004. *Reducing disaster risk: a challenge for development – a global report*. United Nations Development Programme, Bureau for Crisis Prevention and Recovery, New York.
- Pelling, M., & Wisner, B. 2009. *Disaster risk reduction: cases from urban Africa*. Earthscan, London.
- Peltonen, L., Juhola, S., & Schuster, P. 2010. *Governance of climate change adaptation: policy review*. URL: http://www.baltcica.org/documents/baltcica_policyreview_090310_SJ.pdf

- Peng, T. C. P. 2005. *Strategies to Build Up Holistic Governance*. In Public Administration and Governance (NAPSIPAG) Annual Conference 2005 (pp. 1-14).
- Perry, J.L. & Rainey, H.G. 1988. The Public-Private distinction in Organisation Theory: A critique and research strategy. *Academy of Management Review*, 13(2): 182 – 201
- Peters, B. G. 2011. *Institutional theory in political science: the new institutionalism*. Bloomsbury Publishing, USA.
- Peters, B. G. 2005. The search for coordination and coherence in public policy: Return to the centre. *Unpublished paper. Department of Political Science. University of Pittsburgh*.
- Peters, B.G. 2000. *Institutional Theory: Problems and Prospects*. Political Science Series, Institute of Advanced Studies, Vienna
- Peters, B. G. 1999. *Institutional Theory: The “New Institutionalism” in Political Science* London: Cassells.
- Peters, B. G. 1998. Managing horizontal government: the politics of co-ordination. *Public Administration*, 76(2): 295-311.
- Peters, B. G., & Pierre, J. 2001. Developments in inter-governmental relations: towards multi-level governance. *Policy and Politics*, 29(2): 131-136.
- Petz, D. 2014. Strengthening regional and national capacity for disaster risk management: the case of ASEAN, Brookings-LSE Project on Internal Displacement.
- Pierre, J. & Peters, B. G. 2005. *Governing complex societies: Trajectories and scenarios*. Basingstoke: Palgrave Macmillan.
- Pollack, J., Adler, D. & Sankaran, S. 2014. Mapping the field of Complexity Theory: A computational approach to understanding changes in the field. *Emergence: Complexity & Organisation*, 16(2): 74-92.
- Pollitt, C. 2003. Joined-up government: a survey. *Political Studies Review*, 1(1): 34-49.
- Pomfret, R. 2005. *Regional Trade Agreements*. Working Paper 2005-15, School of Economics University of Adelaide, Australia.

Porfiriev, B. 2015. Climate change as a major slow-onset hazard to development: An integrated approach to bridge the policy gap. *Environmental Hazards*, 14(2): 187-191.

Powell, W. W. & Bromley, P. 2013. *New Institutionalism in the Analysis of Complex Organizations*. Prepared for the International Encyclopaedia of Social and Behavioural Sciences, 2nd Edition.

Powell, W.W., & Colyvas, J.A. 2008. *Micro-foundations of Institutional Theory*. Paper prepared for Handbook of Organisational Institutionalism (Eds.) Greenwood, R., Bueno, M., Drori, G., Glynn, M.A., Martin, T., Meyer, J., Suarez, D., & Tompkins, M. London: Sage Publishers.

Prabhakar, S.V.R.K, Srinivasan, A. & Shaw, R. 2009. Climate change and local level disaster risk reduction planning: need, opportunities and challenges. *Mitigation and Adaptation Strategies for Global Change*, 14(1):7-33.

Provan, K. G. 1984. Inter-organisational cooperation and decision making autonomy in a consortium multihospital system. *Academy of Management Review*, 9(3):494-504.

PWC & UNISDR, 2013. Working together to reduce disaster risk. Available on <http://www.pwc.com/>, accessed November 2015

Quarantelli, E.L. (Ed). 1998. *What is a disaster? Perspectives on the question*. London: Routledge.

Quarantelli E.L. 2006. *Catastrophes are Different from Disasters: Some Implications for Crisis Planning and Managing Drawn from Katrina*. available on <http://understandingkatrina.ssrc.org/Quarantelli/>, accessed July, 2013

Rainey, H.G. 2012. Organisations, Politics and Public Purposes: Analysing Public Organisations and public management, The 2011 John Gaus Lecture. *Political Science and Politics* (2012): 9 - 16

Rainer, H.G., & Bozeman, B. 2000. Comparing the Public and Private Organisations: Emperical Research and the Power of the A Priori, *Journal of Public Administration Research and Theory* 10(2): 447 – 469

Ramalingam, B., Jones, H., Reba, T. & Young, J. 2008. *Exploring the science of complexity: Ideas and implications for development and humanitarian efforts* (Vol. 285). London: Overseas Development Institute.

- Randolph, J.J. 2009. A Guide to Writing the Dissertation Literature Review. *Practical Assessment, Research & Evaluation*, 14, (13)
- Raschky, P. A. 2008. Institutions and the losses from natural disasters. *Natural Hazards and Earth System Science*, 8(4): 627-634
- Rauken, T., Mydske, P.K. & Winsvold, M. 2015. Mainstreaming climate change adaptation at the local level. *Local Environment*, 20(4): 408-423.
- Rayner, S. & Malone, E.L. (Eds.). 1998. *Human Choice and Climate Change: An. International Assessment*, Volume 3, The Tools of Policy Analysis. Battelle Press, Columbus, OH.
- Reed, M. 1992. Introduction. In Reed, M. & Hughes, M. *Rethinking Organisation: New Directions in Organisation Theory and Analysis*. London: Sage Publications.
- Reitsma, F. 2003. A response to simplifying complexity. *Geoforum*, 34(1):13-16.
- Renn, O. 2008. *Risk governance: coping with uncertainty in a complex world*. Earthscan.
- Renn, O. & Walker, K. 2008. *Global risk governance. Concept and practice using the IRGC framework*. Dordrecht.
- Renn, O., Klinke, A., & Van Asselt, M. 2011. Coping with complexity, uncertainty and ambiguity in risk governance: a synthesis. *Ambio*, 40(2): 231-246.
- Repetto, R. C. 2008. *The climate crisis and the adaptation myth*. New Haven, CT: Yale School of Forestry & Environmental Studies.
- Revi, A., 2008. Climate change risk: an adaptation and mitigation agenda for Indian cities. *Environment and Urbanisation*, 20(1): 207–229.
- Rijke, J., Brown, R., Zevenbergen, C., Ashley, R., Farrelly, M., Morison, P. & van Herk, S. 2012. Fit-for-purpose governance: a framework to make adaptive governance operational. *Environmental Science & Policy*, 22(2012): 73-84.
- Ring, P. S. & Van de Ven, A. H. 1994. Developmental processes of cooperative inter-organisational relationships. *Academy of Management Review*, 19(1): 90-118.
- Road Traffic and Safety Agency (RATSA) 2015. Road Traffic Accidents Report, Lusaka

Robbins, S.P. 1990. *Organisation Theory: Structure, Design and Application*. New York: Prentice-Hall International Inc.

Rodrigues, C.A. 2001. Fayol's 14 principles of management then and now: A framework for managing today's organisations effectively. *Management Decision* 39(10): 880 - 889

Roeth, H. 2009. *The Development of a Public Partnership Framework and Action Plan for Disaster Risk Reduction in Asia*. United Nations International Strategy for Disaster Reduction, Bangkok, Thailand.

Ronfeldt, D. 2006. In search of how societies work: Tribes—The First and Forever Form. RAND Pardee Centre working paper series, WR-433-RPC.

Rojas-Blanco, A. V. 2006. Local initiatives and adaptation to climate change. *Disasters*, 30(1): 140-147.

Russel, D. & Jordan, A. 2009. Joining up or pulling apart? The use of appraisal to coordinate policy making for sustainable development. *Environment and Planning*, 41(5):1201.

Ryan, C. M., & Walsh, P. 2004. Collaboration of Public Sector Agencies: Reporting and Accountability Challenges. *International Journal of Public Sector Management*, 17(7): 621-631.

Samaddar, S. Nargundkar, S. & Daley, M. 2006. Inter-organisational information sharing: The role of supply network configuration and partner goal congruence. *European Journal of Operational Research*, 174(2): 744-765.

Sandfort, J. 1999. The structural impediments to human service collaboration: Examining welfare reform at the front lines. *Social Service Review*, 73(3): 314-339.

Sandrey, R. 2013. An analysis of the SADC Free Trade Area. *Trade Law Centre. TRALAC Trade Brief*, (D13TB01).

Sarker, S.I. & Khan, M.R.A. 2013. Classical and Neo-classical approaches of management: An Overview, *Journal of Business and Management*, 14(6): 01 - 05

Saurombe, A. 2009. Regional Integration Agenda for SADC Caught in the Winds of Change Problems and Prospect. *Journal of International Commercial Law and Technology*, 4(2):100 - 106.

Scharpf, F.W. 1997. Introduction: the problem-solving capacity of multi-level governance. *Journal of European Public Policy*, 4(4): 520-538.

- Scharpf, F. W. 1994. Games real actors could play positive and negative coordination in embedded negotiations. *Journal of Theoretical Politics*, 6(1): 27-53.
- Scheraga, J.D., Ebi, K.L., Furlow, J., & Moreno, A. R. 2003. From science to policy: developing responses to climate change. *Climate Change and Human Health: Risks and Responses* (McMichael AJ, Campbell-Lendrum D, Corvalan CF, Ebi KL, Githeko A, Scheraga JD, *et al.*, eds). Copenhagen: World Health Organization/World Meteorological Organization/United Nations Environment Programme, 237, 266.
- Schermerhorn, J. R. 1975. Determinants of inter-organisational cooperation. *Academy of Management Journal*, 18(4): 846-856.
- Schermerhorn, J. R. 1977. Information sharing as an inter-organisational activity. *Academy of Management Journal*, 20(1): 148-153.
- Schipper, E.L.F. 2009. Meeting at the crossroads? Exploring the linkages between climate change adaptation and disaster risk reduction. *Climate and Development*, 1: 16–30.
- Schipper, E.L.F. 2006. *Climate Risk, Perceptions and Development in El Salvador*. Tyndall Centre for Climate Change Research Working Paper 93,
- Schipper, E.L.F., Liu, W., Krawanchid, D. & Chanthy, S. 2010. Review of climate change adaptation methods and tools. *MRC Technical Paper*, (34).
- Schipper, L. & Pelling, M. 2006. Disaster risk, climate change and international development: scope and challenges for integration. *Disasters* 30(1):19-38.
- Schneider, T. 2014. Responsibility for private sector adaptation to climate change. *Ecology and Society*, 19(2):8.
- Schneider, M., & Somers, M. 2006. Organisations as complex adaptive systems: Implications of complexity theory for leadership research. *The Leadership Quarterly*, 17(4):351-365.
- Schneiderbauer, S., Pedoth, L., Zhang, D., & Zebisch, M. 2013. Assessing adaptive capacity within regional climate change vulnerability studies—an Alpine example. *Natural hazards*, 67(3):1059-1073.
- Scholz, J. T., Berardo, R., & Kile, B. 2008. Do networks solve collective action problems? Credibility, search, and collaboration. *The Journal of Politics*, 70(2):393-406.

Scott, W.R. 2004. Institutional Theory: Contributing to a Theoretical Research Program. In Smith, K.G & Hitt, M.A. *Great Minds in Management: The Process of Theory Development*. Oxford: Oxford University Press.

Scott, W.R. 1987. The Adolescence of Institutional theory. *Administrative Science Quarterly*, 32::493-511.

Scott, P.G., & Facone, S. 1998. Comparing public and private organisations: An explanatory analysis of three frameworks. *American Review of Public Administration* 28(2):126–145.

Scott, Z. & Tarazona, M. 2011. *Study on Disaster Risk Reduction, Decentralization and Political Economy: Decentralisation and Disaster Risk Reduction*. Background Paper for the UNDP's contribution to the global assessment report on disaster risk reduction 2011.

Searle, J. R. 2005. What is an institution? *Journal of Institutional Economics*, 1(1): 1-22.

Selznick, P. 1948. Foundations of the theory of organisation, *American Sociological Review*, 13 (1): 25–35.

Seng, D.S.C. 2013. Tsunami resilience: Multi-level institutional arrangements, architectures and system of governance for disaster risk preparedness in Indonesia, *Environmental Science and Policy*, 29(2013): 57 - 70

Seng, D.C & Guillande, R. 2008. *Disaster risk Profile of the Republic of Seychelles*. United Nation Development Programme

Severino, A. & Picard, M. 2012. *Law and Regulation for the reduction of risk from natural disasters in Angola*. A national law desk survey, International Federation of Red Cross and Red Crescent Societies (IFRC), Geneva, Switzerland.

Shams R. 2003. *Regional Integration in Developing Countries: Some Lessons Based on Case Studies*. HWWA Discussion Paper 251, Hamburg Institute of International Economics.

Shamsuddoha, M., Roberts, E., Hasemann, A. & Roddick, S. 2013. *Establishing Links between Disaster Risk Reduction and Climate Change Adaptation in the Context of Loss and Damage*. Policies and Approaches in Bangladesh.

Shannon, M.A. & Schmidt, C.H. 2002. Theoretical approaches to understanding inter-sectorial policy integration. *Cross-Sectoral Policy Impacts on Forests*, 46:15-26.

- Sharma, S. K. 2011. The political economy of climate change governance in the Himalayan region of Asia: a case study of Nepal. *Procedia-Social and Behavioural Sciences*, 14:129-140.
- Shaw, R., & Goda, K. 2004. From disaster to sustainable civil society: The Kobe experience. *Disasters*, 28(1):16-40.
- Shaw, R & Krishnamurthy, R. R (Eds.), 2009. Disaster Management: Global Challenges and Local Solutions, Universities Press (India) Private Limited, India, 2009.
- Sheer, A. 1981. A survey of the political economy of customs unions. *Law and Contemporary Problems*, 44(3):33-53.
- Shi, P., Li, N., Ye, Q., Dong, W., Han, G., & Fang W., 2010. Research on integrated disaster risk governance in the context of global environmental change. *International Journal of Disaster Risk Science* 1(1):17–23.
- Smit, B., & Pilifosova, O. 2003. Adaptation to climate change in the context of sustainable development and equity. *Sustainable Development*, 8(9):9.
- Smit, B., & Wandel, J. 2006. Adaptation, adaptive capacity and vulnerability. *Global Environmental Change*, 16(3): 282-292.
- Simon, H.A. 1962. The architecture of complexity, *Proceedings of the American Philosophical Society*, 106(6): 467 - 482
- Silverman, D. 1970. *The theory of organisations: A sociological framework*. Heinemann, London.
- Smith, A. C. 2005. Complexity theory for organisational futures studies. *Foresight*, 7(3): 22-30.
- Smith, A. C., & Humphries, C. E. 2004. Complexity theory as a practical management tool: A critical evaluation. *Organisation Management Journal*, 1(2):91-106.
- Solecki, W. Leichenko, R., & O'brien, K. 2011. Climate change adaptation strategies and disaster risk reduction in cities: connections, contentions and synergies. *Current Opinion in Environmental Sustainability* 3 (2011):135 – 141
- South African Local Government Association (SALGA), 2011. *Disaster risk management status assessment at municipalities in South Africa*. Centurion, South Africa.

Southern African Development Community (SADC), 2016. Disaster Risk Management, available on <http://www.sadc.int/themes/disaster-risk-management/>, visited 13 August 2016

Southern African Development Community (SADC), 2015. Enhancing Regional Disaster Preparedness and Response. Report of the extra-ordinary Meeting of Ministers Responsible for Disaster Risk Management and Ministers of Finance, held in June 26, 2015 at Harare, Zimbabwe. SADC, Gaborone, Botswana

Southern African Development Community (SADC), 2012. History and Treaty, available on <http://www.sadc.int/about-sadc/overview/history-and-treaty/>, accessed 31 August 2015

Southern African Development Community (SADC), 2010a. Report on the SADC Disaster Risk Reduction and Preparedness Planning Workshop, 05-08 October 2010, Gaborone, Botswana.

Southern African Development Community (SADC), 2010b. Southern Africa Sub- Regional Framework of Climate Change Programmes: Adaptation and mitigation actions, supported by enabling measures of implementation, Gaborone, Botswana

Southern African Development Community (SADC), 2005. Regional Indicative Strategic Development Plan, SADC House, Government Enclave, Gaborone, Botswana

Southern African Development Community (SADC), 2001. Protocol on Politics, Defence and Security Cooperation, SADC House, Government Enclave, Gaborone, Botswana

Southern African Development Community (SADC), 1992. Declaration and Treaty of the Southern African Development Community, Windhoek, Republic of Namibia

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Angola country Report, Volume 2 Country Report 1, Wits, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Botswana Country Report, Volume 2 Country Report 2, Wits, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Malawi Country Report, Volume 2 Country Report 3, Wits, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Mauritius Country Report, Volume 2 Country Report 4 Wits, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Mozambique Country Report, Volume 2 Country Report 5 Wits, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Namibia Country Report, Volume 2 Country Report 6 Wits, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Seychelles Country Report, Volume 2 Country Report 7, Witwatersrand, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: South Africa Country Report, Volume 2 Country Report 8, Witwatersrand, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Swaziland Country Report, Volume 2 Country Report 09, Witwatersrand, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Tanzania Country Report, Volume 2 Country Report 10, Witwatersrand, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Zambia country Report, Volume 2 Country Report 11, Witwatersrand, South Africa

Southern African Regional Universities Association (SARUA), 2014. Strengthening University contributions to climate compatible Development in southern Africa: Zimbabwe country Report, Volume 2 Country Report 12, Witwatersrand, South Africa

Sperling, F. & Szekely, F. 2005. Disaster risk management in a changing climate. Discussion paper prepared for the World Conference on Disaster reduction on behalf of the vulnerability and adaptation resource group (VARG). Washington DC.

Statistics Mauritius, 2014. Digest of Demographic statistics 2013, Ministry of Finance and Economic Development, Republic of Mauritius.

Statistics South Africa, 2012. Census 2011. *Statistical release*. Pretoria, South Africa.

Steelman, T.A. & Mandell, M. 2003. Understanding what can be accomplished through inter-organisational Innovations: The importance of typologies, context and management strategies. *Public Management Review*, 5: 197-224.

Steurer, R. 2013. Disentangling governance: a synoptic view of regulation by government, business and civil society. *Policy Sciences*, 46(4): 387-410.

Steurer, R. 2007. From government strategies to strategic public management: an exploratory outlook on the pursuit of cross-sectorial policy integration. *European Environment*, 17(3):201-214.

Steurer, R. 2004. *Strategic public management as holistic approach to policy integration*. In Berlin Conference on the Human Dimensions of Global Environmental Change: Greening of Policies–Inter-linkages and Policy Integration (pp. 3-4).

Steurer, R., Bauer, A. & Feichtinger, J. 2010. *The governance of adaptation to climate change: taking stock and providing guidance*. Analytical framework for the stock taking survey of governance approaches in 10 OECD countries, Institute of Forest, Environment, and Natural Resource Policy.

Steurer, R. & Berger, G. 2010. Horizontal policy integration: Concepts, administrative barriers and selected practices. *Nachhaltigkeit regieren: Eine Bilanz zu Governance-Prinzipien und Praktiken [Governing Sustainability: Taking stock of governance principles and practices]*. München: Oekom, 55-74.

Storbjörk, S. 2007. Governing climate adaptation in the local arena: challenges of risk management and planning in Sweden. *Local Environment*, 12(5): 457-469.

Strang, D. 1994. Institutional accounts of organisations as a form of structural analysis, In *Current Perspectives on Social theory*, Supplement, JAI Press Inc. 151 – 174.

Stromberg, D. 2007. Natural disasters, economic development and humanitarian aid. *The Journal of Economic Perspectives*, 21(3): 199-222.

Struwig, F.W. & Stead, G.B. 2001. Planning, designing and reporting research. Cape Town: Hanlie Venter.

Suarez, P., Givah, P., Storey, K & Alexander Lotsch A. 2008. *HIV/AIDS, Climate Change and Disaster Management: Challenges for Institutions in Malawi*. The World Bank Development Research Group, Sustainable Rural and Urban Development Team.

Swart, R., Biesbroek, R. & Lourenço, T. C. 2014. Science of adaptation to climate change and science for adaptation. *Frontiers in Environmental Science*, 2: 29.

Swaziland Central Statistics Office, 2008. *Swaziland Demographic and Health Survey 2006 – 2007*. Central Statistical Office Mbabane, Swaziland and Macro International Inc. Calverton, Maryland USA.

Tai, H.S. 2015. Cross-Scale and Cross-Level Dynamics: Governance and Capacity for Resilience in a Social-Ecological System in Taiwan. *Sustainability*, 7(2): 2045-2065.

Tashakkori, A & Teddlie, C. (eds.). 2010. *SAGE Handbook of Mixed Methods in social science and behaviour*, 2nd edition, Thousand Oaks: SAGE Publications.

Taylor, F.W. 1911. *Scientific Management*. New York, Harper & Row

The Incheon Declaration, 2009. Building a Local Government alliance for disaster risk reduction', Available on <http://www.unisdr.org/campaign/resilientcities/assets/documents/Incheon->, accessed April 2015

Teddlie, C. & Tashakkori, A. (Eds.). (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioural sciences*. Thousand Oaks: Sage Publications Inc.

Teisman, G. R. & Klijn, E.H. 2008. Complexity theory and public management: An introduction. *Public Management Review*, 10(3): 287-297.

Teixeira, R., Koufteros, X. & Peng, X. D. 2012. Organisational structure, integration, and manufacturing performance: A conceptual model and propositions. *Journal of Operations and Supply Chain Management*, 5(1):70-81.

Termeer, C., Biesbroek, R., & Van den Brink, M. 2012. Institutions for adaptation to climate change: comparing national adaptation strategies in Europe. *European Political Science*, 11(1): 41-53.

Thatcher, C. 2007. *A study of inter-organisational arrangements among Three Regional Campuses of a Large Land-Grant University*. Dissertation, PhD.- University of Hartford, West Hartford, Connecticut.

The World Bank, 2013. *Building resilience: integrating climate and disaster risk into development*. Lessons from World Bank Group, World Bank, Washington DC.

The World Bank. 2011a. Lesotho - Post disaster needs assessment: heavy rains 2010-11. Washington, DC: World Bank.
<http://documents.worldbank.org/curated/en/2011/01/16465266/lesotho-post-disaster-needs-assessment-heavy-rains-2010-11>, accessed 23 March 2016.

The World Bank, 2011b. *Vulnerability, Risk Reduction, and Adaptation to Climate Change, Madagascar climate Risk and Adaptation Country Profile*. The World Bank Group, Washington DC

The World Bank, 2010. *Report on the status of Disaster Risk Reduction in Sub-Saharan Africa*. The International Bank for Reconstruction and Development/The World Bank, Washington D.C.

The World Bank, 2007. *Disasters, Climate Change, and Economic Development in Sub-Saharan Africa: Lessons and Future Directions*. Washington, D.C.

The World Bank, 1997. *The World Development Report: The State in a changing World*. The World Bank, Washington DC, USA

Thoenig, J-C. 2011. Institutional theories and Public Institutions: New agendas and appropriateness. In *The Handbook of Public Administration*, by Peters G.B & Pierre, J (eds.) 169 – 179, Sage Publishers.

Thomson, A. M., & Perry, J. L. 2006. Collaboration processes: Inside the black box. *Public Administration Review*, 66(s1): 20-32.

Thomson, A. M., Perry, J. L., & Miller, T. K. 2009. Conceptualizing and measuring collaboration. *Journal of Public Administration Research and Theory*, 19(1): 23-56.

Thomson, A. M., Perry, J. L., & Miller, T. K. 2008. Linking collaboration processes and outcomes. *Collaborative Public Management*, 97-120.

- Thompson, A., Robbins, P., Sohngen, B., Arvai, J., & Koontz, T. 2006. Economy, politics and institutions: From adaptation to adaptive management in climate change. *Climatic Change*, 78(1): 1-5.
- Thornhill C. & Van Dijk, G. 2010. Public Administration Theory: Justification for conceptualisation, *Journal of Public Administration*, 45(1.1):95 - 110
- Thorpe, R. & Holt, R. 2008. *The SAGE Dictionary of Qualitative Management Research*. Thousand Oaks: SAGE Publications.
- Thrasher, R.D & Gallagher, K.P. 2008. *21st Century Trade Agreements: Implications for Long-Run Development Policy*. The Frederick S. Pardee Centre for the Study of the Longer-Range Future, Boston University.
- Tierney, K.J. 2012. Disaster governance: social, political, and economic dimensions. *Annual Review of Environment and Resources*, 37(2012): 341-363.
- Tierney, K. J. 1989. Improving theory and research on hazard mitigation: Political economy and organizational perspectives, *International Journal of Mass Emergencies and Disasters*, 7 (1989): 367-396
- Tol, R. S., & Yohe, G. W. 2007. The weakest link hypothesis for adaptive capacity: an empirical test. *Global Environmental Change*, 17(2): 218-227.
- Tompkins, H. 2002. Climate change and extreme weather events: is there a connection. *Cicerone* 3 (2002)
- Tompkins, E. L., & Eakin, H. 2012. Managing private and public adaptation to climate change. *Global Environmental Change*, 22(1): 3-11.
- Treib, O., Bähr, H., & Falkner, G. 2007. Modes of governance: towards a conceptual clarification. *Journal of European Public Policy*, 14(1): 1-20.
- Turnbull, M., Sterrett, C. L., & Hilleboe, A. 2013. *Towards resilience: A guide to disaster risk reduction and climate change adaptation*. Warwickshire, UK: Practical Action Publishing.
- Twigg, J. 2004. *Disaster risk reduction: Mitigation and preparedness in development and emergency programming*. Humanitarian Practice Network, Overseas Development Institute, London, UK.

Twigg, J. 2001. *Corporate Social Responsibility and Disaster Reduction: A Global Overview*. UCL: London.

United Nations (UN), 2015. *Sendai Framework for Disaster Risk Reduction 2015-2030*. Adopted at the Third United Nations World Conference on Disaster Risk Reduction Sendai, Japan, 14-18 March 2015, UN General Assembly, A/CONF.224/L.2, Geneva.

United Nations (UN), 2007. Democratic Republic of Congo: Public Administration Profile, Division for Public Administration and Development Management (DPADM), Department of Economic and Social Affairs (DESA), United Nations, Geneva, Switzerland.

United Nations, 2004. United Republic of Tanzania Public Administration Country Profile, Division for Public Administration and Development Management (DPADM), Department of Economic and Social Affairs (DESA), United Nations, Geneva, Switzerland.

United Nations, 1998. *Rethinking public administration: an overview*. Division of Public Administration and Development Management.

United Nations (UN), 1989. International Decade for Natural Disaster Reduction, Resolution 44/236 – Resolution adopted on the reports of the second committee, UN, Geneva

United Nations Development Programme (UNDP), 2015. Strengthening disaster risk governance: UNDP support during the HFA implementation period 2005 – 2015, New York

United Nations Development Programme (UNDP), 2012. Institutional and context analysis guidance note, United Nations Development Programme, Bureau for Development Policy, New York.

UNDP, 2011. Concept Note: Preparatory assistance to disaster risk reduction Component, Angola, Available on https://info.undp.org/docs/pdc/Documents/AGO/UNDP_AO_PRODOC_DRR.pdf accessed 02 November 2015

United Nations Development Programme (UNDP), 2008. Strengthening National and Local Resilience to Disaster Risks in Swaziland, June 2008 to July 2010 Project Brief.

United Nations Development Programme (UNDP), 2010. Disaster Risk Reduction, Governance & Mainstreaming, Bureau for Crisis Prevention and Recovery, United Nations Development Programme, New York

United Nations Development Programme (UNDP), 2007a. *Governance for Disaster Risk Management: How to Guide*, UNDP, Bureau for Crisis Prevention and Recovery, New York

United Nations Development Programme (UNDP), 2007b. *Enhancing National and Local Capacity in Disaster Risk Reduction in Lesotho March 2008 to February 2009*. Lesotho, Maseru.

United Nations Development Programme (UNDP). 2004. *Reducing Disaster Risk: A Challenge for Development*, Bureau for Crisis Prevention and Recovery, New York.

United Nations Development Programme (UNDP), 2002. *A climate Risk Management approach to disaster reduction and adaptation to climate change*. UNDP Expert Group meeting, Integrating disaster reduction with adaptation to climate change, Havana, 17 – 19 June 2002

United Nations Development Programme (UNDP), 1997. *Governance for sustainable human development: A UNDP policy document*. UNDP, New York

UNDP – UNEP, 2008. *Making the Economic Case: A Premier on Economic Arguments for Mainstreaming Poverty – Environment Linkages into National Development Planning*.

United Nations Disaster Assessment & Coordination (UNDAC), 2008. *Democratic Republic of Congo earthquake in the Great Lakes Region 10– 22 February 2008*, UNDAC Mission Report

United Nations Economic Commission for Africa (UNECA), 2012. *Assessing regional integration in Africa: Towards an African FTA*, Economic Commission for Africa, Addis Ababa, Ethiopia.

United Nations Economic Commission for Africa (UNECA), 2006. *Regional integration in Africa II: rationalising regional economic commissions*, Economic Commission for Africa, Addis Ababa, Ethiopia.

United Nations Economic and Social Council, 2013. *Integrating disaster risk reduction and climate change adaptation for sustainable development: Note by the Secretariat*. Economic and Social Commission for Asia and the Pacific, Committee of Disaster Risk Reduction, Third Session, 27 – 29 November 2013, Bangkok, Thailand

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2013. *Building Resilience to Natural Disasters and Major Economic Crises*, UNESCAP, Bangkok, Thailand, available on <http://www.unescap.org/resources/building-resilience-natural-disasters-and-major-economic-crises-0>, accessed, April 2015

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2009. What is good governance? UNESCAP, Bangkok, Thailand, Available on <http://www.unescap.org/sites/default/files/good-governance.pdf>, accessed April, 2015.

United Nations Environment Programme (UNEP), 2011. The Democratic Republic of Congo Post-Conflict Environmental Assessment - Synthesis for Policy Makers, United Nations Environment Programme, Kenya, Nairobi

UNFCCC, 2014. Institutional arrangements for national adaptation planning and implementation, 2014 Thematic Report of the Adaptation Committee, United Nations Climate Change Secretariat, Bonn, Germany

UNFCCC, 2008. Integrating practices, tools and systems for climate risk assessment and management and strategies for disaster risk reduction into national policies and programmes, Technical paper, FCCC/TP/2008/4

United Nations International Strategy for Disaster Reduction (UNISDR), 2015a. Disaster Risk Reduction Private Sector Partnership: post 2015 framework-private sector blueprint five private sector visions for a resilient future, Geneva, UNISDR - (DRR-PSP)

UNISDR, 2015b. UNISDR Working Papers on Public Investment Planning and Financing Strategy for Disaster Risk Reduction: Review of Mauritius, 2015, UNISDR. Geneva.

United Nations International Strategy for Disaster Reduction (UNISDR). 2014. Private Sector [Online]. Available: <http://www.unisdr.org/partners/private-sector>, accessed October 2015

United Nations International Strategy for Disaster Reduction (UNISDR), 2013. Synthesis report: consultation on post 2015 framework for disaster risk reduction, Available on http://www.preventionweb.net/files/32535_hfasynthesisreportfinal.pdf, accessed April 2015

United Nations International Strategy for Disaster Reduction (UNISDR), 2012. Disaster Risk Reduction and Climate Change Adaptation in the pacific: An institutional and policy analysis. Geneva, Switzerland

United Nations International Strategy for Disaster Reduction (UNISDR), 2011a. Global Assessment Report, 2011: Revealing Risk, Redefining Development, Geneva: UNISDR

United Nations International Strategy for Disaster Reduction (UNISDR), 2011b. Inventory of National Coordination Mechanisms, Legal Frameworks and National Plans for Disaster Risk Reduction in Africa, UNISDR, Geneva, Switzerland

United Nations International Strategy for Disaster Reduction (UNISDR). 2010. Policy Brief 3: Strengthening Climate Change Adaptation through Disaster Risk Reduction. United Nations, Geneva, Switzerland

United Nations International Strategy for Risk Reduction (UNISDR). 2009. Adaptation to climate change by reducing disaster risk: Country practices and Lessons. Briefing Note 2. United Nations, Geneva, Switzerland

United Nations International Strategy for Disaster Reduction (UNISDR), 2008. Links between disaster risk reduction, development and climate change. Report prepared for the Commission on Climate Change and Development, Sweden.

United Nations International Strategy for Disaster Reduction (UNISDR), 2007. Guidelines: National Platforms for Disaster Risk Reduction. Geneva: UNISDR.

United Nations International Strategy for Disaster Reduction (UNISDR), 2006. NGOs and disaster risk reduction: a preliminary review of initiatives and progress made, Background Paper for a Consultative Meeting on A “Global Network of NGOs for Community Resilience to Disasters, Geneva, 25-26 October, 2006

United Nations International Strategy for Disaster Reduction (UNISDR), 2005. Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters. Geneva: UNISDR.

United Nations International Strategy for Disaster Reduction (UNISDR), 2004. Africa regional strategy for disaster risk reduction’, International Strategy for Disaster Reduction, accessed 01 April 2010, from http://www.unisdr.org/files/13093_AFRICAREGIONALDRRSTRAT

United Nations International Strategy for Disaster Reduction (UNISDR)/Indian Ocean Commission, 2015. Building capacities for increased public investment in integrated climate change adaptation and disaster risk reduction: *Report on Mauritius*, Islands Programme for financial protection against climatic and natural disasters, Indian Ocean Commission, Mauritius.

United Nations International Strategy for Disaster Reduction (UNISDR) - UNDP, 2012: Disaster Risk Reduction and Climate Change Adaptation in the Pacific: An Institutional and Policy Analysis. Suva, Fiji: UNISDR, UNDP, 76pp.

United Nations International Strategy for Disaster Reduction (UNISDR), UNDP, ITC, 2010. Local governments and disaster risk reduction: good practices and lessons learned

- Urwin, K. & Jordan, A. 2008. Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance. *Global Environmental Change*, 18(1):180-191.
- Van Aalst, M. K., Cannon, T., & Burton, I. 2008. Community level adaptation to climate change: the potential role of participatory community risk assessment. *Global Environmental Change*, 18(1):165-179.
- Van Asselt, M. B., & Renn, O. 2011. Risk governance. *Journal of Risk Research*, 14(4): 431-449.
- Van Der Waldt, G. 2009. Public Management and Disaster Risk Reduction: Potential interdisciplinary contribution. *JAMBA: Journal of Disaster Risk Studies* 2 (1): 14 27.
- Van de Ven, A. H. 1976. On the nature, formation, and maintenance of relations among organizations. *Academy of Management Review*, 1(4):24-36.
- Vangen, S. and Huxham, C. 2003. Nurturing collaborative relations: Building trust in inter-organisational collaboration. *The Journal of Applied Behavioural Science*, 39(1):5-31.
- Van Kersbergen, K. & Van Waarden, F. 2004. Governance as a bridge between disciplines: Cross-disciplinary inspiration regarding shifts in governance and problems of governability, accountability and legitimacy. *European journal of political research*, 43(2):143-171.
- Van Logchem, B. & Queface, A.J. (eds.). 2012. Responding to Climate Change in Mozambique: Synthesis Report. Maputo INGC.
- van Niekerk, D. 2014. A critical analysis of the South African disaster management act and policy framework. *Disasters*, 38(4): 858-877.
- van Niekerk, D. 2011. Concept Paper: The South African Disaster Risk Management Policy and Legislation – A critique. North-West, University, Potchefstroom.
- van Niekerk, D. 2006. Disaster risk management in South Africa: The function and activities – towards an integrated approach. *Politeia Vol. 25 (2), 2006*.
- van Niekerk, D., 2005. A comprehensive framework for multi-sphere disaster risk reduction in South Africa. North West University, Potchefstroom (Dissertation Ph.D.).

Van Niekerk, D., Ndlovu, E., & Chipangura, P. 2015. Experiences of Africa: status and potentials. In Izumi, T. & Shaw, R. (Eds.), *Disaster Management and Private Sectors: Challenges and Potentials*. Springer Japan.

Van Niekerk, D. & Visser, R. 2009. *Experience on decentralised mechanism and funding for Disaster Risk Reduction in South Africa*. Paper presented at the Second Ministerial Conference on Disaster Risk Reduction in Africa, Nairobi 14-16 May 2010.

Van Riet, G. 2008. *Disaster risk assessment in South Africa: some current challenges*. South African Sociological Association Conference: Society, Power and the Environment: Challenges for the 21st century.

Van Wyk, E., Bean, W.L., & Yadavall, V.S.S. 2011. Modelling of uncertainty in minimising the cost of inventory for disaster relief, *South African Journal of Industrial Engineering* 22(1): 1-11

Venton, P. & La Trobe, S. 2008. *Linking climate change adaptation and disaster risk reduction*. Tearfund.

Verduijn, R. 2005. *Strengthening Food Insecurity and Vulnerability Information Management in Lesotho*. FIVIMS Assessment Report, FAO-UN, Lesotho, Maseru.

Vermaak, J. & Van Niekerk, D. 2004. Disaster risk reduction initiatives in South Africa. *Development Southern Africa*, 21(3): 555-574.

Viljoen, W. 2013. Addressing climate change issues in eastern and southern Africa: the EAC, COMESA, SADC and the TFTA. *Cape to Cairo*, 130.

Vincent, I. 1999. Collaboration and integrated services in the NSW public sector. *Australian Journal of Public Administration*, 58(3): 50-54.

Vincent, K. 2015. *Climate change adaptation in Mozambique: Past Present and Future*. Report of the ACCRA workshop 30 September 2015 and stakeholder meeting 01 October 2015, Maputo, Kulima Integrated Development Solutions.

Vincent, K. 2007. Uncertainty in adaptive capacity and the importance of scale. *Global Environmental Change*, 17(1): 12-24.

Vines, A & Weimer M. 2011. *Angola: Assessing risk to stability*. A report of the Centre for Strategic and International Studies Africa Programme, Washington D.C.

- Vink, M. J., Dewulf, A. & Termeer, C. J. A. M. 2013. The role of knowledge and power in climate change adaptation governance: a systematic literature review. *Ecology and Society*, 18(4): 46.
- Visitchaihan, S. 2003. Revisiting Weber's Theory of Bureaucracy and its Usefulness for Analysing Organizational Structures and Issues, *Journal of Public Administration* 2(2003): 127 - 146
- Waarden, F. 1992. Dimensions and types of policy networks. *European Journal of Political Research*, 21(1-2): 29-52.
- Waldfogel, J. 1997. The new wave of service integration. *The Social Service Review*, 463-484.
- Walker, R.M., & Bozeman, B. 2011. Publicness and Organisation Performance, *Journal of Public Administration Research and Theory* 21(2011): 279 – 281.
- Walker, G., Tweed, F., & Whittle, R. 2014. A framework for profiling the characteristics of risk governance in natural hazard contexts. *Natural Hazards and Earth System Science*, 14(1):155-164.
- Walker, G., Tweed, F., & Whittle, R. 2013. A framework for profiling the characteristics of risk governance in natural hazard contexts. *Natural Hazards and Earth System Sciences Discussions*, 1:2207-2229.
- Walker, G; Whittle, R; Medd, W. & Watson, N 2010. Risk Governance and Natural Hazards. CapHaz-Net WP2 Report, Lancaster Environment Centre, Lancaster University: Lancaster (available at: http://caphaz-net.org/outcomes-results/CapHaz-Net_WP2_Risk-Governance.pdf, accessed April, 2015
- Walton, M. 2015. Setting the context for using complexity theory in evaluation: boundaries, governance and utilisation. *Evidence & Policy: A Journal of Research, Debate and Practice*, Policy Press.
- Wamsler, C., Luederitz, C. & Brink, E. 2014. Local levers for change: Mainstreaming ecosystem-based adaptation into municipal planning to foster sustainability transitions. *Global Environmental Change*, 29(2014):189-201.
- Washington, R., Harrison, M., Conway, D., Black, E., Challinor, A., Grimes, D., Jones, R., Morse, A., Kay, G., & Todd, M. 2006. African Climate Change: Taking the Shorter Route. American Meteorological Society, 1355–1366.

Watson, C., Caravani, A., Mitchell, T., Kellett, J., & Peters, K. 2015. *Finance for reducing disaster risk: 10 things to know*. Overseas Development Institute (ODI).

Weber, M. 1947. *Theory of Social and Economic Organisation*. New York, Oxford University Press.

Weingast, B.R., & Wittman, D.A. 2006. The Reach of Political Economy. In Weingast, B.R. & Wittman, D.A. (eds.). *The Oxford handbook of political economy*. Oxford University Press.

Wejs, A., Harvold, K., Larsen, S. V. & Saglie, I. L. 2014. Legitimacy building in weak institutional settings: climate change adaptation at local level in Denmark and Norway. *Environmental Politics*, 23(3): 490-508.

Welman, C., Kruger, F. & Mitchell, B., 2008. Research methodology. 3rd ed. Cape Town: Oxford University Press.

Westerhoff, L., Keskitalo, E.C.H., & Juhola, S. 2011. Capacities across scales: local to national adaptation policy in four European countries. *Climate Policy*, 11(4):1071-1085.

Weyland, K. G. 2002. The politics of market reform in fragile democracies: Argentina, Brazil, Peru, and Venezuela. Princeton University Press.

Whalen, H., 1970. Ideology, democracy and the foundation of local self-government, In: L.D. Feldman & M.D. Goldrick (eds.), *Politics and government of urban Canada*, p. 312, Taylor & Francis, Toronto.

Whalley, J. 2006. *Recent Regional Agreements: Why so many, so fast, so different and where are they headed?* CIGI Working Paper No.9, Paper prepared for the CESifo Venice Summer Institute on Global Economy Workshop, Understanding the Latest Wave of Regional Trade and Cooperation Agreements, July 19-20, 2006, Venice International University, San Servolo.

Whetten, D. A. 1981. Inter-organisational relations: A review of the field. *The Journal of Higher Education*, 1-28.

White, M., & Winkworth, G. 2012. A Rubric for Building Effective Collaboration: Creating and Sustaining Multi Service Partnerships to Improve Outcomes for Clients, Concepts Paper, available https://www.acu.edu.au/data/assets/pdf_file/0011/483914/Collaboration_Rubric.pdf, accessed 02 April 2015

Whitehead, M. 2003. In the shadow of hierarchy: meta-governance, policy reform and urban regeneration in the West Midlands. *Area*, 35(1): 6-14.

Wilbanks, T.J. & Kates, R.W. 2010. Beyond adapting to climate change: embedding adaptation in responses to multiple threats and stresses. *Annals of the Association of American Geographers*, 100(4): 719-728.

Wilkins, P. 2002. Accountability and Joined-up Government. *Australian Journal of Public Administration*, 61(1): 114-119.

Wilkinson, E. 2015. Beyond the volcanic crisis: co-governance of risk in Montserrat, *Journal of Applied Volcanology*, 4(2015): 3.

Wilkinson, E. 2012. Transforming disaster risk management: a political economy approach. *ODI Background Notes*.

Williams, G. 2011. Study on disaster risk reduction, decentralisation and political economy: The political economy of disaster risk reduction. *Background Paper for the UNDP's contribution to the global assessment report on disaster risk reduction 2011*

Williams, I., & Powell, M. 2013. *In search of public: an analysis of the derivation and application of Publicness theories*. Paper presented at the symposium "Blurring the boundaries between public and private, Social Policy Association Conference, 08 – 10 July, 2013, Sheffield.

Wilson, E. 2006. Adapting to climate change at the local level: the spatial planning response. *Local Environment*, 11(6):609-625.

Wisner, B., Comfort, L., Cutter, S., Pulwarty, R., Hewitt, K., Oliver-Smith, A., Wiener, J., Fordham, M., Peacock, W., & Krimgold, F. 1999. Reframing disaster policy: the global evolution of vulnerable communities. *Environmental Hazards* 1(1):39-44.

Wolstenholme, R. & Ng'ambi, F. 2010. The role of parliamentarians in strengthening the climate change agenda: Malawi report, International Institute for Environment and Development.

World Economic Forum (WEF), 2013. *The future role of civil society*. World Economic Forum, Geneva, Switzerland.

World Health Organisation, 2013. Angola. Available on <http://www.who.int/countries/ago/en/> accessed 01 December 2015

- Wren, D.A. & Bedeian, A.G. 2009. *The Evolution of Management Thought*, Sixth edition. London: John Wiley & Sons, Inc.
- Yamin, F., Rahman, A. & Huq, S. 2005. Vulnerability, adaptation and climate disasters: a conceptual overview. *IDS bulletin*, 36(4):1.
- Yanda, P., Mushi, D., Henku, A.I., Maganga, F., Minde, H., Malik, N., Kateka, A., Bird, N & Tilley, H. 2013. *Tanzania National Climate Change Finance Analysis*. Overseas Development Institute, London and the Centre for Climate Change Studies, University of Dar es Salaam.
- Yang, T.M. & Maxwell, T.A. 2011. Information-sharing in public organizations: A literature review of interpersonal, intra-organizational and inter-organizational success factors, *Government Information Quarterly*, 28(2): 164-175.
- Yodmani, S. 2001. *Disaster Risk Management and Vulnerability Reduction: Protecting the Poor*. Paper delivered at the Social Protection Workshop 6: Protecting Communities – Social Funds and Disaster Management under the Asia and Pacific Forum on Poverty: Reforming Policies and Institutions for Poverty Reduction.
- Yoo, C.B., Hawryszkiewicz, I. & Kang, K. 2012. Multiple perspectives framework to model complex processes. In *ACIS 2012: Location, location, location: Proceedings of the 23rd Australasian Conference on Information Systems 2012*: 1-10).
- Yorke, D. 2007. The local government in England and Wales. *European Journal of Marketing*, 18(2): 10-16.
- Young, O. R. 2010. Institutional dynamics: Resilience, vulnerability and adaptation in environmental and resource regimes. *Global Environmental Change*, 20(3):378-385.
- Young, O. R. 1994. The problem of scale in human/ environment relationships, *Journal of Theoretical Politics*, 6(1994): 429-447.
- Zeithaml, V. A., Varadarajan, P., & Zeithaml, C.P. 2001. The Contingency Approach: Its foundations and relevance to theory building and research in marketing. *European Journal of Marketing* 22(7):37 – 64.
- Zenger, T. R., Lazzarini, S.G. & Poppo, L. 2002. Informal and formal organisation in new institutional economics. *Advances in Strategic Management*, 19:277-306.

- Zhang, J., Okada, N. & Tatano, H., 2005. Integrated Natural Disaster Risk Management: Comprehensive and integrated Model and Chinese Strategy Choice. Proceedings of Fifth annual IASA-DPRI forum on Integrated Disaster Risk Management Sept. 14-18 Beijing, China
- Ziervogel, G., New, M., Archer van Garderen, E., Midgley, G., Taylor, A., Hamann, R., Stuart-Hill, S., Myers, J. & Warburton, M. 2014. Climate change impacts and adaptation in South Africa. *Wiley Interdisciplinary Reviews: Climate Change*, 5(5): 605-620.
- Ziervogel, G., Taylor, A., Hachigonta, S. & Hoffmaister, J. 2008. *Climate adaptation in southern Africa: Addressing the needs of vulnerable communities*. Report Commissioned by Oxfam GB, Stockholm Environment Institute.
- Zimbabwe National Statistics Agency (Zimstat), 2012. Zimbabwe Population Census 2012, Population Census Office, Harare, Zimbabwe.
- Zondi, S. 2009. *Governance and social policy in the SADC region: An issues analysis*. Development Planning Division Working Paper Series No.2, DBSA: Midrand.
- Zucker, L.G. 1987. Institutional Theories of Organisation. *Annual Review of Sociology*, 13(1987): 443 – 464.

ANNEXURE A: INTRODUCTORY LETTER FOR DATA COLLECTION

NEMAKONDE LIVHUWANI DAVID



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01 October 2014

To Whom It May Concern

Mr NemaKonde L.D student Number 24539155 is a registered student at the North West University for the Programme: Doctor of Philosophy in Development and Management – Disaster Studies. The title of his thesis is: Integrating parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community (SADC) Region. The study aims to develop a model which will help in the integration of organisations for disaster risk reduction and climate change adaptation at national level of government.

As part of the empirical evidence for his study Mr. NemaKonde is expected to collect data regarding his studies from officials dealing with disaster risk management (reduction) and Climate change (adaptations) from all SADC member states. Your experience and understanding on issues pertaining to disaster risk management (reduction) and climate change (adaptation) is valuable to inform the outcomes of this study

You are therefore requested to assist by completing the attached online questionnaire. Please note that your participation is voluntary and confidential as per attached informed consent form.

Kind regards

A handwritten signature in black ink, appearing to read 'Dewald van Niekerk', written over a light grey circular stamp.

Prof. Dewald van Niekerk

Director: African Centre for Disaster Studies

North-West University

South Africa

ANNEXURE B: INFORMED CONSENT



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01 October 2014

INFORMED CONSENT

You are hereby invited to participate in the research project described below. Your participation is completely voluntary and anonymous. This consent letter is for those willing to participate in the research project on **“Integrating parallel structures for disaster risk reduction and climate change adaptation in the Southern African Development Community”**.

The main objective of this study is to unravel the reasons for and the consequences of the isolation of disaster risk reduction and climate change adaptation and to provide an model for the integration of disaster risk reduction and climate change adaptation.

The ethical guidelines followed in this study are provided for by the North West University Ethical Committee:

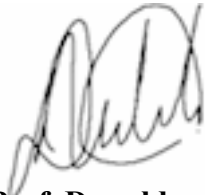
Anonymity and Confidentiality: The information collected in the study will be used anonymously and for the purpose of the study and publication of articles. No names or respondents and names of their organisations will be published. Your response will be grouped with other responses from the sample.

Voluntary Participation: Your participation in the study is entirely voluntary. You are free to choose if you want to participate or not. If you decide to participate you are requested to open

the attached link and complete the questionnaire. The questionnaire might take between 20 and 40 minutes to complete.

Thank you in advance for agreeing to participate in the study.

Kind Regards

A handwritten signature in black ink, appearing to read 'Dewald van Niekerk', with a stylized, cursive script.

Prof. Dewald van Niekerk

Director: African Centre for Disaster Studies

North-West University

South Africa

ANNEXURE C: INTERVIEW PROTOCOL FOR FACE-TO FACE INTERVIEWS

INTEGRATING PARALLEL STRUCTURES FOR DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

These are only leading questions that might stimulate a discussion and follow up question to clarify matters

- What is your position?
- Your background?
- What is the role of your organisation / institution in climate change/disaster risk reduction related matters?
- In dealing with risk, does your organisation separate between risk posed by climate change and risk from natural hazards?
- Have you ever considered the changing climate risk patterns in order to effectively manage the disaster risk?
- What do you think are the reasons for establishing separate structures for disaster risk reduction and climate change adaptation in your country?
- Do you think engaging in direct RR/CCA will affect your organisation to engage in its core work?
- What do you think are the effects of establishing and continuing to have separate structures for disaster risk reduction and climate change adaptation?
- Why is it important to link the structures/ institutions for drr and cca
- Can measures to reduce the impact of disasters be jointly financed by DRR and CCA funds?
- Is risk reduction and climate change adaptation integration relevant for your your organisation?
- To what extent do climate projections inform disaster risk reduction measures.
- What are the critical aspects of the enabling environment for integrating disaster risk reduction and climate change adaptation?
- How can the disaster risk reduction and climate change adaptation structures be brought towards becoming integrated structures? What are the possible ways of integrating risk reduction and climate change adaptation within programmes/organisations?

ANNEXURE D: ONLINE SURVEY QUESTIONNAIRE

**INTEGRATING PARALLEL STRUCTURES FOR DISASTER RISK REDUCTION
AND CLIMATE CHANGE ADAPTATION IN SADC**

•

Organisation/institution	Position	Academic and work background

- **What is the role of your organisation/institution in climate change/disaster risk reduction related matters?**
- **When dealing with risk, does your organisation separate between risk posed by climate change and risk from natural hazards?**

Yes	NO

Explain

- **The organisation I work for possess sufficient capacity and resources to address disaster risk**

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- **Climate change is not merely an environmental problem but rather a potent element in the deadly brew of disaster risk.**

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- **There is a positive correlation between extreme weather events and climate change**

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- **Due to climate change, extreme weather events have become intense, unprecedented and unpredictable**

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- **There are major overlaps between disaster risk reduction and climate change adaptation.**

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- **On a Scale of 1 – 5 rate the main reasons for establishing separate organisations/institutions for disaster risk reduction and climate change adaptation in your country (1 = weak and 5 = strong)**

Traditional division of government responsibilities into discrete areas	

Historical evolution of the concepts	
Lack of knowledge and understanding of issues by political leaders	
Careerism in the climate change arena	
Influence of international frameworks	
Others (please specify)	

- **On a Scale of 1 – 5 rate the following effects of establishing and continuing to have separate organisations/institutions for disaster risk reduction and climate change adaptation (1 = weak and 5 = strong)**

Incoherent policies	
Polarisation of interventions/ each c organisation focusing on its own priorities	
Competing for same resources	
Coordination becomes a nightmare	
Different international frameworks widening the gaps	
Territorial contests	
Duplication of services	
Other (please specify)	

- **These effect have often hindered an effective engagement of both communities in addressing issues of common interest**

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- The arrangement of many different actors belonging to different fields of expertise, organisations and institutions, that follow different visions and objectives in addressing disaster risk enhances fragmentation of efforts.

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- Differences in respective mandates, programmes and sets of measures on how to deal with climate change issues on the one hand and disaster risk reduction on the other provide great difficulty when developing a coherent strategy

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- Do you think it is important to integrate organisations/institutions for disaster risk reduction and climate change adaptation?

Yes	NO

Explain

- How important is joint funding for measures to reduce disaster risk

Very Important	Important	Not sure	Somewhat important	Not important at all

1	2	3	4	5

- **Rate on a scale of 1 – 5 at what stage should joint financial mechanisms for disaster risk reduction and climate change adaptation be considered?**

Budget allocation by central government (Ministry of Finance)	
At project level	
Must not be considered at all (Each must be funded separately)	
Others (please specify)	

- **What percentage of your daily work goes into disaster risk reduction and climate change adaptation?**

0%	20%	40%	60%	80%	100%

- **Rate on a scale of 1 – 5 the aspects of an enabling environment for integrating disaster risk reduction and climate change adaptation**

Enhanced political will and leadership	
Providing platform for dialogue	
Enhanced technical knowledge (senior government officials)	
Developing joint frameworks, policies and systems	
Improved good governance	
Other (Please specify)	

- **Integration requires formalised institutional arrangements?**

Strongly agree	Agree	Not sure	Disagree	Strongly

				disagree
1	2	3	4	5

- **Rate on a scale of 1 – 5 the mechanisms your institution uses to engage with their counterparts in disaster risk reduction and/or climate change adaptation**

No engagement	
Information sharing	
Informal contacts/ cooperation	
Coordinate issues of common interest	
Collaborate on issues of common interest	
Other (please specify)	

- Are there (formal or written) agreements between your organisations?

Yes	NO

- What are the elements of agreement?

- Are there integrated or shared responsibilities amongst the organisations?

Yes	NO

- Give examples of the responsibilities shared.

- Are there any critical turf issues that affects your working relations?

Yes	NO

- What are these?

- How may they be resolved?

- Leadership (political and administrative) in my organisation accept and support the working relations with the other organization.

Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	2	3	4	5

- **Merging/ structural adjustments of organisations for disaster risk reduction and climate change adaptation will assist in reducing disaster risk**

Strongly agree	Agree	Not sure	Disagree	Strongly

				disagree
1	2	3	4	5

- **Explain?**

ANNEXURE E: Respondent Demographics and background

Respondent Group composition	Educational Background	Work Experience	Role of organisation in DRR/CCA
Researcher	Geographer	Teacher, Land use Physical Planner, and Lecturer and Researcher of Disaster Risk Reduction, Environmental Studies, Climate change adaptation.	Research and consultancy in Climate change and DRR, facilitation and training of communities and organisations in DRR and climate change adaptation
Chief Director	Social Sciences	Experience in Local Government, disaster management, water services sector developments, municipal partnerships and Public Private Partnerships	Dealing with implementation of DRM legislation, DRR programmes and DRM Planning, response and recovery
Director	Masters Development & Management	25 years in Emergency and Disaster Management	Disaster management
DRR specialist	Master in DRR	10 years of program management experience related DRR	Support (technical, financial, material) national institutions in the areas of prevention , preparedness and recovery
Deputy Director			
GIS Manager	Post-Graduate Diploma in Geomatics	15 years' work experience	To promote an integrated and coordinated system of disaster prevention, mitigation and risk management
Assistant Director	Post-graduate diploma in Disaster Management	17 years in public service	Though the organisation attends to all the issues of the disaster management continuum, my specific directorate deals

			with capacity building issues
Head of Service Orientation and Reflection	Master in Risk Management and Disaster	Deputy Director, organisational consultant in a consulting firm Consultant and data analyst, webmaster; department head	Co-ordinating activities of RCMP / DRR. Host the VAC or Vulnerability assessment committee
Deputy Director	Food Science & Leisure & Tourism Management. Currently busy Master degree in disaster management		Coordinating disaster risk reduction programmes, projects and activities
Climate Change Scientist	Geography, Environment, Meteorology, Policy analysis		Policy and Strategy Development, Climate Change Coordination, CCA/DRM Project and Programme Development, Resource Mobilization
Director	Ecology, Biodiversity and Climate Change		Policy development, coordination and implementation
Principal Programme Officer	Communications studies, strategic management and disaster risk studies.	About seven years in the media communication industry then another seven years in the disaster management field.	National coordinating body for all issues related to disaster risk reduction. We work with other stakeholders as well on issues relating to climate change.
Disaster Risk Reduction Specialist	Master 2 in reducing disaster risk. Experience	Coordination of emergency responses to cyclone victims, Supports the National Institutions in charge of Risk Management and Disaster in the implementation of the National Risk Management Strategy and Catastrophes in accordance with the global challenges.	At national level: institutional support, technical and material support to prevention, preparedness and recovery. At Community level: strengthening the resilience of vulnerable communities to cyclones, floods and drought.

Senior Manager	Public administration degree, Master of Disaster Management.	15 years operational experience in emergency services and Disaster Management.	It's to develop policies and set overall strategic direction for DRM in the country
Disaster risk management expert	Civil engineer and disaster risk management professional	Working experience of more than ten years.	Coordinate the implementation of national disaster risk reduction strategy in line with the global strategy for DRR
Managing Consultant	MPhil Sustainable Development Planning and Management	Development planning & management Environmental sustainability DRR & CCA Capacity development in all the above	Consulting services
Climate scientist	MSc	28 years working experience	Early warning
Operations Manager	Geography, Environmental Science and Planning		Coordinating Mitigating Programmes Strengthening Early Warning Systems
Principal Meteorologist	BSc. Hon Mathematics and Meteorology.	Fifteen years work experience as a forecaster. Work as a visiting scientist responsible climate change impact mitigation over Southern Africa and also doing seasonal rainfall forecasts for the SADC region.	Responsible for formulating early warning guidelines pertaining to severe weather in conjunction with National Disaster Management office and Department of Water Affairs.