A COMPREHENSIVE FRAMEWORK FOR MULTI-SPHERE DISASTER RISK REDUCTION IN SOUTH AFRICA

BY

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Submitted in accordance with the requirements for the degree of

PHILOSOPHIAE DOCTOR

IN PUBLIC MANAGEMENT AND DEVELOPMENT

in the

SCHOOL OF SOCIAL AND GOVERNMENT STUDIES

at the

NORTHWEST UNIVERSITY, POTCHEFSTROOM CAMPUS.

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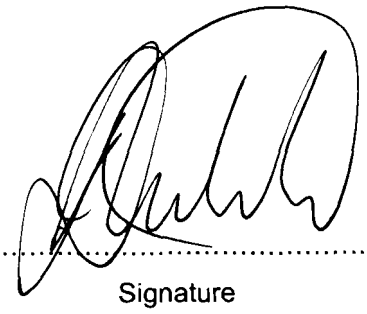
May 2005

DECLARATION

I declare that: "***A comprehensive framework for multi-sphere disaster risk reduction in South Africa***" is my own work, that all sources used or quoted have been indicated and 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 another university.



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16/09/2005

Date

ACKNOWLEDGEMENTS

First and foremost I give honour to my Creator for giving me the ability and insight to complete this thesis.

I would like to thank my promoter, prof. Gerrit van der Waldt, for his wealth of knowledge and insight. Thank you for always being patient and willing to listen to yet another change of focus. I am fortunate to have had the opportunity to study under your guidance. I also need to express thanks to Mr. Terry Jeggle for his advice and hours of reading drafts and e-mails, and in doing so taught me more than one could ever find in books. Also, Col. George Ritchie who taught me that there is no replacement of experience, and wisdom (really) only comes with age. Ms. Pat Reid for taking six months off her busy schedule to be the acting Director of the African Centre for Disaster Studies in my stead. You will never know how much the six month sabbatical did for my mental well-being. A special word of gratitude to all the participants in my focus group interviews. Without your participation this study would not have been possible. Recognition must also be given to all the international scholars of disaster risk who was willing to share their knowledge with me. To all the staff (past and present) of the African Centre for Disaster Studies which made it possible for me to spend more time on writing this thesis than actual work, thank you. I would also like to acknowledge the financial support by the Provention Consortium that funded a portion of this research. Thanks to my editor Ms. Marilu Greyling for doing a splendid job. Any mistakes are my own. A final word of thanks to my wife, Liezel. Thank you for being understanding during those late nights and early mornings. Without your continued support, love and patience I would not have made it.

ABSTRACT

Since the 1960s there has been a constant evolution in the common understanding of international disaster management. Various measures and structures were created to plan for emergency relief and the management of a disastrous event. Despite all the international effort which was aimed at reducing the impact of natural and anthropogenic hazards on humankind, very little progress was made. Loss of life, property, infrastructure and economic livelihoods are on the increase without any indication of improvement. Developmental activities could in most instances be blamed for the high level of disaster risk present in communities. On the other hand, very little was done in the international arena (through a multi-disciplinary approach) to ensure a developmental focus on disaster risk.

Despite the sometimes dismal situation in which especially the less developed world found themselves, some progress has been made in disaster risk reduction since the 1990s. Major disasters since the 1960s, as well as intensive media coverage of these events, have created a global awareness of the need to reduce disaster impacts. The aspects mentioned above, with the involvement of a variety of different disciplines and professional constituencies, gradually started to investigate and formulate an understanding of disaster risk. This, together with, the involvement of a variety of different disciplines and professional constituencies gradually led to the investigation and formulation of an understanding of disaster risk.

The declaration of the International Decade of Natural Disaster Reduction (1990-1999) and the formulation of the International Strategy for Disaster Reduction (2000-2010) confirmed the international importance of disaster risk reduction. South Africa, coming from a history of *apartheid* and discrimination, realised the void in caring for communities at risk. Severe floods in the Western Cape Province in 1997 heralded a new area in disaster management

in South Africa. In 1998, a legislative process started which culminated in the promulgation of the Disaster Management Act 57 of 2002.

Despite the international as well as national focus on the prevention and mitigation of disasters, their continuous impact and increase in losses were a clear indication that more than just pure disaster management should be undertaken. A paradigm shift gradually occurred where disasters were no longer seen as events to respond to. A focus on disaster risk reduction emerged. This focus is aimed at reducing the risk in which communities find themselves by using development interventions.

Disaster risk reduction is not without its own challenges. The heightened emphasis on the subject matter by a variety of regional and international agencies showed that a concrete theoretical knowledge base was lacking. A need to identify all the aspects of which disaster risk reduction comprises evolved. Several international disaster risk reduction frameworks emerged aimed at providing qualitative and quantitative indicators to measure success in disaster risk reduction.

This thesis aimed to develop a comprehensive multi-sphere disaster risk reduction framework that is tailor-made for the strategic management arena in South Africa. The research provides the reader with a background study on the international development of the concept of disaster risk reduction and its components. It focuses on disaster risk management and disaster management within the South African context. Four international disaster risk reduction frameworks are analytically compared and aligned with international best practices. Subsequently the South African national disaster management policy framework (the National Disaster Management Framework) is analysed and compared to the findings of the international comparison. This research further made use of focus group interviews for data collection. Specialists in the field of disaster risk management in South Africa formed part of the focus group interviews which served as a form of triangulation between the described processes and the reality in the South African public sector. In conclusion this thesis provides a new disaster risk reduction framework for

application in the strategic management sector on all levels of government. The framework is comprehensive, yet flexible enough, to be adapted for tactical and operational implementation.

SAMEVATTING

Daar was 'n konstante evolusie in die algemene begrip van internasionale rampbestuur sedert die 1960s. Verskeie maatreëls en strukture was geskep om sodoende te beplan vir noodleniging en die bestuur van 'n rampgebeurtenis. Ten spyte van al die internasionale pogings om die impak van natuurlike en antropogeniese gevare op die mensdom te verminder, is weinig vordering gemaak. Verlies van lewens, eiendom, infrastruktuur en ekonomiese lewensbestaan is aan die toeneem sonder enige aanduiding van verbetering. Ontwikkelingsaktiwiteite kan in meeste gevalle geblameer word vir die hoë vlak van ramprisiko teenwoordig in gemeenskappe. Aan die ander kant is min gedoen in die internasionale arena (deur 'n multi-dissiplinêre benadering) om te verseker dat daar 'n ontwikkelingsfokus op ramprisiko is.

Ten spyte van die soms ongewenste situasie waarin soveel ontwikkelende lande hulself bevind, is daar wel sedert die 1990s vooruitgang gemaak in ramprisikovermindering. Verskeie groot rampe sedert die 1960s, asook 'n toename in mediadekking van die gebeure, het gelei tot 'n globale bewuswording aangaande die behoefte om die impak van rampe te verminder. Die bogenoemde aspekte, met die betrokkenheid van verskeie dissiplines en professionele korpse, het stelselmatig 'n begrip van ramprisiko begin ondersoek en formuleer. Die Internasionale Dekade van Natuurlike Rampvermindering (1990-1999), asook die Internasionale Strategie vir Rampvermindering (2000-2010), het die internasionale belangrikheid van rampvermindering bevestig. Suid-Afrika, wat uit 'n agtergrond van apartheid en diskriminasie kom, het besef dat daar 'n leemte bestaan in die omsien van gemeenskappe met hoë risiko. Uitermatig baie vloede in 1997 in die Wes-Kaap Provinsie het 'n nuwe era vir rampbestuur in Suid-Afrika ingelei. In 1998

is 'n beleidmakende proses begin wat die Wet op Rampbestuur 57 van 2002 tot gevolg gehad het.

Ten spyte van die internasionale asook nasionale fokus op die voorkoming en versagtende maatreëls ten opsigte van rampe, was rampe se volgehoue impak en toename van verliese, 'n duidelike aanduiding dat meer as suiwer rampbestuur nodig was. 'n Paradigmaskuif het stelselmatig plaasgevind deurdat rampe gesien word as meer as net gebeurtenisse wat optrede verg. 'n Fokus op ramprisikovermindering het na vore gekom. Die fokus het ten doel om die risiko waarmee gemeenskappe saamleef deur ontwikkelingsingryping aan te spreek. Ramprisikovermindering is nie sonder uitdagings nie. Die verhoogde klem op die onderwerp deur verskeie streeks- asook nasionale agentskappe het op die tekortkoming van 'n konkrete teoretiese kennisbasis gedui. 'n Behoefte het ontstaan om alle aspekte waaruit ramprisikovermindering bestaan, te identifiseer. Verskeie internasionale ramprisikoverminderingraamwerke het die lig begin sien. Die raamwerke is daarop gemik om kwalitatiewe en kwantitatiewe indikatore, om sukses in ramprisikovermindering mee te meet, daar te stel.

Die proefskrif het gepoog om 'n volledige multi-sfeer ramprisikoverminderingraamwerk te ontwikkel. So 'n raamwerk is spesifiek gemik op die strategiese bestuursarena van die Suid-Afrikaanse openbare sektor. Die navorsing voorsien die leser van 'n agtergrondstudie aangaande die internasionale ontwikkeling van die konsep, asook komponente van ramprisikovermindering. Die proefskrif fokus op ramprisikovermindering asook rampbestuur binne die Suid-Afrikaanse konteks. Vier internasionale ramprisikoverminderingraamwerke word analities met mekaar, en internasionale beste-praktyke, vergelyk. Daaropvolgend word die Suid-Afrikaanse nasionele rampbestuur beleidsraamwerk (die Nasionale Rampbestuurraamwerk) geanaliseer en vergelyk met die bevindinge van die internasionale raamwerke. Die navorsing het verder gebruik gemaak van fokusgroeponderhoude om sodoende data in te samel. Spesialiste binne die veld van ramprisikobestuur in Suid-Afrika het deel uitgemaak van die fokusgroeponderhoude. Die fokusgroeponderhoude het ook triangulasie ten

doel gehad. Hierdeur is die prosesse van die navorsing, soos hierbo uiteengesit, en die realiteit binne die Suid-Afrikaanse openbare sektor met mekaar vergelyk. Gevolglik voorsien hierdie proefskrif 'n nuwe ramprisikoverminderingraamwerk vir toepassing binne die strategiesebestuur sektor in Suid-Afrika op alle vlakke van regering. Die raamwerk is volledig, maar ook buigsaam genoeg, om aangepas te word vir taktiese en operasionele implementering.

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CHAPTER 1:
ORIENTATION AND PROBLEM STATEMENT

1.1 INTRODUCTION

In today's fast changing global environment, the detrimental consequences of disasters on society, economy, natural environment, and even politics, cannot be overemphasised. More so in developing countries, the impact of disasters inevitably goes beyond their immediate devastation as the continuing toll on human lives, properties and resources exacerbates poverty and sets back economic development.

Global disaster statistics for 1996-2000 revealed considerable economic costs estimated at US$235 billion and 425,000 lives lost (CRED, 2002). Disasters caused by natural hazards alone reportedly affected an average of 211 million people per year in the past decade (Munich Re, 2003).

The United Nations, national governments, non-governmental organisations (NGOs), academic and research institutions have made significant strides in promoting and establishing programmes and strategies for disaster reduction (i.e. awareness campaigns, risk assessments, enhancing institutional risk reduction arrangements and poverty reduction plans, training programmes and research) and response (i.e. early warning systems, regional response units and food security monitoring) (UN/ISDR, 2003; SADC, 2001:14-28). Notwithstanding the above, many countries and local communities, especially in Southern Africa, are becoming increasingly vulnerable to disasters as technological, environmental, political and economic change combine to increase disaster risks (ISDR, 2002:21; Von Kotze, 1999a:33; Von Kotze, 1999b:55; Falconer and Foresman, 2002, 9-15).

Moreover, socio-economic studies have revealed that the secondary effects and indirect costs of disasters have long-term effects on societies, regardless of their level of development (Bull-Kamanga *et al*, 2003:201; Rosenthal *et al*, 2001; Munich Re, 2003; Lohnert and Geist, 1999:xiii).

This study aims to develop a comprehensive framework for disaster risk reduction within the South African context. This introductory chapter will provide the reader with an orientation and problem statement as to the phenomenon under investigation. Certain key terminology underlying the study will be discussed and in doing so misunderstanding and wrongful interpretation will be limited. The key research questions as well as the objectives of the research will enjoy attention. Subsequently the method of investigation and the contribution of the research to the disaster risk reduction body of knowledge will be discussed.

1.2 ORIENTATION AND PROBLEM STATEMENT

Jeggle (in Rosenthal *et al*, 2001) points out that since the 1960s; there has been a constant evolution and development in the common understanding of international disaster management. Efforts in reacting to, or preventing catastrophic events have been referred to as emergency relief or disaster assistance (UNICEF, 1986:3-10), civil defence (South Africa, 1966), civil protection (South Africa, 1977), disaster management (UNDP, 1992:1-3), humanitarian assistance (Black, 1992:201), disaster prevention (Kaplan, 1996:70-71), and most recently, disaster risk management (Kajl, 2002:1-12). Each of these elements have, in their own respect, a certain reactive focus on emergency events.

Annually vast amounts of money are still spent on response to situations of disaster (Munich Re, 2003; ISDR, 2002). Some well-meaning development projects have also increased vulnerability and have only succeeded in short-term solutions as well as political gains for decision-makers. These developments instilled risk, not resilience. Jegillos (1999:11), Blaikie *et al*,

(1994: 64) and De Satge (2002:191), indicate that the underlying conditions of disaster risk are generated by unsustainable development practices, while Holloway (in Ingleton, 1999:208) is of the opinion that the challenges in reducing disaster risk in Southern Africa is essentially a developmental question. Karimanzira (1999:17) emphasises that in order for sustainable development and sustainable livelihoods to be achieved, disaster risk in the context of vulnerability reduction and enhancing resilience should enjoy top priority.

A report released by the International Strategy for Disaster Reduction (ISDR, 2002), shows that in a review undertaken on the International Decade for Natural Disaster Reduction (IDNDR, from 1990-1999) various initiatives (e.g. the World Vulnerability Report, Global Environmental Outlook and the World Disaster Report) have been developed in order to address disaster risk in the context of development. Although these projects add value to disaster risk reduction, a comprehensive and systematic review of ongoing initiatives is still lacking (ISDR, 2002:4). The elaboration of a comprehensive framework to measure disaster risk reduction efforts over time, which could set the ground for the development of specific risk reduction targets, thereby contributing to the enhancing capacities in governments and communities, is also needed (ISDR, 2002:4; Mitchell, 2003:1; IDEA, 2003:2).

In July and August 2003 two different international forums were established. Both were designed as steps towards creating an overarching understanding of disaster risk reduction and how it can be measured (Mitchell, 2003:1). Firstly, the *Instituto de Estudios Ambientales* convened meetings of experts in Barcelona and Colombia to discuss its *Information and Indicators Program for Disaster Risk Management* project (Cardona, 2003). Secondly, the UN's International Strategy for Disaster Reduction initiated an online conference stimulated by the organisation's *Draft Framework to Guide and Monitor Disaster Risk Reduction* (ISDR, 2003). The "framework" which each of these forums advances, aims to increase effective disaster risk reduction practices. The frameworks aim to provide a better understanding and guide as well as monitor disaster risk reduction activities regionally and within countries.

Various other initiatives have subsequently seen the light (e.g. the SINT-RISK "foot print" framework of Regional Andean Programme for Risk Reduction and Disaster Prevention (PREANDINO)/ Andean Development Corporation (CAF), and the UNDP Disaster Risk Index). These frameworks are, however, too generic for local application and need considerable refinement in order to make it relevant to the South African situation.

One of the findings of the ISDR conference mentioned was that the *Draft Framework,* which was decided upon (see http://www.unisdr.org/dialogue for content detail) has to be widely disseminated and different regions and countries need to "internalise" and "adapt" the framework to suit their own particular requirements (ISDR, 2003). This study will aim to achieve the above within the South African context.

In January 2003, the South African Government promulgated the Disaster Management Act 57 of 2002 (South Africa, 2003). The aim of the legislation is to provide a coherent and coordinated approach to disaster risk reduction for the whole of South Africa. Although the legislation and the preceding White Paper on Disaster Management (South Africa, 1999) is specific on the operational modalities of disaster management at all levels of government (e.g. the creation of structures), it is silent on how disaster risk reduction must be implemented or how success can be ensured. One of the requirements of the Disaster Management Act is to ensure that all spheres of government apply disaster management in a uniform manner (see section 7 of the Disaster Management Act). The mentioned needs to be achieved through the integration of disaster risk reduction into development activities through the Integrated Development Plan (IDP) process (see Chapter 3 for an in-depth discussion on this integration), (South Africa, 2000; South Africa, 2003), thus contributing to sustainable development.

It is against this background that the need for a disaster risk reduction framework for South Africa becomes apparent. Such a framework will assist political, policy and operational decision-makers to direct much needed development projects to enhance disaster risk reduction. The development of

the mentioned framework will depend on a multi-disciplinary, multi-sectoral approach to disaster risk. The framework will enhance understanding of disaster risk and will provide concrete indicators against which success in disaster risk can be measured.

1.3 CONCEPTUALISING KEY TERMINOLOGY UNDERLYING THE STUDY

Certain concepts are used throughout this thesis. It is important that these terms be defined and discussed in order to ensure clarity and the correct application thereof.

1.3.1 Disaster (risk) reduction

The terms "disaster reduction" and "disaster risk reduction" have elicited some discussion and confusion over the past two years (Ritchie, 2003). Jeggle (2003a) is of the opinion that in essence both terms refer to the same phenomenon, and that the ISDR is not making any significant distinction between the two terms. The concept of disaster risk reduction is more widely used than disaster reduction as it indicates an emphasis on what is being reduced, as opposed to "disaster reduction" which might increase the perception that the main focus of disaster (risk) reduction is disasters, rather than hazards and conditions of vulnerability. With the above in mind, disaster risk reduction and disaster reduction will be used as synonyms in this thesis. A distinction between disaster risk reduction and disaster risk management will, however, be made.

The ISDR (2002:25) defines disaster risk reduction as "*the systematic development and application of policies, strategies and practises to minimise vulnerabilities and disaster risks throughout a society, to avoid (prevent) or to limit (mitigate and prepare) adverse impacts of hazards, within the broader context of sustainable development*". The UNDP (2004:135) concurs with the

before-mentioned definition. The World Bank (2004) simply states that [disaster] risk reduction is to avoid hazards and reduce vulnerability.

From the definitions it is therefore clear that disaster risk reduction entails a very wide focus on issues on a strategic level (see management levels below). Disaster risk reduction aims to implement certain strategic initiatives (policies, strategies and practices – see Kroon, 1990) that will ultimately reduce or eliminate conditions of hazard and vulnerability at the local level[1]. Reducing risk requires that all stakeholders change their perception and behaviour to place a high priority on safety in planning and development (World Bank, 2004). The World Bank further indicates that measures such as land use planning, structural design, construction practices and standards and disaster warning systems are examples of risk reduction. This term uses sustainable development as its basis of understanding, in other words, disaster risk reduction can only be successful within the context of sustainable development. Some of the key terms underlying this definition of disaster risk reduction will also be discussed to provide clarity.

1.3.2 Disaster risk

The term [disaster] risk is multidisciplinary and may be used in a variety of contexts (UNDP, 1992). Kelman (2003:6) is of the opinion that various disciplines define risk in different ways, and that the definition of risk depends on the observer. In the case of disaster risk reduction, disaster risk has a specific focus (UNDP, 1992). On perusal of the literature defining risk it is clear that varied opinions exist but that some communalities can be identified.

Risk is usually associated with the human inability to cope with a particular situation. Risk embraces exposures to dangers, adverse or undesirable prospects, and the conditions that contribute to danger (Hewitt, 1997:22).

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[1] It is widely accepted that in order for disaster risk reduction to be successful it should be applied at the local or community level – more discussions on this issue follow in subsequent chapters.

Helm (1996:4-7) as well as Sayers *et al* (2002:36-38) defines risk as the probability of an event occurring linked to its possible consequences. Tobin and Montz (1997:282) differ slightly from Helm and argue that risk is the product of the probability of an occurrence and expected loss due to vulnerability to the occurrence. These authors express risk as:

Risk = probability of occurrence X vulnerability

Blaikie *et al* (1994:21) differ partially from Tobin and Montz and indicate that risk is a complex combination of vulnerability and hazard. The ISDR (2002:24) defines disaster risk as the probability of harmful consequences, or expected losses (lives lost, persons injured, damage to property and/or the environment, livelihood lost, and the disruption of economic activities or social systems) due to the interaction between humans, hazards, and vulnerable conditions. Cardona (2003:2) and Granger *et al* (1999) agree with this definition.

Risk could therefore be viewed as the possibility that a particular hazard (of certain magnitude within a certain timeframe) might exploit a particular vulnerability (of a certain type within a specific timeframe). It is the product of the possible damage caused by a hazard due to the vulnerability within a community. It should be noted that the effect of a hazard (of a particular magnitude) would affect communities differently (due to different levels and types of vulnerability) (Von Kotze, 1999a:35). This is also true because of the different coping mechanisms within a particular community. In general, poorer communities are more at risk (and less resilient) than communities in possession of coping capacities (be it social, economic, physical, political or environmental).

Increased emphasis is now placed on risk, and an acceptance that disaster, development and environmental problems are inextricably linked. As with the definition of disaster risk reduction, the UNDP (2004:136) and ISDR (2002:25) agree on the definition of disaster risk and express risk as:

Risk = Hazards x Vulnerability

Lewis (1999:8) and Bethke, Good and Thomson (1997:10-11) concur with the above and are of the opinion that risk is therefore the product of hazard and vulnerability. Risk is a statistical probability of damage to a particular element which is said to be "at risk" from a particular source or origin of hazard.

Disaster risks exist, or are created, within social systems (ISDR, 2003:24). Attention should therefore be paid to the social context in which risk occurs, and it should be noted that people will therefore not share the same perceptions of risks and their underlying causes due to their differing social circumstances (UNISDR, 2004b). Rather than merely responding to their consequences (Lewis, 1993:37), communities, governments, civil society and professionals from various fields are increasingly recognising the value of sustained efforts to reduce the social, economic and environmental costs associated with disasters, (ISDR, 2003:15) by addressing disaster risk.

1.3.3 Hazard

A hazard can be defined as a potentially damaging physical event, phenomenon, or human activity, which may cause the loss of life or injury, damage to property, social and economic disruption or environmental degradation. Hazards can include hidden conditions that may represent future threats and which may have different origins. These include natural (geological, hydrometeorological, and biological) processes and/or processes induced by humans (environmental degradation and anthropogenic hazards) (ISDR, 2002:24).

Hazards may be single, sequential, or combined in their origin and effects. Each hazard is characterised by its location, intensity, and probability. Typical examples of hazards may include the absence of rain (leading to drought) or the abundance thereof (leading to flooding). Chemical manufacturing plants near settlements may also be regarded as hazards. Similarly, incorrect

agricultural techniques will in the long run lead to an increase in crop failure risk. Hazards may either be a creation of humans or of the environment. Although the former can be planned for easier than the latter, the management of the hazard will in both cases remain the same. The UNDP (2004:16) only makes provision for defining natural hazards as: "*natural processes or phenomena occurring in the biosphere that may constitute a damaging event*".

1.3.4 Vulnerability

Vulnerability is a set of prevailing or consequential conditions resulting from physical, social, economical, and environmental factors, which increase the susceptibility of a community to the impact of hazards (ISDR, 2002:24). It may comprise physical, socio-economic, and/or political factors that adversely affect the ability of communities to respond to events (Jegillos, 1999). Blaikie *et al* (1994) are of the opinion that vulnerability involves the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a hazard. Vulnerability may be expressed as the degree of loss (expressed, for example, as a percentage) resulting from a potentially damaging phenomenon or hazard. Vulnerability thus refers to the extent to which a community will degrade when subjected to a specified set of hazardous conditions.

Vulnerability has some distinct underlying causes. The magnitude of each disaster, measured in deaths, damage, or costs (for a given developing country), increases with the increased marginalisation of the population. This is caused by a high birth-rate, problems of land tenure and economic opportunity, and the misallocation of resources to meet the basic human needs of an expanding population.

1.3.5 Disaster risk management

The ISDR and UNDP define disaster risk management as the systematic process of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards (UNISDR, 2004b).

The Institute for Disaster Risk Management (IDRM, 2004) is of the opinion that disaster risk management is a development approach to disaster management. This approach focuses on underlying conditions of the risks which lead to disaster occurrence. The objective is to increase capacities to effectively manage and reduce risks, thereby reducing the occurrence and magnitude of disasters.

Gratwa and Bollin (2002:19) define disaster risk management as a series of actions (programmes, projects and/or measures) and instruments expressly aimed at reducing disaster risk in endangered regions, and mitigating the extent of disasters. To them disaster risk management includes risk assessment, disaster prevention and mitigation and disaster preparedness.

Disaster risk management is therefore a more tactical and operational embodiment of strategic decisions (policy, strategies, and programmes). For all means and purposes it would be accurate to argue that disaster risk management is aimed at addressing the disaster risk problem within the resources and constraints imposed by the strategic focus of disaster risk reduction, within the tactical and operational levels.

1.3.6 Disaster management

Crucial to this study is the definition of disaster management. Jeggle (2003a) says that disaster (and emergency) management is the organisation and management of resources and responsibilities for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation. "*Emergency management involves plans, structures and arrangements established to engage the normal endeavours of government, voluntary and private agencies in a comprehensive and coordinated way to respond to the whole spectrum of emergency needs. This is also known as disaster management*".

Coburn, Spence and Promonis (1991:67) are of the opinion that disaster management is a collective term encompassing "*all aspects of planning for and responding to disasters, including both pre- and post-disaster activities. It refers to the management of both the risks and the consequences of disasters*".

Disaster management in the South African context is defined by the Disaster Management Act (South Africa, 2003) as:

"*a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at:*

- *preventing or reducing the risk of disasters;*
- *mitigating the severity or consequences of disasters;*
- *emergency preparedness;*
- *a rapid and effective response to disasters; and*
- *post-disaster recovery and rehabilitation.*"

When considering and comparing the mentioned definitions it becomes obvious that the "internationally accepted" definition for disaster management and that of the South African Government is not totally consistent. The South African definition is a combination between what was previously defined as

disaster risk management and the definition by Jeggle for disaster management. The reasons for this will become clear in later chapters which will include discussions on the development of disaster management in South Africa.

The South African definition places emphasis on a multi-sectoral and multi-disciplinary approach. This therefore means that disaster management is not seen as the responsibility of only one implementing agency, as is the case of disaster management in the international arena. The fact that this definition also places the emphasis on the implementation of measures [to reduce risk], clearly indicates that it is in actual fact referring to disaster risk management.

For the purpose of this thesis, and to ensure consistency with South African legislation and widely used and acceptable terms, disaster management will be used in the same context as disaster risk management. Although the author acknowledges that these two concepts are not synonyms within the international context, when referring to the South African case one can argue that they are indeed the same.

1.3.7 Disaster

The definition of disaster is a contended point within modern literature (Quarantelli, 1998; Smith, 2002:28). Insufficient consensus exists between different authors and organisations as to the exact definition of the term. It is also not uncommon to find varying definitions of the term within one discipline. Although difficult to define it is imperative for the purpose of this thesis that such a definition is given.

Gunn (1993:17) defines disaster as the result of a vast ecological breakdown in the relationship between humans and their environment. He says that disaster is a serious and sudden event on such a scale that the stricken community needs extraordinary efforts to cope with it, often with outside help or international aid.

The ISDR (2002:25) is of the opinion that a disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability, and insufficient capacity or measures to reduce the potential negative consequences of risk.

Benson and Clay (2004:5) say that a disaster is the "*occurrence of an abnormal or infrequent hazard that affects vulnerable communities or geographic areas, causing substantial damage, disruption, and perhaps casualties and leaving the affected communities unable to function normally. From an economic perspective, a disaster implies some combination of losses, in human, physical, and financial capital, and a reduction in economic activity such as income generation, investment, consumption, production, and employment in the "real" economy. There may also be severe effects on financial flows such as the revenue and expenditure of public and private bodies*".

The South African Disaster Management Act (2002) indicates that disaster is a serious disruption of the functioning of a society, causing or threatening to cause widespread human, material, or environmental losses that exceed the ability of the affected community to cope using only its own resources (South Africa, 2002).

For the purpose of this thesis the definition of the South African Disaster Management Act will be used as the basis for discussion. It should be noted that the definition in the Disaster Management Act makes provision for defining local, provincial as well as national disasters. From the above definition it is clear that a certain identifiable unit (affected community) is used as indicator. In terms of the Disaster Management Act, this smallest identifiable unit relates to a local municipality[2]. The geographical boundaries for local municipalities are therefore the "affected community" referred to in the definition. Once a

[2] Category B municipality – See Chapter 3 for a full discussion on the South African government system

hazardous event exploits vulnerability within a local municipality up to the extent that they are unable to cope using their own resources, then a local state of disaster can be declared. Such is also the case for provincial and national disasters. This distinction will become clear in the discussions in Chapter 3.

Throughout this thesis reference will be made to three distinct levels of disaster risk reduction application; that of strategic, tactical and operational. These different "levels" will be adequately defined in order to facilitate discussions. Due to the fact that this study will make extensive use of different frameworks and strategies, it is important to distinguish between these two concepts and to indicate their relationship with the levels of disaster risk reduction application mentioned.

1.3.8 Framework

The term "framework" could have various meanings and interpretations. Brown (1997:578) defines a framework as *"a frame or structure; the fabric for enclosing or supporting anything, or forming the substructure to a more complete fabric"* or *"the structure or arrangement of society"*. WordNet (2003) defines a framework as model or theoretical account of some phenomenon. A framework could also relate to *"a structure for supporting or enclosing something else, especially a skeletal support used as the basis for something being constructed; a fundamental structure, as for a written work; and a set of assumptions, concepts, values, and practices that constitutes a way of viewing reality"* (Dictionary.com, 2004). Anderson and Woodrow (1989:9) say that a framework should set out categories of factors that should be considered for a particular phenomenon, and also the suggested sequence or order in which to consider them. These categories must be comprehensive enough to cover all the important variables. A framework should also address the relationship between the different variables. Framework, for the purpose of this study, will be defined as a skeletal theoretical construct (categories and variables) that forms a foundation and outline containing assumptions,

concepts, values and practices of the way of viewing the reality of particular phenomena[3].

1.3.9 Strategy

The word strategy is derived from the Greek work *"strategos"* which means generalship. It was used in military terms to indicate the art or plan used by a military general to overwhelm his enemies (Kroon, 1990). Kroon (1990:169) indicates that within the management realm, strategy is used to indicate an appropriate plan or method that will achieve the overall objectives of an organisation. Smit and Cronje (1997:142-143) identify two types of strategies, that of a corporate and that of a business strategy. A corporate strategy relates to the overall *"grand vision"* chartered for an organisation as a whole and sets out the business which an organisation should be in. A business strategy determines how best to compete in a particular industry or market. Daft (1997:249) indicates that a traditional strategy is a plan of action which combines global coordination to attain efficiency with flexibility to meet specific needs in various countries (see the Yokohama Strategy and Plan of Action in Chapter 2 for such an example). He further says that a strategy within the business environment prescribes resource allocation and other activities for dealing with the environment in which the organisation functions and helps the organisation to attain its goal. Strategy can also describe the consistencies in an organisation's decisions (Lorsch, 1978:246). Stoner and Freeman (1992:194) add that the concept of strategy could indicate two different perspectives of what an organisation (a) intends to do, and (b) what an organisation eventually does. Taking the above into consideration, strategy can therefore be defined as an overall plan of action which sets out overall

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[3] The phenomenon to be studied in the case of this research will be disaster risk reduction. The framework for disaster risk reduction will therefore be a theoretical skeleton of categories and variables which contains certain assumptions, concepts, values and practices which describes the phenomenon of disaster risk reduction and provides a foundation for the implementation of disaster risk reduction as well as the development of performance indicators towards its success.

objectives of an organisation and the means with which to achieve these objectives.

Although managers have always plotted strategies, management scholars have only recently recognised strategy as a key factor to the success of an organisation. Strategic management as a management approach gradually developed.

1.3.10 Strategic management

Kroon (1990:169) defines strategic management as the continuous, long-term planning process by top and middle management to achieve an organisation's objectives within a changing environment through the development and implementation of an appropriate plan. Lorsch *et al* (1978:116) are of the opinion that resources needed in order to implement the plan and attain the required objectives, form an integral part of strategic management. Stoner and Freeman (1992:186) as well as Smit and Cronje (1997:140) concur with the definitions given above but add that the "internal" as well as "external" environment of the organisation in question will have a great impact on the success of the strategic plan. Daft (1997:245) indicates that strategic management should provide a *"competitively superior fit between the organisation and its environment so as to achieve organisational goals".*

1.3.11 Tactical Management

Tactical management deals primarily with people and action and has a more specific and concrete focus than strategic management (Smit & Cronje, 1997:122). This type of management is mostly of the functional areas of the organisation e.g. marketing, finance, operations, human resources and other functions. Tactical management aims to ensure that the overall organisational objective and strategic plan are implemented (Daft, 1997:220). Kroon (1990:135) says that tactical management is further concerned with shorter

term planning than strategic management, and these types of plans are normally developed by middle management. This type of management is concerned with issues such as formulating budgets, planning staff levels, planning cash flows, formulating advertising programmes and acquiring new resources, to name but a few (Lorsch *et al*, 1978:117).

1.3.12 Operational management

Daft (1997:220) indicates that operational management is concerned with specific action steps towards achieving operational goals and to support tactical planning on a daily basis. Lorsch *et al* (1997:116) say that tactical management is the process of assuring that specific tasks are carried out effectively and efficiently. Smit and Cronje (1997:121-122) are of the opinion that middle- and lower-level managers develop operational plans for operational management. The before-mentioned authors indicate that these operational plans could either be single-use plans or standing plans to achieve the desired organisational objectives.

1.4 ACRONYMS

The following acronyms are used throughout the thesis. Although each acronym is explained in full on its first use, this list serves as an easy reference to the reader.

CAF	*Corporacion Andina de Fomento* (Andean Development Corporation)
CBO	community-based organisation
DM	Disaster Management (category of RMI)
DPLG	Department of Provincial and Local Government
FAO	Food and Agriculture Organisation (United Nations)
FOG	field operations guide
FP	Financial Protection and Governance (category of RMI)
GIS	geographical information systems
IADB	Inter-American Development Bank
ICDM	Intergovernmental Committee on Disaster Management
ICRC	International Committee of the Red Cross
IDEA	*Instituto de Estudios Ambientales* (Institute for Environmental Studies)
IDNDR	International Decade for Natural Disaster Reduction

IDP	integrated development planning
IFRCS	International Federation of Red Cross and Red Crescent Societies
IGF	Intergovernmental Forum
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
ISDR	International Strategy for Disaster Risk Reduction (United Nations)
KPA	Key Performance Area(s)
KPI	Key Performance Indicator(s)
LDC	Least Developed Country
LGA	*Lieux de Gèneve Association* (Association of Geneva Zones)
MDC	More Developed Country
MDMAF	Municipal Disaster Management Advisory Forum
MDMC	municipal disaster management centre
MEC	Member of the Executive Council (member of a provincial Cabinet)
MIDMC	Municipal Interdepartmental Disaster Management Committee
MINMEC	(Forum of) Ministers and Members of Provincial Executive Councils
NEPAD	New Partnership for Africa's Development
NDMAF	National Disaster Management Advisory Forum
NDMC	National Disaster Management Centre
NDMF	National Disaster Management Framework
NGO	non-governmental organisation
NIDMC	National Interdepartmental Disaster Management Committee
OCHA	Office for the Coordinator of Humanitarian Affairs (United Nations)
PDMAF	Provincial Disaster Management Advisory Forum
PDMC	provincial disaster management centre
PIDMC	Provincial Interdepartmental Disaster Management Committee
PREANDINO	Regional Andean Programme for Risk Reduction and Disaster Prevention
RI	Risk Identification (category of RMI)
RMI	Risk Management Index
RR	Risk Reduction (category of RMI)
SADC	Southern African Development Community
SALGA	South African Local Government Association
SAP	Structural Adjustment Programme(s)
SOP	standard operating procedure
UN	United Nations
UNDP	United Nations Development Programme
UNDRO	United Nations Disaster Relief Office
UNDMTP	United Nations Disaster Management Training Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNRRA	United Nations Relief and Rehabilitation Administration
WB	World Bank
WCDR	World Conference on Disaster Reduction (17-24 January 2005, Kobe, Hyogo, Japan)
WFP	World Food Programme
WHO	World Health Organisation
WMO	World Meteorological Organisation

1.5 KEY RESEARCH QUESTIONS

The following key questions will be answered by the research:

i. How is disaster risk reduction defined within the international and South African context?
ii. What are the international criteria or benchmarks in analysing disaster risk reduction?
iii. What criteria, benchmarks or frameworks currently exit in South Africa to measure disaster risk reduction?
iv. What are the requirements to manage disaster risk reduction on all spheres and tiers of government?
v. How can existing international draft frameworks be adapted and internalised to suite multi-sphere South African requirements?
vi. What indicators/performance criteria/parameters should be incorporated in a comprehensive disaster risk reduction framework for South Africa for all tiers of government?

1.6 RESEARCH OBJECTIVES

The research will aim to develop a comprehensive framework that could serve as a guide for the successful implementation of disaster risk reduction initiatives.

In order to reach the above aims, the objectives of the research are to:

i. define disaster risk reduction within the international and South African context;
ii. explore and investigate international criteria and benchmarks in analysing disaster risk reduction;
iii. investigate and analyse current criteria, benchmarks or frameworks for measuring disaster risk reduction in South Africa;

iv. define and explore requirements for the management of disaster risk reduction on all spheres and tiers of government;
v. adapt and internalise existing disaster risk reduction frameworks to suite multi-sphere South African requirements;
vi. explore and describe the indicators/performance criteria/parameters to be incorporated into a comprehensive disaster risk reduction framework for all tiers of government in South Africa.

1.7 CENTRAL THEORETICAL STATEMENT

The following preliminary statements can be made:

i. Currently no comprehensive mechanism exists to monitor and guide disaster risk reduction internationally (ISDR, 2002:4; ISDR, 2003; Mitchell, 2003; IDEA, 2003), and in South Africa (South Africa, 2003).
ii. The lack of a comprehensive framework contributes to the inability to set clear disaster risk reduction targets for communities-at-risk (Holloway, 2003).
iii. A comprehensive framework for disaster risk reduction will enhance South Africa's ability to reduce disaster risk (South Africa, 2002).

1.8 METHOD OF INVESTIGATION

A qualitative research design was used to conduct the research. Qualitative methodology in the form of literature study, comparative analysis and focus group interviews will be used for the purpose of this research.

1.8.1 Literature study

Primary literature was used as the foundation for this research (see Chapters 2 and 3). Books, government and international reports, conference proceedings and research reports/documents will be consulted in order to ascertain the most current developments in disaster risk reduction frameworks. Existing data, empirical findings and national standards within the field of disaster risk reduction will also enjoy attention (see Chapters 4 and 5).

1.8.2 Empirical study

Two focus group interviews were conducted (see Chapter 6). Knowledgeable individuals and stakeholders, institutions/agencies and organisations (e.g. South African Local Government Association – SALGA, South African Weather Service, national, provincial and district and metropolitan disaster management centres; Disaster Management Institute of Southern Africa; and other functionaries) working with disaster risk were selected to participate in the focus group interviews. The purpose of these focus group interviews was to:

i. determine the applicability of the elements identified from literature and international best practices in terms of their contribution towards disaster risk reduction;
ii. test the respondents' perception on the additional elements needed for a disaster risk reduction framework;
iii. identify the current limitation within the South African policy framework;
iv. identify sector and sphere-specific elements which should be included in a disaster risk reduction framework; and
v. determine additional guidelines that need to be included in a multi-sphere framework.

All data obtained from the literature study, comparative analysis and focus group interviews was taken into consideration and a conclusion and recommendations (see Chapter 7) were drawn based on findings.

The following procedure was followed:

vi. A literature study was undertaken to determine the nature of disaster risk and disaster risk reduction.
vii. Based on the research objectives all relevant information was analysed and evaluated according to accepted analytical tools for qualitative analysis.
viii. A comparative analysis between different international frameworks and findings from the literature study was made.
ix. A comparative analysis of the South African National Disaster Management Framework, international frameworks and the literature study was made.
x. Two focus group interviews were conducted for testing and triangulation purposes.
xi. Based on the findings of the focus groups, a final framework was compiled.

1.9 CONTRIBUTION OF THE STUDY

The orientation and problem statement above alluded to the importance of country-specific indicators for disaster risk reduction. This study contributes significantly to the body of knowledge currently in existence in South African and internationally on the subject matter. This study is the first of its kind in South Africa to analyse the specific elements which contribute to disaster risk reduction within a strategic framework. The study provides the impetus towards further research, investigation and thinking in disaster risk reduction.

1.10 CHAPTERS IN THE STUDY

A thematic approach to the research was followed throughout and this thesis is divided into the following chapters (see Figure 1.1 for a graphical presentation of the structure of the study):

i. Chapter 1 serves as the orientation and problem statement to the thesis. In this chapter the concepts underlying the study as well as the abbreviations used, are discussed. Key research questions as well as the objectives of the research are alluded to. The methodological method of investigation is discussed, and the contribution of the research to the disaster risk reduction body of knowledge is given.
ii. In Chapter 2 the theoretical grounding of the study is given through the discussion of the development of the concept of disaster risk reduction in the international context. The theoretical aspects which contribute to disaster risk reduction are also examined through the comparison of different theoretical models.
iii. Chapter 3 provides the reader with insight into disaster risk reduction within the South African environment. Firstly, the South African state structure enjoys attention. Secondly, the historical development of the concept is discussed and lastly, the institutional arrangement for disaster management in South Africa is alluded to.
iv. In Chapter 4, four international disaster risk reduction frameworks are analysed and compared to the identified elements for disaster risk reduction from Chapter 2.
v. Chapter 5 contains an analysis of the South African National Disaster Management Framework. This policy document is compared to the findings of chapters two, three and four.
vi. Chapter 6 gives report on the focus group interviews that were conducted. It provides the reader with insight into the methodology followed in order to derive the conclusions.
vii. The final chapter, chapter 7, contains a new comprehensive framework for multi-sphere disaster risk reduction. It further provides certain

recommendations for future research on disaster risk reduction indicators.

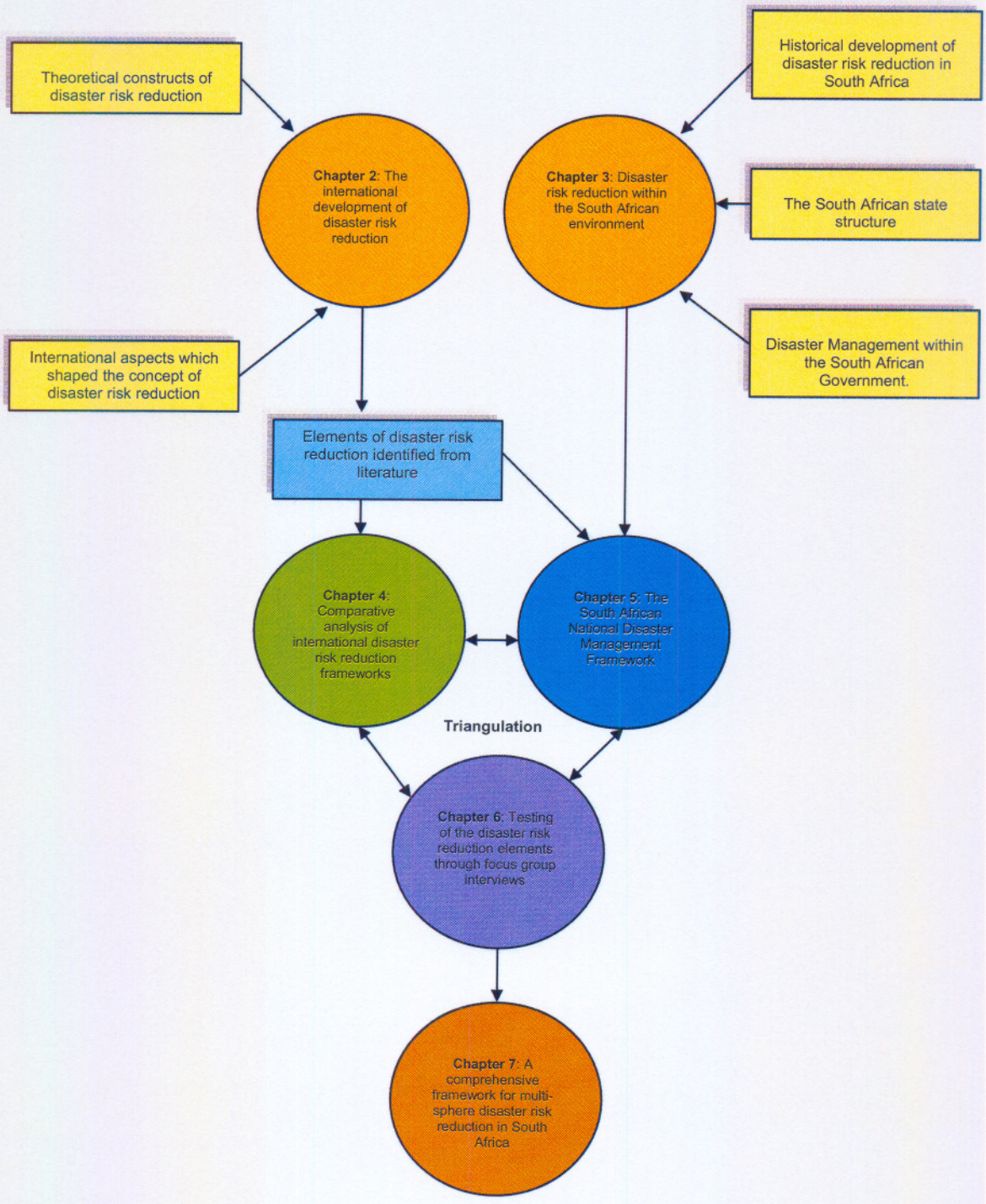

Figure 1.1: The structure of the study

1.11 CONCLUSION

This chapter aimed to provide the reader with an orientation and understanding of the process which was followed in order to reach a conclusion on the problem statement. The phenomenon to be studied was introduced and the dynamic factors under investigation were alluded to. This chapter provided the reader with some key conceptual constructs underlying the study. It also attempted to explain the process that was followed in order to reach the envisaged objectives of the study. The contribution of the study to the disaster risk reduction body of knowledge was also mentioned.

Disaster risk reduction is a relatively new term within the international as well as national environment. In order to determine the underlying elements to this term it is imperative that a thorough theoretical investigation of the concept is undertaken. Such an analysis of the term would provide the foundation towards the better understanding of the concept and the aspects which comprise it. The following chapter aims to provide the reader with an in depth investigation as to the international development of the term "disaster risk reduction". It further addresses the elements which contribute to disaster risk reduction from a theoretical point of view.

potentially greater costs for their future. More than anything else, the media images of natural disasters at the close of the twentieth century underscored and focussed upon the human consequences and social dimensions of these events (UNISDR, 2002).

This chapter aims to provide an in-depth investigation and evaluation of the development of the concept of disaster risk reduction in the international arena. It should be noted that the development of disaster risk reduction cannot be discussed in terms of a timeframe or chronology of events. Some significant aspects like the disaster relief agenda, preparedness and response will be used to indicate the development of the term. The evolving mechanisms towards prevention will also be highlighted. This chapter will focus on the most significant developments in terms of international organisations and agreements. The development/disaster dimension will also be used to explain the focus on disaster risk. Lastly, the different components of disaster risk reduction will be discussed as it emanates from literature. Firstly it is important to understand the origin of the study of disaster and risk.

2.2 THE STUDY OF DISASTER AND RISK

History has shown that societies sustain annual losses due to the impact of natural and anthropogenic disasters/hazards. The notion of disaster has undergone a dramatic transformation of meaning over time (see the work of Quarantelli, 1998). In the early development of humankind and civilisations, many, if not most, of the cultures around the world viewed disasters as acts of God (Drabek, 1991:4), or attributed to it some false casual attractions such as "*Des Astro*" or "evil star", "bad luck" and "blind faith" (Dombrowsky in Quarantelli, 1998:19). Disasters were perceived as inevitable events which impacts on humanity due to our inability to please gods, or by provoking their wrath. Development in science gradually started to question these perceptions and "truths" of disaster. The investigation into the intrinsic nature of disasters as well as the human reaction to and underlying causal factors creating disasters, progressively came under the spotlight.

The focus on disaster and risk came about through various initiatives and events since the Second World War. The scientific study of disaster and risk is one such event. A focus on the development of disaster risk reduction would therefore be incomplete without a discussion of the roots of disaster studies and research both within the social as well as natural sciences.

Some of the earliest recorded ideas on disaster and risk within the social sciences were expressed by the likes of Carr (1932) and Sorokin (1942) who questioned the influence of catastrophe on social patterns. Although these authors were known to some in this field of study, they were seldom explicitly acknowledged for their pioneering work (Quarantelli, 1998:1), and they greatly influenced the subsequent works by others in disaster studies. Some of the first systematic work in disaster studies and research occurred in the 1950s (Endelman, 1952; Powell, Rayner & Finesinger, 1952; Quarantelli, 1954 & 1957; Moore, 1956; Fritz & Williams, 1957) and 1960s (Drabek & Quarantelli, 1967; Dynes & Quarantelli, 1968), with a noticeable heightened interest in the 1970s (Doughty, 1971; Hewitt & Burton, 1971; Kreps, 1973; Dynes, 1974; Mileti, Drabek & Haas; 1975; Glantz, 1976; Westgate & O'Keefe, 1976; O'Keefe, Westgate & Wisner,1976; Jager, 1977; Torry, 1978; Turner, 1978). These earlier theorists approached the concept of disaster from a social science as well as a natural/physical science perspective. It is also evident in this period (1970s) that European scholars were much more interested in this phenomenon that their American counterparts. The enormous contribution of American social science scholars since the 1980s can, however, not be denied.

Gilbert (in Quarantelli, 1998:11) indicates that the social science perspective approached the study of disaster from three different paradigms, that of content research, chronological development and lastly, cleavages. In the first instance disaster was viewed as a duplication of war - an external agent can be identified which requires communities to react globally against the "aggression". The second (chronological development) views disaster as an expression of social vulnerability – disaster is therefore the result of

underlying community logic or social processes. Thirdly, disaster is an entrance to a state of uncertainty – disaster is the impossibility of identifying and defining (real or perceived) dangers. It is therefore an attack on our perception and known reality. Cardona (2003:14) and Kreps (in Quarantelli, 1998:33) are of the opinion that the above early paradigms within the social science emphasised the reaction and perceptions of communities during and after emergencies and did not explicitly focus on issues of risk, or mitigating the risk of physical harm and social disruption before an event had occurred.

The natural and physical science approach to disaster emphasised the hazard component in terms of hydrometeorological, geodynamic and technological/anthropogenic phenomena such as earthquakes, floods, mudslides, cyclones, industrial accidents and nuclear fallout. The natural sciences therefore aimed to understand the dynamics of hazards (Smith, 2002; Cutter, 1994) and from this standpoint tried to quantitatively determine (and simulate) its possible occurrence and impact on humans and the environment. Dombrowsky (in Quarantelli, 1998:28) cautions that although this approach has proven to be scientifically sound, it is impossible to recreate reality based on algorithms that simulate changes over time exactly.

Gilbert (1995:232-233) proclaims that the scientific approach to disaster and risk is in many instances a reflection of the "market" in which disaster research became an institutional demand. The historical disaster (and risk) studies literature tended to focus on "*how the rich nations feel*" (Sachs, 1990:26) and did not necessarily address the social, economic, and political realities in poorer countries most affected by disasters. The natural sciences were, however, the first to address issues of probability and risk based on quantifiable hazard variables. Moreover the focus on risk (as apposed to disaster) as a social phenomenon became evident during the latter part of the 1970s. In the 1980s a global realisation developed that disaster is not so much the size of the physical event but the inability of the stricken community to absorb the impact within its proper set of constraints and capacities (Lechat, 1990:2; Lavell, 1999). This realisation highlighted the need towards a risk, rather than disaster focus in disaster studies and research.

The modern-day study of risk relates closely to the first understanding and investigation of disaster, both within a social and natural/physical science perspective, as explained above. Cardona (2003:2), Kelman (2003:6-8) as well as Smith (2002:49-52) identifies two schools of thought that has developed in terms of disaster risk since the 1980s. Cardona refers to these as the *constructivist* and *objectivist* or *realist* schools of thought. Smith's interpretation is that of *behavioural* and *structural* paradigms. Kelman simply refers to the social scientist and physical scientist's focus on risk. After assessing the work of the three authors it became clear that for all means and purposes the constructivist school of Cardona, the behavioural paradigm of Smith and the social scientist focus by Kelman refer to the same approach in the investigation of disaster, so too the objectivist, structural and physical scientist paradigms. The work of Cardona will be used to differentiate between these two aspects.

Constructivist thinking relates to social sciences where risk is viewed as a social construct (similar to the earlier disaster focus). This approach requires an understanding of social representations and perceptions, and the interaction between different social actors and phenomena. A consciousness developed that it is conditions of risk, and the attitudes to risk, rooted in societies that inevitably lead to disasters. These conditions and attitude to risk in Less Developed Countries (LDCs) are greatly depended on the economic conditions present in a country. Such conditions necessarily force vulnerable societies (e.g. the poor) to accept the risks which they face, whereas rich societies can choose to avoid such risks. On the other hand, the objectivist or realist school finds itself more within the natural and physical sciences. Within this school of thought it is believed that risk can be quantified and objectively judged. As with the earlier emphasis on the quantification of disaster, so the accent within the natural and physical science remained on the quantification of risk. This estimation of risk also translated to the economic and actuarial sciences that believe that risk can be determined through mathematical formulae. Hewitt (in Quarantelli, 1998:76), a geohazard scientist,

acknowledges that the social understanding of disaster is much more crucial to the contemporary disaster/risk scene.

It would be unjust to assume that both of the mentioned schools of thought or paradigms enjoyed equal status within the international arena. Hewitt (in Quarantelli, 1998:77-78) says that the pure focus on the social construct of disaster/risk by the constructivists ignores the hazard or "*agent-specific*" approach. This approach remained the most common vision of disasters, even in the work of social scientists within the 1980s. The truth to this statement is evident in the objectives of the International Decade for Natural Disaster Reduction (IDNDR) – see section 1.5.1. Both of these schools of thought have made the paradigm shift from a pure disaster oriented focus to that of disaster risk. The contemporary understanding of risk has greatly increased to the extent that various scholars from a variety of different disciplines (e.g. sociology, anthropology, geography, architecture, agriculture, meteorology, engineering, law, public administration and development studies) are jointly researching issues of disaster risk (Comfort *et al*, 1999; Vogel, 1999).

The following section aims to address some other fundamental issues that contributed to the heightened focus on disaster risk reduction within the international context.

2.3 THE DISASTER RELIEF AGENDA

A variety of different and varied occurrences had a significant impact on the development of disaster risk reduction. Aspects discussed below do not necessarily indicate a natural progression towards disaster risk reduction, but it should rather be seen as elements which ensured a realisation of the need for disaster risk reduction measures. It should, therefore, be stated clearly that the researcher does not believe that the contemporary attention which disaster risk reduction enjoys is a natural evolutionary process of just one discipline, nor can it be accurately linked to a chronological timeframe. It is

CHAPTER 2:
THE DEVELOPMENT OF DISASTER RISK REDUCTION: AN INTERNATIONAL PERSPECTIVE

2.1 INTRODUCTION

The need of human beings to be safe from harm has been well documented and researched (Maslow, 1968). According to the Christian faith, after creation, God instructed man in the Holy Bible to rule over all the earth (Bible, 1996). Since this commandment, humans have been in constant contact with the natural cycles and processes of the earth. Some of these cycles and processes in time proved to be harmful to every living thing and the environment on which we depend. These natural hazards had variable impacts on the normal way of life of different societies. The development and progression in humankind's understanding of the world and life ensured a progressive and continuous evolution in the response to the events threatening our livelihood. Humankind developed techniques to deal with natural hazards, either by aiming to contain the forces of nature, or by altering our own behaviour. The development of humankind brought with it an increase in the susceptibility towards hazardous exploitation. It was only in the modern age that humankind aimed to study and understand what was called "natural disasters". This study increased our understanding of the causal factors and how humans contribute to their own demise though unsustainable development techniques.

During the last century, several powerful natural disasters occurred in different parts of the world, in countries both technologically advanced and developing. The types of natural hazards that triggered these disasters varied from the unpredictable occurrence of earthquakes, to more predictable seasonal floods and periodic storms. Other less immediate and slowly evolving hazards such as drought and environmental degradation affected even more people with

rather the culmination of the activities and work of many different professionals and disciplines (see Jeggle in Rosenthal, Comfort & Boin, 2001; UNISDR, 2003).

Issues of disaster risk always enjoy heightened attention after a disaster. It is only logical to argue that some of the major disasters to strike the globe in the post-World War Two era ensured a continuous focus on disaster related issues stimulated by modern news media, albeit only for a limited period subsequent to a disaster. In the discussion on the international development of the concept disaster risk reduction, certain prominent disasters which shaped the focus on disaster risk reduction will be highlighted. Examples of disasters post-1960 will be used.

This section aims to highlight some of the most significant aspects within the international relief system which contributed to the development of the concept of disaster risk reduction. Firstly, disaster relief and development aid will enjoy attention. Secondly, the development agenda will be discussed followed by the impact of disaster relief on the realisation for the need for preventative measures. Lastly, changes in the international relief system and the reasons therefore will be highlighted.

2.3.1 Disaster relief and development aid

A discussion on the international disaster relief mechanism would be inadequate if separated from development aid. It should, however, be noted that these two concepts must not be viewed as synonyms, although in many instances the division between development aid and disaster relief is hazy.

Disasters were events to be waited for and only after the disaster has struck, would remedial action be taken to ensure a speedy return to normality (Moore, 1956:733-734). Many less developed countries (LDCs), living with the legacy of the post-Second World War, post-colonial era and then the post-Cold War, were mostly defenceless in the face of disasters and in dire need of

economic development. This is quite evident in the Chinese famine of the early 1960s (Watkins, 2003) as well as the North Peruvian earthquake of 1970 (Forces of Nature, 2004). In most instances, communities were perceived to be helpless and required [international] intervention and assistance (Comfort *et al.*, 1999). This fatalistic attitude towards disasters lead to the stereotypical provision of relief after a disaster has occurred (Lechat, 1990:3). The East Pakistan/Bangladesh cyclone, and resulting storm surge which killed approximately 300 000 people in 1970 is a sterling example of how the international community intervened to assist seemingly "helpless" populations (see Cuny, 1983), and in doing so demonstrated strikingly incompetent management capacities (Ritchie, 1976). The Guatemalan earthquake of 1976 exhibited the same aid provision characteristics, up to the extent that the affected population began to believe that they are helpless and in need of external intervention.

Jeggle (in Rosenthal, Comfort & Boin, 2001:317) indicates that "*the conception of emergency assistance [disaster relief] has been predominantly one of providing immediate and short-term basic necessities of food, water, shelter and medical care to survivors of a specific catastrophe*". The provision of relief was therefore not linked to any form of long term development planning.

2.3.1.1 The early years of relief

The earliest documented codes in dealing with early warning and relief were the Madras Famine Code of 1883 which was the forerunner to the Bengal Famine Code. The former aimed "to monitor grain prices as an indicator of famine". The latter (developed in 1895 and revised in 1913) spelled out in great detail the responsibilities of Governments in the anticipation, response and recovery to droughts and floods, and the consequent loss of agricultural production (ISDR, 2004b). Until the 1920s, disaster relief was delivered strictly on a bilateral basis (from one nation to another). With the inception of the International League of the Red Cross and later Red Crescent Societies,

international organisations started to play a more coordinating and intermediary role in disaster relief (Burton, Kates & White, 1993:209-210; Gunn, 1992:16). Most of the humanitarian relief activities, both governmentally driven and private (Green, 1977:29), were born out of the Second World War (e.g. British War Relief in the United States and Oxfam in Britain) (Black, 1992:1; Burton, Kates & White, 1993:210). The devastation of the war on Europe firmly established the need for some form of mechanism to provide relief to people in their hour of need. Towards the end of the Second World War (1943), the United Nations Relief and Rehabilitation Administration (UNRRA)[4] became the first disaster enterprise instituted on a global scale (Gunn, 1992:16). It was also in this post-war period that different governments moved into a larger relief role than before, which was predominantly the domain of relief organisations. This is quite evident in the establishment of international aid agencies by the majority of the more developed countries (MDCs).

Examples are the establishment of the United States Agency for International Development (USAID) and the Office of Foreign Disaster Assistance, created by John F. Kennedy in 1961 with the aim of implementing the Marshall Plan for reconstructing Europe after the Second World War (USAID, 2004). Other MDCs followed the example set by the USA and in 1969 the Canadian government established the Canadian International Development Agency (CIDA) (CIDA, 2004), Germany created the *Deutsche Gesellschaft für Technische Zusammenarbeit* (GTZ) GmbH in 1975 (GTZ, 2004) and the United Kingdom established the Ministry of Overseas Development in 1964 (to become the Department for International Development in 1997) with a Refugee and Relief Division (DFID, 2004).

These international aid organisations had, in most cases, a two-fold objective: firstly, to implement the foreign policy of the mother country in the developing world; and secondly, to alleviate the plight of the poor. These objectives as

[4] Interestingly, in foresight, the UNRRA was so named a year before the international body under the same name was established: the United Nations.

well as the prevailing international political situation dictated the way in which aid was given to countries in need. These international development agencies gradually started to form an important part of the international relief system.

2.3.1.2 The international relief system

Green (1977:29) indicates that the international disaster relief system since the 1970s consists of four major elements: the United Nations, private organisations (e.g. Red Cross and others), donor governments (through their development agencies) and the international media. Cuny (1983:107-109) identifies five tiers, that of primary donors, organisations receiving relief, international relief and development organisations, local government and NGOs, and projects. An amalgamation of the focus of Green and Cuny will be used to discuss the international relief system.

2.3.1.2.1 The United Nations and its agencies

The UN, realising the importance of disaster relief, prioritised the international coordination of emergency assistance, and in 1971 established the United National Disaster Relief Office (UNDRO) (UN, 1971; Burton, Kates & White, 1993:186). UNDRO was to be the focal point in the UN system for disaster relief matters. UNDRO was initially created with a mandate to respond to natural disasters, but quickly expanded to include so called "man-made" disasters as well (UN Chronicle, 1991).

In its first few years of operation UNDRO never obtained the status proclaimed by Resolution 2816. Internal communication and lines of authority within and between UN agencies hampered the work of UNDRO. UNDRO, that mostly had to work though UN field staff, found this virtually impossible due to a lock of inter-agency cooperation and collaboration and the competition over relief fund raising within the UN system. Throughout its 20 years of existence UNDRO was beset by problems including an uncertain

mandate, inadequate and incompetent staffing and funding, lack of in-country capacity, lack of support from other UN agencies (and on occasion the Secretariat), a long running dispute over whether or not it should be operational (i.e. physically involved in the handling and distribution of assistance), and poor credibility within the donor community (ODI, 1993:2). Its performance was regularly criticised in reviews by UN and external reviewers. Perhaps the most fundamental of all of UNDRO's problems was that it was always the poor relation to the other, larger UN agencies that were directly involved in the relief operations

The relationship of UNDRO with private international organisations was also all but ideal. Tansley (1975:79) in his report of a three-year reappraisal of the role of the Red Cross in international relief, puts it quite candidly in saying that the Red Cross and UNDRO do not enjoy the same relationship as it does with other UN agencies like World Health Organisation (WHO) and United Nations Children's Fund (UNICEF). The aftermath of the drought and famine in the Sahel and particularly Ethiopia in 1974 ensured a heightened importance of disaster relief. It is also in this era that UNDRO staff was expanded and it developed a solid base for its operations. Green (1977:33) says that the initial funding of UNDRO was on a bilateral basis (notably from the United States) but later became part of the UN budget. In most cases UNDRO worked through the resident staff of the United Nations Development Programme (UNDP) (Cuny, 1983:119). UNDRO did not itself control a major share of the resources being channelled to the affected population, or indeed have a substantial field presence during the response. It is questionable that it could ever have been expected to play an effective coordination role (ODI, 1993:2). In April 1992, UNDRO was absorbed within the newly created Department of Humanitarian Affairs.

Currently the UN still provide for disaster relief through its many different agencies (e.g. Office for the Coordination of Humanitarian Affairs (OCHA), UNICEF, World Food Programme (WFP), United Nations Children's Fund (UNICEF) and Food and Agricultural Organisation (FAO)). The UN specialised agencies can provide a wide variety of resources ranging from

technical assistance to food. Many of these agencies have their own in-country staff that is capable of conducting relief programmes.

2.3.1.2.2 Primary donors and international aid agencies

Cuny (1983:107) is of the opinion that the primary donors (e.g. private contributors, taxpayers, corporate donors and special interest groups) form the first tier in the international relief system. These donors normally do not have direct contact with the community for which the aid is intended and therefore donors tend to work through an implementing agency such as international relief organisations and international aid agencies. Although, international aid agencies are primarily responsible for implementing the mother country's foreign policy through development aid, they inevitably become involved in the provision of disaster relief. Response by these international aid agencies after a disaster has occurred, also started to influence the development agenda and the provision of aid. In many instances much needed development aid was redirected towards reconstruction and rehabilitation after a disaster. This is quite evident in the Andhra, Pradesh cyclone of 1977. Massive development aid was rerouted to Indian communities in need of immediate assistance, with some significant long-term development consequences for the communities for which the development aid was intended (Cuny, 1983).

Smith (2002:34) emphasises the enormous impact of disasters on the development by indicating that in the year 1992 alone the world lost more money due to the impact of natural disasters estimated at US$62 billion), than it spent on developmental aid (estimated at US$60 billion).

In staying with the developmental aid agencies, Todaro (1994:541-543) argues that the impetus behind providing foreign aid was either politically or economically motivated. Today it is widely recognised that the Marshall Plan, was a means by the United States of America (USA) to contain the spread of communism through Europe. After the successful reconstruction of Europe,

many of these established organisations continued their work of providing aid and relief to communities in want. Most of the relief organisations found themselves working exclusively in the LDCs (Black, 1992:54-56), with most of the foreign aid also going to these countries (Todaro, 1994:541). Once the balance of Cold War interests shifted from Europe to the developing world in the 1950s, the containment policy of the USA aid programme dictated a shift towards political, economic, and military support for geographically strategic "friendly" LDCs. Most of the aid programmes to the developing nations (not only those coming from the USA, but also Great Britain and France) were more aimed towards purchasing their security and propping up their sometimes shaky regimes, than promoting long-term social and economic development. At the other side of the Cold War spectrum, the socialist aid of the former Soviet Union was essentially also politically and strategically motivated, although its form and content differed somewhat (Todaro, 1994:543). These aid giving governments sometimes found themselves in an absolute conundrum – funding military might on the one hand while providing relief to those affected by these weapons.

Green (1977:46) in his discussion on international relief within the Cold War era concurs with the prognosis of Todaro on the motivations of international aid agencies. He argues that donor governments were willing to fund disaster relief operations as long as this meant increased visibility to the government in question. This is still evident today when western international television networks graphically broadcast stricken communities receiving international aid with "*A gift from the people of...*" printed on the aid packaging, normally accompanied by a life-size logo of the donor agency. Besides the aim to implement foreign policy which accompanied relief and donations, it would be unjust not to acknowledge that without such relief many more fatalities and losses would have been sustained from disaster in the LDCs.

In many instances the receiving country was also guilty of gross violations in requesting aid. This was done by either understating the effect of the disaster for reasons of national pride, or overstating and in doing so using the aid in normal government services (e.g. donor medicine in ordinary hospital

operations) or to defray deficits on the national budget (e.g. the Ethiopian government requested food relief in order to defray costs for previously budgeted grain imports) (Green, 1977:61-62). Such actions of governments sometimes exacerbate problems in other countries that are equally in need of international aid.

2.3.1.2.3 Private relief organisations

In the early years of disaster relief (1950 onward), private agencies (referred to as "voluntary organisations" or "volags" by Cuny, 1983:108; widely known as non-government organisations - NGOs) generally provided a small portion of the assistance during a given disaster. They however became an important part of the relief mechanism as they tend to be the first responders (Cuny, 1983:108). In most instances they already have in-country resources and are not extensively belaboured by bureaucratic channels. Private relief organisations also find themselves (most of the time) in political neutral terrain and can better provide aid in areas that are politically sensitive. This was quite evident in the Baifra war in the late 1960s; the civil strive in Burundi in 1972 and Afghanistan in the 1980s. These private organisations also have the ability to provide different types of relief that are not easily matched by the official organisations (Green, 1977:36). Many more private organisations have been created since the 1960s and in many instances have developed thriving fundraising mechanisms.

One of the most cumbersome aspects associated with a multitude of private organisations is that their actions often tend to be uncoordinated, are frequently in competition, and also exhibit an alarming lack of collaboration (Ritchie, 2004). This leads to a duplication and waste of resources. Such was the case in the Ethiopian famine of the 1970s (which only became globally known through a television documentary made by Stephen Green working for a UN agency) and again in the early 1980s. In realising the scarcity of resources and the need for a coordinated approach, the Christian Relief and Development Association (CRDA) was established in Ethiopia in May 1973

(initially consisting of 13 members). It currently consists of over 200 NGOs, and faith based organisations (CRDA, 2004).

Similarly, in 1972, an informal committee of five of the major relief agencies (including Oxford Committee for Famine Relief (OXFAM), Catholic Relief Services (CRS), the World Council of Churches (WCC), the Lutheran World Federation (LWF), and the League of the Red Cross Societies) was set up in Geneva. This committee met weekly under the chairmanship of the League of the Red Cross but failed to include UNDRO, either as a co-opted member or as an observer.

Jeggle (2005) indicates that another watershed in the international relief system and involvement of private organisations in providing disaster relief was the Bangladesh emergency after their independence war. More than 120 NGOs flocked to Bangladesh in order to provide relief aid. Although the UN was essentially managing the logistics of the fledgling country, many NGOs worked in a myriad of aspects, sometimes uncoordinated. In reaction to the amount of NGOs working in Bangladesh, the Association of Voluntary Agencies in Bangladesh (AVAB) was formed in 1972. The AVAB was later (in 1975) changed to the Association of Development Agencies in Bangladesh (ADAB). Similarly Agency Coordinating Body for Afghan Relief (ACBAR) formed of the NGOs working in Pakistan and Russian-occupied Afghanistan in the period 1987-1990 (Jeggle, 2005).

From the discussion above it is clear that the need for a coordinated approach to disaster relief was gradually being addressed. The need for a uniform approach culminated in the joint development of the Sphere Project by prominent NGOs. The Sphere Project was developed in 1997 in order to provide minimum standards for humanitarian relief. Sphere is based on two core beliefs: first, that all possible steps should be taken to alleviate human suffering arising from calamity and conflict, and second, that those affected by disaster have a right to life with dignity and therefore a right to assistance (Sphere Project, 2005). The Sphere project includes the Humanitarian Charter and Minimum Standards for the core sectors of water supply and sanitation,

nutrition, food aid, shelter and site management, and health services (Sphere Project, 2005).

2.3.1.2.4 The international media

In the 1970s and 1980s several major disasters, such as the 1973/4 Sahel drought and relating famine, the 1974 Bangladesh floods, the Guatemalan earthquake of 1976, the Andhra, Pradesh cyclone in India in 1977, the Bhopal, India chemical release in 1984, the repeat of the 1973 Ethiopian famine in 1984, the great 1985 Mexico City earthquake, Chernobyl in 1986 and the Exxon Valdes oil spill in Prince William Sound, attracted global media attention. Taken together, they strained international capacity to provide effective and timely emergency relief services. In addition to this several of these events had a high political profile, particularly among major industrialised countries.

Media coverage of these disasters transmitted vivid images of suffering and devastation into the homes of the MDCs, sparking a global outcry and outreach to these communities. Many relief organisations were quick to realise the usefulness of international television and soon used it to their benefit. A sterling example of how the media influences relief is surely the coverage of the 2000 Mozambique floods in Southern Africa. Most relief organisations were mobilised long before the official call for international assistance was made by the Mozambique government.

Continuing today, the role of the international media cannot be underestimated. Global media networks possess, in most cases, vastly more resources and field personnel than even some of the most established relief organisations. The international media has become an intricate (albeit transient) part of the international relief system in terms of communication, aid mobilisation and influencing public opinions on a disastrous event. It is with no doubt that the international news media can play a crucial role in disaster risk

reduction. The sensational focus of the news media on the death toll and extent of low frequency - high impact events remains an obstacle.

2.3.1.2.5 Local communities and projects

The final tier identified by Cuny (1983:108-109) is that of the community and project level. At this level the funds and resources mobilised and allocated through the preceding tiers, are dispersed and the needs of the affected communities are addressed. These projects can take on a variety of different forms. Cuny (1983) criticises the international relief mechanism for not taking the communities' coping capacity into account when developing relief programmes. He clearly stipulates the need for developmental interventions to improve development as well as an enhanced state of affairs than that prior to the disaster. The need for vulnerability reduction planning within a development focus comes to the fore.

It should, however, be noted that some significant changes occurred in the international relief system. These changes will be discussed briefly.

2.3.1.3 Changes in the international relief system

The Kurdish refugee crisis of April 1991 involved the movement of 1.9 million people fleeing oppression by Iraqi Government forces (ODI, 1993:2). 70% of the refugees were able to cross into Iran where they were comparatively well cared for by the local authorities and the Iranian Red Crescent. Most of the refugees who moved towards Turkey were prevented from crossing the border by the Turkish authorities and were stranded on exposed, high altitude sites on the Iraqi side of the border (ODI, 1993:3).

The international community responded with a number of actions. The most significant being the passage of Security Council Resolution 688 on 5 April 1991 (UN, 1991) which insisted *"that Iraq allow immediate access by*

international humanitarian organisations to all those in need of assistance in all parts of Iraq". The United States of America, Britain, France and the Netherlands aimed to establish safe havens within northern Iraq to enable Kurds to move down to more sheltered sites within Iraq where they were protected from attack by Iraqi government forces. A further action was the mounting of a massive relief operation in which military forces (principally transport aircraft and helicopters but also medical professionals and management) played a crucial role in delivering assistance, together with the UN agencies and international NGOs.

The Kurdish operation established the important precedent that, under certain circumstances, the international community is prepared to use force in support of humanitarian relief operations (ODI, 1993:3). In addition, the response sharply exposed the weaknesses in coordination mechanisms and in the ability of the system to rapidly deliver assistance in areas where agencies of the host government could not be used and where few international NGOs operated prior to the intervention. This operation created precedents because of the context in which it occurred. The performance of UN agencies involved in the provision and coordination of relief during the Kurdish operation was criticized by some western governments, during and after the operation. Such criticisms focused upon the slow response of the principal UN agencies to the opportunities created by the passage of Resolution 688, the perennial lack of inter-agency coordination and the lack of leadership provided by the UN system to the numerous other agencies (donor, NGO and intergovernmental) involved in the response.

The collapse of the former Soviet Union and the ending of the Cold War witnessed a convergence of USA and Russian interests on many foreign policy issues, simultaneously reducing the need for Russia to use its veto powers in the Security Council and increasing the costs to it of doing so. This has radically enhanced the capacity of the Security Council to address and act upon international security and humanitarian issues.

Whilst Resolution 688 established an important precedent, subsequent events indicate a continuing struggle between those favouring a more interventionist approach and those arguing against it on the grounds of national sovereignty (ODI, 1993:3). Within the General Assembly the former group has faced considerable opposition. Thus, initial drafts of General Assembly Resolution 46/182 of 19 December 1992 (UN, 1992) aimed at improving the UN's coordination of the international relief system sought to sustain the impetus for the more interventionist approach resulting from Resolution 688.

The final text of General Assembly Resolution 46/182 aimed at improving the UN's coordination of relief states: *"The sovereignty, territorial integrity and national unity of states must be fully respected in accordance with the Charter of the United Nations. In this context, humanitarian assistance should be provided with the consent of the affected country and in principle on the basis of an appeal by the affected country"*. The text leaves some room for humanitarian intervention. Its use of the phrases *"should be"* and *"in principle"* allows for instances when assistance can be provided without an appeal by the affected state or even without its consent.

The changes may be seen as the adaptation of international relief system to the ending of the Cold War and the collapse of the Soviet Union. These events have simultaneously enhanced the capacity of the Security Council to undertake armed intervention in support of humanitarian objectives, removed the capacity for central control over a host of newly unleashed ethnic tensions and opened up new roles for armed forces built up during the Cold War period. Within this new context the power of the richer western governments to influence the pace and direction of change within the international relief system has been significantly enlarged, by virtue of their central role in resourcing the international relief system and, in the case of France, UK and USA, through their membership of the Security Council (ODI, 1993:4). The enhanced role of the Security Council increases the likelihood that relief assistance will be provided to civilian populations in zones of conflict. However, an apparent lesson from the cases of Somalia and Bosnia is that armed interventions in support of humanitarian relief objectives are likely to be

crucially dependent upon the prevailing attitudes and concerns of the richer western governments, especially the USA.

On the African continent a more direct involvement by African governments to African crisis has also become evident since 1994 (Neethling, 2004:51). The democratic elections in South Africa, the strengthening of Pan African sentiment, the establishment of the African Union and the new developmental focus on Africa through NEPAD, all contributed to peacekeeping and humanitarian interventions by African countries. As is the case with the UN Security Council, the African Union has not significantly shown vigour in intervening in countries in conflict (e.g. Rwanda, Sudan, and DRC). It should, however, be highlighted that peacekeeping and peace making on the African continent should not be confused with relief. To this end, the African relief mechanism is severely limited in its capacity and many African nations remain the focal point for international relief.

In perusal of the "new" international relief system it becomes clear that the provision of assistance is not a unilateral mechanism anymore. Moreover countries dependent on relief are aiming to link the provision of relief with developmental initiatives (SCUK/C, 2004).

2.3.2 The influence of the development agenda

Already in 1976 Ritchie (1976) noted the importance of development in preventing disasters. The seminal publication of Cuny (1983 quoted above) as well as the work of Randolph C. Kent (*Anatomy of Disaster Relief: The International Network of Action* published in 1987), also explored the importance of development and vulnerability in creating or exacerbating disasters (Lavell, 1999). By the end of the 1990s the theme of disasters, environment and sustainability had also been vented in a number of works edited by Kreimer (1989), Kreimer and Zador (1989) as well as Kreimer and Munasinghe (1991). Cuny paid particular attention to the role of development in emergency assistance and proclaimed that emergency issues should be

addressed in the context of much larger development policies. It is widely accepted that Cuny was the first to address the disaster-development interaction mostly due to his direct involvement in the international dimension of disaster/emergency management (Jeggle, 2005; Lavell, 1999).

Kent researched the complexity of the causes of disasters being rooted in conditions of vulnerability. They (Cuny and Kent) questioned the validity of cyclical disaster occurrences and emphasised the importance of a holistic approach towards disasters, although from two different perspectives. Mary Anderson (1985) also added considerable thought to this debate during the latter part of the 1980s. Anderson and Woodrow (1989) advanced the concept of incorporating vulnerability reduction in development activities (Jeggle, 2004).

The above-mentioned authors came from a wide array of different disciplines with varied direct involvement in situations of disasters, yet they all realised that the occurrence of disasters (be it natural or human induced) can, and should, be addressed through a change of focus. Such a change of focus was to address the root causes of disaster mostly through developmental interventions. The emphasis on the types of developmental interventions towards disaster reduction varied from author to author, and ranged from the adaptation of public policy to direct community-based development projects towards vulnerability reduction. Notwithstanding the above, the late 1980s heralded a new era in the management of disasters.

2.3.3 A new focus for disaster relief

Hammock and Nastsios (in Cuny, 1999:xi) proclaim that one of the traditional weaknesses of humanitarian agencies has been their inability to be reflective and undertake objective analysis of their relief response on a more strategic level. Events of the 1970s (e.g. the north Peruvian earthquake killing 66 000 in 1970; the Sahel drought and famine of 1973/4; the Tangshan, China earthquake killing over 600 000 people, the ousting of the Khmer Rouge in

Cambodia in 1979) and 1980s (Bhopal chemical plant accident in India in 1984; again famine in Ethiopia in 1984/5; the Armenia earthquake in 1988 killing 55 000; the Somali war and the Exxon Valdes oil spill of 1989) spurred an international outcry to reassess the way in which disaster relief was provided (Jeggle in Rosenthal, Comfort & Boin, 2001:319). It was widely felt by the scientific community (Gunn, 1993:16-17; Quarantelli, 1998) and professional groups, that there had to be a more effective way of responding to disasters than only providing relief materials to the survivors (Jeggle in Rosenthal, Comfort & Boin, 2001:320; Comfort *et al.*, 1999). The concept of disaster management progressively found its way into the vocabulary of international relief organisations and policy makers.

The events mentioned above intensified the drive towards the development of a better global system in terms of disaster preparedness. A realisation grew that the international relief mechanism was not geared for such events. This motivated the international assistance community, typically accompanied by NGOs involved in emergency assistance responsibilities, to give greater public visibility and policy commitment to preparedness in disaster management (Jeggle in Rosenthal, Comfort & Boin, 2001:319). A more comprehensive sense of disaster preparedness and management that encompassed functions of preparedness, prevention, mitigation, reconstruction and rehabilitation began to be more widely recognised as a much needed alternative to disaster relief.

2.4 DISASTER PREPAREDNESS AND MANAGEMENT

Blaikie *et al* (1994:233) indicate that in the early part of the 1970s, the term "disaster prevention" was used very freely. UNDRO later questioned the use of "prevention" because it argued that a disaster can not be prevented, only mitigated (UNDRO, 1991:157). The terms prevention, preparedness and mitigation were also frequently muddled. Disaster mitigation (actions taken to reduce damage or loss) signified a new paradigm towards disaster reduction and so too expanded on the ideas of disaster preparedness and

management. This is quite evident of the theoretical writings of scholars in this era (see section 2 above).

The progression in technological advancement in the twentieth century made it possible to apply and mobilise resources in order to reduce (or mitigate) the impacts of natural hazards. One of the first steps in turning the focus of emergency assistance was applied to the field of pre-disaster emergency procurement and shipment procedure for food. This also included the establishment of forward warehouses for emergency food stock around the world. Although the ensuring of food stock was given priority, other interests in broader preparedness planning gradually won commitment towards the improvement of "readiness of response" (Jeggle in Rosenthal, Comfort & Boin, 2001:320). Through compiling contingency plans, setting up disaster relief teams, and stockpiling emergency relief material, NGOs and relief organisations progressively developed the concept of preparedness into a more focused facet of emergency relief assistance (Black, 1992:177-181).

Progress in technology also brought with it a new focus in terms of early warning systems for specific hazards and risk reduction (Lavell, 1999). This is clearly illustrated by the USAID-sponsored Famine Early Warning System (FEWS), and the UN Food and Agricultural Organisation's Global Information and Early Warning System (GIEWS). Lavell (1999) indicates that the progress in technology also brought with it new risks relating to the uncertain application of these technologies.

The end of the 1980s saw a keen interest within the international community towards the systematic development of methodologies which could be applied to ensure even better pre-disaster preparedness (Rouhban in Ingleton, 1999:164-165). Gradually the common use of the concept "disaster management" emerged. The central paradigm of the integrated approach towards disaster management can be viewed in a common timeframe cutting across natural hazards as a sequence of phases each being amenable to a specific type of intervention (e.g. planning phase, preparedness phase, prevention phase, mitigation phase, warning phase, disaster impact phase,

rescue phase, relief phase, rehabilitation phase, and reconstruction and recovery phase) (Lechat, 1990:3; UNDP, 1992). Disaster management aimed towards the integration of pre- and post-disaster activities in order to safeguard lives and property against possible disasters. Figure 2.1 below provides a graphical representation of the phases mentioned above.

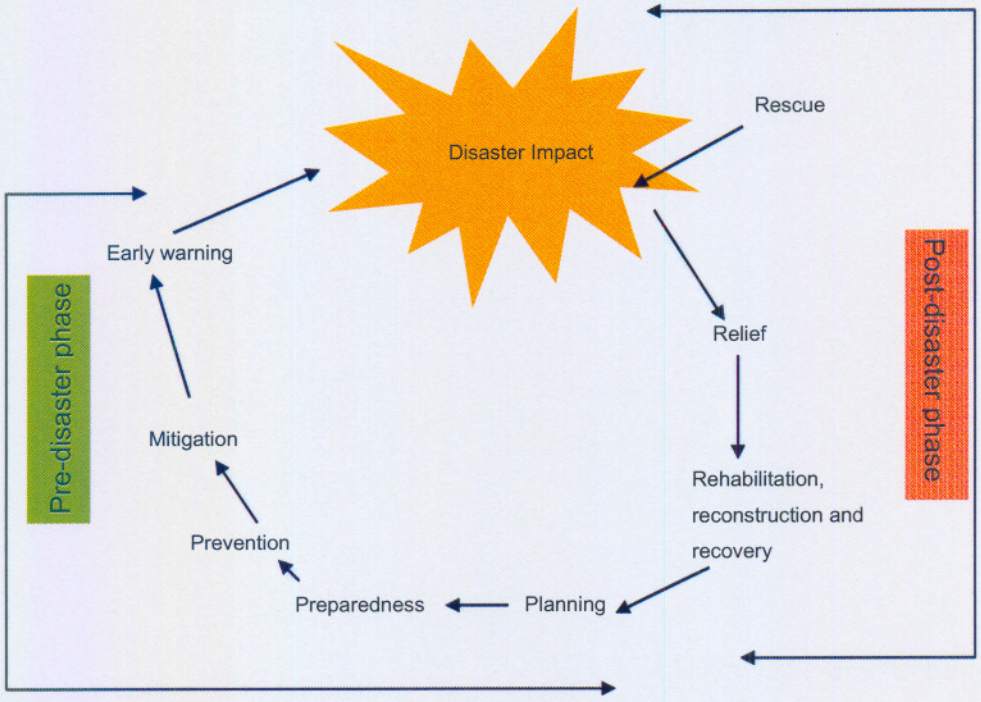

Figure 2.1: The Disaster Management Continuum / Cycle
(adapted from UNDP, 1992)

The concept of the disaster management cycle found it way into many writings. The most significant of these is the Disaster Management Training Programme of the United National Development Programme (UNDP). This cycle, although inappropriate within the contemporary thinking of disaster risk reduction, had its implementation and assisted many African countries with a conceptual framework for the management of disasters. In the mid-1990s, some of the inadequacies of the disaster management cycle became more evident. What the self-centric disaster management cycle did not acknowledge was that there were other sectors of activity continuing outside of the cycle (see the work of Cuny, 1993; Kent, 1987; Anderson & Woodrow, 1989). Not everything that happened, or that was undertaken, subscribed to

this interpretation of natural disaster management, though it invariably did subscribe to the contexts for the impact of natural disasters themselves (Lewis, 1999:129). In particular a number of disaster management practitioners aimed to implement the disaster management cycle as a sequence of events (Reid, 2004), which in many instances lead to a distortion and partial depiction of reality (Lavell, 1999). This phased implementation of actions was totally impractical and once again geared elements of the disaster management fraternity only towards the response to a particular disaster event *after* it had occurred. This approach did not consider the importance of hazards and risk and all planning were mere contingencies for a given event.

Some scholars (George N. Ritchie and Brian Ward in the 1980s) favoured an alternative view of disaster impacts through what Ritchie (2004) describes as the "Disaster/Development Linear Projection" (see Figure 2.3 below). This representation aims to explain the disaster loss parameters within developed and less developed nations. The diagram aims to explain the importance of disaster risk reduction measures in order to ensure that LDCs can recover quicker from disasters. From the diagram it is evident that recovery from after a disaster is prone to occur more rapid in developed nations than less developed nations due to the existence of various multi-disciplinary disaster risk reduction measures such as insurance cover, availability of assets and capacities, land-use planning, development planning, early warning systems, building codes, social safety nets, and emergency assistance, to name but a few.

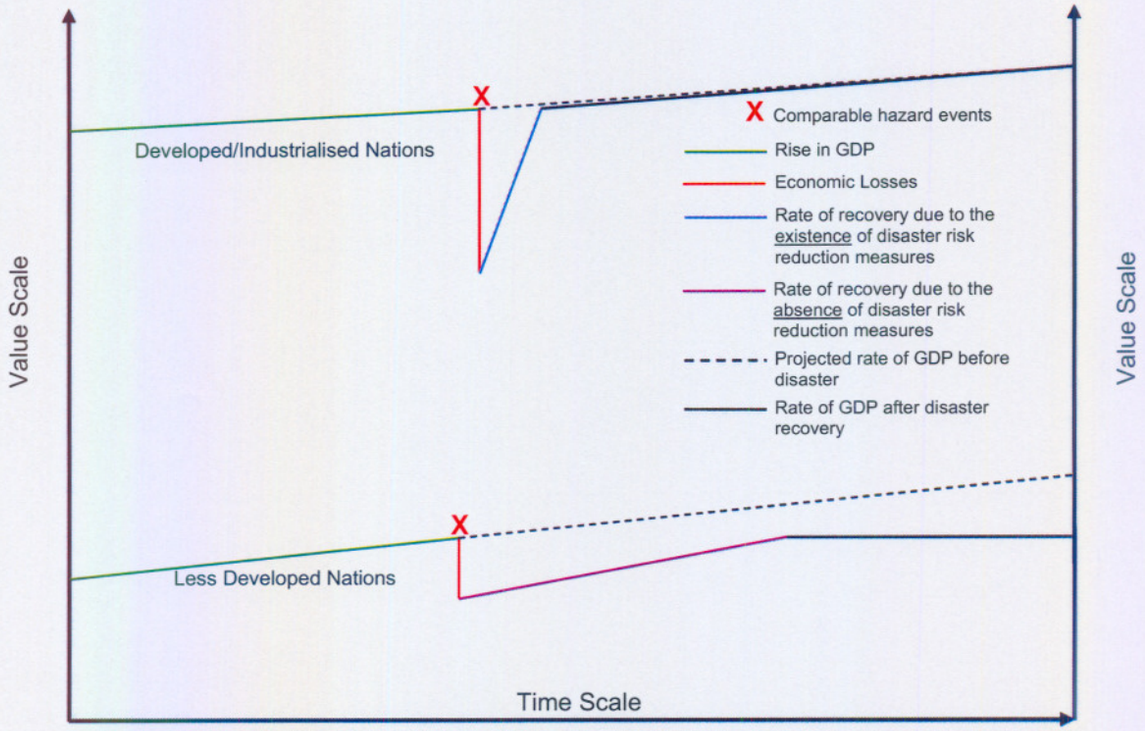

Figure 2.2: Disaster/Development Linear Projection
(Ritchie, 2004)

Jeggle (in Rosenthal, Comfort & Boin, 2001:334-335) contrasts the earlier concepts of emergency assistance and disaster management. He points out that there are distinctive managerial and functional implications for the organisation of risk and disaster management for the future. These are summarised in Table 2.1 below.

EMERGENCY ASSISTANCE	HAZARD, RISK AND DISASTER MANAGEMENT
Primary focus on **HAZARDS**.	Major focus on **VULNERABILITY**.
Single, event-based scenarios.	Dynamic, multiple risk issues.
Basic responsibility to respond to an event.	Fundamental need to assess, update.
Often fixed, location-specific conditions.	Extended, shared or regional locales.
Responsibility in single authority or agency.	Multiple interests, actors, responsibilities.
Command and control, directed operations.	Situation-specific functions, free association.
Established hierarchical relationships.	Shifting, fluid and tangential relationships.
Urgent, immediate-to-short time frames in outlook, planning, attention, returns.	Comparative, moderate-to-long time frames in outlook, planning, return values.
Rapidly changing, dynamic information	Accumulated, historical, layered-updated

usage. Often conflicting or "sensitive".	comparative, information. Open or public.
Primary, "authorised" or singular sources.	Multiple and diverse or changing sources.
Need for definitive "facts".	Differing perspectives, points of view.
Operational, or public information-based use of communications.	Multiple-use, shared exchange, inter-sectoral information, matrixes, nodal, lateral flows in communication.

Table 2.1: Emergency assistance vs. Hazard, risk and disaster management
(Jeggle in Rosenthal, Comfort and Boin, 2001:335)

From the above table it is therefore clear that changing organisational and institutional roles in disaster management mark a fundamental shift towards hazard and risk management for the future. Jeggle (2004), however, cautions that one should not assume that disaster risk reduction developed or evolved from the earlier understanding of disaster management. The focus on disaster risk reduction rather developed due to the work of a number of different professional disciplines, all with one aim in mind – to reduce the risk of disasters occurring or affecting people.

The evolution of disaster management did, however, ensure a realisation that hazard and risk relate to significantly larger professional constituencies. The discriminating focus of the international scientific community, different professional constituencies, and national administrators on disasters brought with it the recognition that intervention is needed on a professional and administrative scale.

2.5 INTERNATIONAL POLICIES AND MECHANISMS THAT SHAPED DISASTER RISK REDUCTION

Although the United Nations' various agencies have to a greater and lesser degree been involved in response to disasters, which normally translated into humanitarian crisis, no one agency was dedicated to purely focussing on issues relating to disasters. The inadequacies of the international relief and humanitarian system to address continuous losses due to natural disasters brought with it a realisation that alternative interventions are needed. An

international decade on natural disasters was first proposed at the Eighth International Congress of Earthquake Engineering (Lechat, 1990:2). This initiative was met favourably by the international scientific community.

2.5.1 The International Decade of Natural Disaster Reduction (IDNDR)

In December 1987, the United National General Assembly adopted Resolution 42/169 which proclaimed the years 1990-1999 as the International Decade for Natural Disaster Reduction, or IDNDR (WMO, 1997:1; Smith, 2002:348; UNISDR, 2002:17; UN, 1987; Lechat, 1990:2). During this decade a concerted international effort was attempted to reduce the loss of life, property, livelihoods, and social and economic disruption caused by the violent impact of nature on vulnerable conditions. The aim of this decade was to ensure a shift in the reactive approach towards natural disasters to that of pro-active planning and prevention (Housner, 1989:45-46; Lechat, 1990:2; Smith, 2002:348). The five main goals of the Decade were to:

i. improve the capacity of each country to mitigate the effects of natural disasters, paying special attention to assisting developing countries in the assessment of disaster damage potential and in the establishment of early warning systems and disaster-resistant structures when and where needed;
ii. develop appropriate guidelines and strategies for applying existing scientific and technical knowledge, taking into account the cultural and economic diversity of different countries;
iii. foster scientific and engineering endeavours aimed at closing critical gaps in knowledge in order to reduce the loss of life and property;
iv. disseminate existing and new technological information related to measures for the assessment, prediction and mitigation of natural disasters; and

v. develop measures for the assessment, prediction and mitigation of natural disasters through programmes of technical assistance and technology transfer, demonstration projects, and education and training, tailored to specific disasters and locations, and to evaluate the effectiveness of those programmes (UN, 1987; Smith, 2002: 348).

With the above goals as objectives, the IDNDR set certain targets to be reached by all counties by the year 2000. The IDNDR envisaged that all countries would have conducted national risk assessments, developed national and/or local prevention preparedness plans and implemented global, regional, national and local warning systems (UNESCO, 2000). The IDNDR assumed that political will and conduct by different governments would be present and assist in achieving the above goals.

Initially the IDNDR was largely influenced by scientific and technical interest groups as the objectives above clearly alluded to (UNISDR, 2002:17). However, a much wider global interest in the economic and social consequences of natural disasters developed as the Decade progressed (Bates, Dynes and Quarantelli, 1991:288-289). This indicated a much broader interest in issues of hazard awareness and risk management practices. The importance given to socio-economic vulnerability as a rapidly increasing factor of risk in most societies, underlined the need to encourage the wider participation of local communities in hazard and risk reduction activities (UNISDR, 2002:17).

The IDNDR was dependant on the financial and other support provided by member states. It was also the responsibility of member states to formulate their own policies and strategies, and establish national platforms that would serve as the focal point for disaster reduction activities. Although the Decade had a very slow start (Smith, 2002:348), over 130 countries managed to setup national committees. These committees/national focal points differed in their capacities and effectiveness with less that one-quarter becoming fully active (most in South Asia, due to the impetus and activities of the Asian Disaster

Preparedness Centre, and only a few in Africa according to Ritchie, 2004). Some pilot projects were initiated through a co-funding mechanism, but once again only one-quarter of these projects were successful. As the Decade progressed, some criticism of its key objectives emerged.

The emphasis that the Decade placed on scientific solutions, as well as the transfer of hazard-mitigation technologies to developing countries was capital-intensive most of the time and did not take the capacities of these countries into consideration (Blaikie *et al*, 1994:xiv). These projects also placed a disproportionate emphasis and reliance on external experts. Bates, Dynes and Quarantelli (1991:288-289) criticised the IDNDR for not taking social, political and economic dimensions of disasters into account. They emphasised that it was no longer adequate to rely only on structural and technical solutions to hazards reduction. The importance of local participation became evident in recovery and redevelopment planning following a disaster (Berke, Karez and Wenger, 1993:93-109). The omission of technological hazards and environmental degradation from the IDNDR brief was also identified as a defect. The IDNDR failed to expand the concept of hazard reduction to include most important technological hazards induced by human development and neglect also within a hazardous environment (Smith, 2002:349). Although the concept of development/disaster integration was not new at the times of planning the IDNDR (see O'Keefe, Westgate and Wisner, 1976), the Decade failed to recognise the importance of the inclusion of risk reduction initiatives within programmes of sustainable development, thus creating certain development dilemmas (McEntire, 1997:225; Rosenthal, Comfort & Boin, 2001).

McEntire (1997:221-231) indicates that beside the dilemmas of development, some other weaknesses during the IDNDR by the international community include:

i. the violation of human rights in disasters;
ii. a low degree of relief coordination and collaboration; and
iii. difficulties in providing aid.

The lack of action by the IDNDR to the above aspects was evident throughout the Decade.

Some of the weaknesses listed above were, however, recognised in a mid-decade review of the IDNDR. This lead to a much wider consultation by the IDNDR including development officials, politicians, the economic sectors, environmentalists and disaster relief professionals. At the end of the Decade it was accepted that 10 years is not enough time in the international arena to address all the challenges identified adequately. Smith (2002:349) indicates that the IDNDR was merely "*a signpost near the start of a very long journey*".

In the concluding forum of the IDNDR held in Geneva, Switzerland in July 1999, the document '*A Safer World in the 21st Century: Disaster and Risk Reduction*' was adopted. The document was compiled through consensus discussions among hazard and risk management stakeholders, and includes a commitment by all stakeholders to:

i. conduct a national audit or assessment process of existing functions necessary for a comprehensive and integrated national strategy of hazard, risk and disaster prevention, projected over 5-10 and 20 year time periods;
ii. conduct dynamic risk analysis with specific consideration of demographics, urban growth, and the interaction or compound relationships between natural, technological and environmental factors;
iii. build, or where existing, strengthen regional/sub-regional, national and international approaches, and collaborative organisational arrangements that can increase hazard, risk and disaster prevention capabilities and activities;
iv. establish coordination mechanisms for greater coherence and improved effectiveness of combined hazard, risk and disaster prevention strategies at all levels of responsibility;

v. promote and encourage know-how transfer through partnership and among countries with particular attention given to the transfer of experience to those countries most exposed to risks;
vi. establish global, national, and regional or sub-regional information exchanges, facilities, or websites dedicated to hazard, risk and disaster prevention, linked by agreed communication standards and protocols;
vii. link efforts of hazard, risk and disaster prevention more closely with the Agenda 21 implementation process for enhanced synergy with environmental and sustainable development issues;
viii. focus multi-year risk reduction strategies on urban concentration and mega-city environments;
ix. institute comprehensive application of land-use planning and programmes in hazard-prone environments;
x. develop and apply standard forms of statistical recording of risk factors, disaster occurrences and their consequences to enable more consistent comparisons;
xi. undertake periodic reviews of accomplishments in hazard, risk and disaster reduction efforts at all levels of engagement and responsibility; and
xii. study feasibility of specific alternative funding and resource allocation modalities that can ensure continued commitment to sustained risk and disaster prevention strategies (IDNDR, 1999).

Holloway (2003:30) indicates that at the end of the IDNDR, in Southern Africa, and perhaps more widely across Africa, the field of disaster reduction has never explicitly achieved the same policy stature or secured levels of financial commitment comparable to those seen in Asia or Latin America. This, according to Ritchie (2004), can be attributed greatly to the existence of the Asian Disaster Preparedness Centre and the involvement of the United States in Latin America. The above provided impetus to the International Strategy for Disaster Reduction (see section below). Another significant event which shaped the disaster risk reduction agenda in the 1990s was the World Conference on Natural Disaster Reduction held in Yokohama, Japan from 23-

27 May 1994 and the subsequent adoption of the Yokohama Strategy and Plan of Action for a Safer World.

2.5.2 The Yokohama Strategy and Plan of Action for a Safer World

Although articulated in 1994, the principles of the Yokohama Strategy and Plan of Action for a Safer World are possibly more relevant in the 21 century than when they were conceived (UNISDR, 2002:18). These principles provided the foundation on which much of the disaster risk reduction thinking of the new millennium is based.

The Yokohama Strategy and Plan of Action for a Safer World (1994) stressed that each country has the sovereign responsibility to protect its citizens from natural disasters and that priority must be given to developing countries, in particular the least developed, land-locked countries and the small island developing states. It further emphasised the importance of "*developing and strengthening national capacities and capabilities and, where appropriate, national legislation for natural and other disaster prevention, mitigation and preparedness, including the mobilisation of non-governmental organisation and participation of local communities*". Lastly, the Strategy pointed to the importance of promoting and strengthening sub-regional, regional and international cooperation in prevention, reduction and mitigation of natural and other disasters.

In order to achieve the above objectives, the Plan of Action stipulates ten actions which are critical for the success of the Strategy. These actions are still relevant and shape the way in which disaster risk reduction is viewed. They include:

i. Risk assessment as a required step for disaster reduction policies and measures.
ii. Disaster prevention and preparedness are of primary importance in reducing the need for disaster relief.

iii. Disaster prevention and preparedness should be considered integral aspects of development policy and planning at national, regional, bilateral, multilateral and international levels.
iv. The development and strengthening of capacities to prevent, reduce and mitigate disasters is a top priority area to be addressed.
v. Early warnings of impending disasters and their effective dissemination using telecommunications, including broadcast services, are key factors to successful disaster prevention and preparedness.
vi. Preventive measures are most effective when they involve participation at all levels, from the local community through the national government to the regional and international level.
vii. Vulnerability can be reduced by the application of proper design and patterns of development focused on target groups, by appropriate education and training of the whole community.
viii. The need to share the necessary technology to prevent, reduce and mitigate disaster.
ix. Environmental protection as a component of sustainable development consistent with poverty alleviation is imperative in the prevention and mitigation of natural disasters.
x. The international community should demonstrate strong political determination required to mobilise adequate and make efficient use of existing resources, including financial, scientific and technological means, in the field of natural disaster reduction, bearing in mind the needs of the developing countries, particularly the least developed countries.

The basis for the strategy is that "*natural disasters continue to strike and increase in magnitude, complexity, frequency and economic impact. Whilst the natural phenomena causing disasters are in most cases beyond human control, vulnerability is generally a result of human activity. Therefore, society must recognise and strengthen traditional methods and explore new ways to live with such risk, and take urgent actions to prevent as well as to reduce the effects of such disasters*" (Yokohama Strategy and Plan of Action for a Safer World, 1994; UNISDR, 2002:18).

The IDNDR cultivated fertile soil for the announcement of its successor, The International Strategy for Disaster Reduction (ISDR) in 2000.

2.5.3 The International Strategy for Disaster Reduction (ISDR)

As the successor to the IDNDR, the International Strategy for Disaster Reduction (ISDR) proceeded with the emphasis of the protection against hazards, reducing vulnerability and building resilient communities (UNISDR, 2002:19). The most significant progress that the ISDR aims to make, vis-à-vis the ideals of the IDNDR and the Yokohama Strategy and Plan of Action for a Safer World, is the cultivation of a multi-disciplinary approach to disaster reduction within the broader context of sustainable development (UNISDR, 2004). The ISDR takes a global approach to disaster reduction inculcating a culture of risk avoidance behaviour through the fostering of partnerships at community level.

The ISDR aims to increase public awareness to understanding risk, vulnerability and disaster reduction globally. One of the major emphases of the ISDR is ensuring political commitment to the development and implementation of disaster reduction policies and actions by all governments, but in particular those most exposed to the possible impact of hazards. Stimulating interdisciplinary and intersectoral collaboration and the expanding of existing networks is one of the key focus areas of the ISDR. Learning from the IDNDR, the ISDR calls attention to the importance of research and the improvement of scientific knowledge of disaster reduction.

In order to ensure that the ideals of the ISDR will be reached, the Inter-Agency Secretariat for the ISDR (UN/ISDR) was established as the focal point by the United National General Assembly through its resolutions 54/219 (UN, 2000a) and 56/195 (UN, 2002). The UN/ISDR must ensure synergy between disaster reduction activities and those in the socio-economic and humanitarian fields (UNISDR, 2002:19). One of the strengths of the UN/ISDR

is the ability to bring together a wide array of different stakeholders from various sectors though the Inter-Agency Task Force on Disaster Reduction (IATF/DR).

The IATF/DR is the principal body for the development of disaster reduction policy. It is headed by the UN Under-Secretary General for Humanitarian Affairs and consists of 25 UN, international, regional and civil society organisations.

The mandated functions of the IATF/DR are:

i. to serve as the main forum within the United Nations system for devising strategies and policies for the reduction of natural hazards;
ii. to identify gaps in disaster reduction policies and programmes and recommend remedial action;
iii. to provide policy guidance to the ISDR secretariat; and
iv. to convene ad hoc meetings of experts on issues related to disaster reduction (UNISDR, 2004).

The Task Force has established four working groups to focus on: climate and disasters; early warning; risk, vulnerability and impact assessment; and wildland fires (UNISDR, 2004). Beside these working groups, the Task Force has indicated that it aims to pursue additional areas such as: drought; ecosystem management; land-use planning; raising the political profile of disaster reduction; exploring public-private partnerships; and integrating issues of disaster reduction into development planning.

The ISDR further served as the organising body for the second World Conference on Disaster Reduction (WCDR). A discussion on the contemporary events which are shaping disaster risk reduction would be incomplete without a focus on the above conference.

2.5.4 The World Conference on Disaster Reduction

In December 2003 (UN, 2003), the UN General Assembly adopted resolution 58/214, in which it decided to convene a second World Conference on Disaster Reduction. As mentioned previously, the first World Conference on Disaster Reduction took place in Yokohama, Japan in May 1994 and set a plan of action called the Yokohama strategy. The WCDR adopted the *Hyogo Declaration*, and the *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*, which aims to define a new plan of action for the years 2005-2015 to facilitate the implementation of the Millennium Development Goals (see section below).

The WCDR has the following five specific objectives:

i. to conclude and report on the review of the Yokohama Strategy and its Plan of Action, with a view to updating the guiding framework on disaster reduction for the twenty-first century;
ii. to identify specific activities aimed at ensuring the implementation of relevant provisions of the Johannesburg Plan of Implementation of the World Summit on Sustainable Development on vulnerability, risk assessment and disaster management;
iii. to share good practices and lessons learned to further disaster reduction within the context of attaining sustainable development, and to identify gaps and challenges;
iv. to increase awareness of the importance of disaster reduction policies, thereby facilitating and promoting the implementation of those policies; and
v. to increase the reliability and availability of appropriate disaster-related information to the public and disaster management agencies in all regions, as set out in relevant provisions of the Johannesburg Plan of Implementation of the World Summit on Sustainable Development (UN, 2005:8).

The Conference addressed issues of disaster reduction under the following broad thematic areas:

i. Governance: Institutional and policy frameworks for risk reduction.
ii. Risk identification, assessment, monitoring and early warning.
iii. Knowledge management and education.
iv. Reducing underlying risk factors.
v. Preparedness for effective response and recovery.

One of the most significant aims of the WCDR is a refined framework for disaster risk reduction linked to the MDGs (see Chapter 4 for the UN/ISDR and UNDP Disaster Risk Reduction Framework). At the writing of this thesis the refinement of the framework and indicators were still in the initial phase and has been incorporated into the discussion on frameworks in Chapter 4. Some scholars, however, are of the opinion that the Hyogo Framework for Action (UN, 2005) failed dismally in linking the Kobe outcomes with the goals and targets set out in the Millennium Development Goals (Walker & Wisner, 2005:1).

The disaster/development theme is one that has enjoyed some attention in this chapter. It remains, however, to expand on this focus in order to justify the emphasis that development will enjoy in the measurement of success in disaster risk reduction. The following section will draw the reader's attention to some of the main arguments in integrating development- and disaster planning. Contemporary thought on this subject shows that the development of disaster risk reduction has been greatly influenced by the disaster/development arguments (AU/NEPAD, 2004; UNISDR, 2003; UNDP, 2004).

2.6 DISASTERS: A DEVELOPMENTAL SOLUTION?

"Can sustainable development along with the international instruments aiming at poverty reduction and environmental protection, be successful without taking into account the risk of natural hazards and their impacts? Can the planet afford the increasing costs and losses due to so-called natural disasters? The short answer is, no."

UN/ISDR background paper for WSSD, 2002.

In recent years (from the 1990s onward) the development community has been making the links between disasters and development (UNISDR, 2003; UNDP, 2004; Lavell, 1999). This evolution would seem inevitable when one considers the disproportionately high costs that developing countries pay for disasters (World Bank, 2004). It is now widely recognised that the most likely solution to disaster problems is the implementation of successful developmental projects towards vulnerability- and risk reduction, environmental management and sustainable livelihoods (UNISDR, 2003:26-28; Comfort *et* al., 1999; UN, 1999; De Satge, 2002). This premise has been proclaimed for decades by many academics and scientists (O'Keefe, Westgate and Wisner, 1976; Cuny, 1983; Kent, 1987, Anderson & Woodrow, 1989; Bates, Dynes and Quarantelli, 1991:288). Lavell (1999) points out that *"the basic problem is not that disasters may have important negative development consequences, particularly where their impact is large relative to the size of the affected economy. Rather, the real problem is the reduced size and/or level of development of the affected economy and society. Instead of satanizing hazards for their impacts on society, it would probably be more correct to satanize society for its impacts on hazards!"*

At the beginning of the IDNDR, social scientists also made it clear to the international community not to view the solution to disaster problems only as one of engineering or the physical sciences (Bates, Dynes and Quarantelli, 1991:288) but that the human dimension should enjoy top priority. Lavell (1999) at the end of the IDNDR remained steadfast in his argument that *"risk and disasters are complex social problems"*. The aims and objectives of the UN/ISDR (as stated above) is a clear indication of the shift in focus towards a multi-disciplinary approach to disaster risk. Scientists, disaster and risk

management practitioners started to take the multiple hazards future societies face into account, and that development is the cause of disasters in most cases. Comfort *et al.* (1999) say that there has been a widespread failure to recognise and address the ways in which changes in land use, settlement policies, population distribution, and the attendant degrading of habitats dramatically increase hazard exposure and vulnerability, and ultimately increase the risk of disasters.

The implementation of disaster related solutions, however, takes place within specific political, economic, environmental and socio-cultural contexts (see UNISDR, 2003:30-38) which assumes a development perspective. Gunn (1992:17) claims that disaster is an anthropocentric, sociocentric phenomenon. In the above context, disasters destroy (and require additional) resources critical to development. Jeggle (in Rosenthal, Comfort & Boin, 2001:337) is of the opinion that "*in an era of rising costs of disasters, it becomes much less tenable in political terms to continue to allocate funds for maintaining emergency services, if there is not a significant shift of resources to minimise losses from known, expected, and in many cases, recurrent, hazards*". He (Jeggle) further states that it is not acceptable that resources should first be lost to disasters before political decision-makers deem it important enough to allocate funds towards risk reduction. Lavell (1999) questions the validity of accepting economic growth models as inherent good and contributing towards development and ultimately vulnerability reduction. He says that political sensitivity to structural risk reduction measures is much less than questions relating to income redistribution, reduction of poverty and community empowerment. The conundrum of disaster risk reduction therefore becomes evident: how does one justify the spending of public money and the application of resources to a phenomenon that might not happen due to these preventative actions, when day-to-day pressures are greater? (UNISDR, 2003:28). Then again it should also be noted that development efforts carried out without regard to environmental consequences can expose humans systems to even greater disaster vulnerabilities (see the discussion on the consequence of Hurricane Mitch in Honduras and Nicaragua in 1998 by Comfort *et al.*, 1999, and the work of Lavell, 1999).

Ritchie (2004) is of the opinion that Hazard Impact Assessments (HIA) and Environmental Impact Analysis (EIA) should form an integral part of all new (and major) development interventions. HIA should assess and address all long-term abstract and unquantifiable aspects relating to a project. Such assessment should include the possible hazardous impact by a given phenomenon on development projects and also the aggravating conditions towards increased hazard frequency due to the nature of the project (e.g. increased mining activities could induce earthquakes). A HIA is mostly subjective in nature and quite difficult to quantify. EIA on the other hand must embrace the whole life cycle of a project which includes the operational life and also, if applicable, the closure and decommissioning of a project. Through EIA the impact on the environment (physical and social) can be quantified against reasonable assumptions, and certain answers to problems can be provided. Decision-makers would therefore be in a position to make balanced judgements and allocate available resources accordingly. Ritchie (2004) emphasises the importance that all international funded projects (e.g. through the WB, EU, IMF, and bilateral agreements) should become subject to independent HIA and EIA prior to the approval of funding for the project.

It would, however, be naïve to think that the problems brought on by disasters and the possible solutions provided by development went unnoticed by policy makers and politicians. In September 2000 the member states of the United Nations unanimously adopted the Millennium Declaration (UN, 2000b) which sets out a roadmap towards human development. This declaration strives towards obtaining certain goals by 2015, called the Millennium Development Goals or MDGs. The United Nations system has accordingly geared itself towards reaching these goals and all development aid is sharply focussed towards attaining the MDGs. Global development, therefore, must address these goals. It is also believed that by achieving the MDGs, disaster risk will be reduced significantly. Prior to, and also after the World Conference on Disaster Reduction (WCDR) held in Kobe, Japan (18-22 January 2005), talk within the disaster risk reduction community focussed heavily on the alignment of the MDGs with that of disaster risk reduction goals and targets.

This topic will enjoy attention later on in this chapter. The following section will address how the development of disaster risk reduction is now influenced by the development agenda.

2.6.1 The Millennium Development Goals

The Millennium Development Goals (MDGs) aim at committing the international community to an expanded vision of development, one that promotes human development as the key to sustaining social and economic progress in all countries, and recognises the importance of creating a global partnership for development (Prinsloo, Binon & Van Niekerk, 2004). According to the UNDP (2004:15), the MDGs contain cross-cutting themes in development and disaster risk policy. Each of these themes is tied to specific targets and indicators for progress. The goals have been commonly accepted as a framework for measuring development progress. There are eight MDGs, which comprise 18 targets and 48 indicators. Where possible, the targets are given as quantified, time-bound values for specific indicators. Table 2.2: The Millennium Development Goals and Targets below contain a breakdown of these goals and targets.

GOAL	TARGETS
Goal 1: Eradicate extreme poverty and hunger	**Target 1:** Halve, between 1990 and 2015, the proportion of people whose income is less than US$1 a day. **Target 2:** Halve, between 1990 and 2015, the proportion of people who suffer from hunger.
Goal 2: Achieve universal primary education	**Target 3:** Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.
Goal 3: Promote gender equality and empower women	**Target 4:** Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015.
Goal 4: Reduce child mortality	**Target 5:** Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.
Goal 5: Improve maternal health	**Target 6:** Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio.
Goal 6: Combat HIV/AIDS, malaria, and other diseases	**Target 7:** Have halted by 2015 and begun to reverse the spread of HIV/AIDS. **Target 8:** Have halted by 2015 and begun to

	reverse the incidence of malaria and other major diseases.
Goal 7: Ensure environmental sustainability	**Target 9:** Integrate the principles of sustainable development into country policies and program and reverse the loss of environmental resources. **Target 10:** Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. **Target 11:** Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers.
Goal 8: Develop a global partnership for development	**Target 12:** Develop further an open, rule-based, predictable, non-discriminatory trading and financial system. **Target 13:** Address the special needs of the least developed countries (includes tariff-and quota-free access for exports enhanced program of debt relief for Highly Indebt Poor Countries (HIPC) and cancellation of official bilateral debt, and more generous Official Development Assistance (ODA) for countries committed to poverty reduction). **Target 14:** Address the special needs of landlocked countries and small island developing states (through the Program of Action for the Sustainable Development of Small Island Developing States and 22nd General Assembly provisions). **Target 15:** Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term. **Target 16:** In cooperation with developing countries, develop and implement strategies for decent and productive work for youth. **Target 17:** In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries. **Target 18:** In cooperation with the private sector, make available the benefits of new technologies, especially information and communications.

Table 2.2: The Millennium Development Goals and Targets
(World Bank, 2003)

The UNDP (2004:57) indicates that the strategic integration of disaster risk management within development planning can make a significant contribution to meeting the MDGs. Jeggle (2004) cautions towards a too narrow focus on disaster risk reduction within the MDGs, and says that constraints will be placed on the ideals of disaster risk reduction if one only considers them in terms of their functioning "under" development. Disaster risk reduction should

rather be seen as a supporting mechanism towards achieving sustainable development, and development as a support towards risk reduction. The one can therefore not be seen as subordinate to the other. A previous argument therefore remains true, that disaster risk reduction can only be successful through a multi-disciplinary approach. The above said, one should not lose sight of the fact that *"[N]atural disasters exert an enormous toll on development. In doing so, they pose a significant threat to prospects for achieving the Millennium Development Goals."* (Brown in UNDP, 2004).

Achieving the MDGs within the indicated timeframes will require more focus on development outcomes and less on inputs to measure national progress towards meeting the MDGs effectively. The goals establish yardsticks for measuring results, not just for developing countries but also for developed countries that help to fund development programmes and for the multilateral institutions that help countries implement them. Such a focus on the outcomes of development in order to measure the success of the MDGs could in itself proof problematic for disaster risk.

The first seven goals are mutually reinforcing and are directed at reducing poverty in all its forms. The last goal MDG8 - "develop a global partnership for development" - is about the means to achieve the first seven, and probably holds the most far-reaching opportunities for disaster risk reduction (UNDP, 2004:17). Many of the poorest countries will need additional assistance and must look to the developed world to provide it. The UNDP (2004:17) indicates that countries that are poor and heavily indebted will need further help in reducing their debt burdens and meeting their trade reforms. This leaves most of the developing world in a predicament. There is a general global lack of consensus in international trade and the protection of sectors most needed not to be protected (for the developing world to economically grow e.g. agriculture), is still occurring. Only recently has the developing world made some inroads into European and American markets for their primary products (Blustein, 2004:A01). Benson and Clay (2004:18) indicate that economic development is widely accepted as being GDP growth due to secondary and tertiary products. The current talks on trade agreements only focus on market

access for primary products. The developing world therefore struggles to reach their trade agreements and debt repayment within the international trade reform that is necessary for these counties to economically grow. It should also be taken into account that trade reforms will greatly influence development patterns, priorities, social and territorial development (UNDP, 2004:17), which in turn will have a considerable impact on disaster risk distribution. The reforms mentioned above might stimulate risk generating development. An over emphasis on development in order to reach the goals could result in risk increasing development (see the argument of Ritchie above). In other words, development for the sake of development without considering the short- and long-term consequences thereof instils more risk. Such an emphasis on development output, it can be argued, almost takes one back to the immediate post-colonial era in Africa. Ritchie (2004) provides an example to justify the above argument. During the last 30 to 50 years, herds in the sub-Saharan region and in parts of India have increased due to improved breeding and animal husbandry. West-Africa saw an increased demand for meat in this period. Greater demand lead to greater herds which in turn impacted on available land and water sources without significantly increasing meat outlets. Herd size as a cultural sign of wealth further exacerbated the situation. In order to meet the increased demand for surface water, the technological development of tube wells was implemented to tap into existing ground water. Subsequently the conservation of surface water by pastoral farmers decreased as cisterns and tanks were also introduced. The maintenance of these cisterns and tanks over generations was neglected. The improvements in water supplies from tube wells were not matched by improved pasture/grazing management. The colonial era introduced the barter system of goods for cattle which once again significantly ensured an increase in the herd populations. Most of these herd population growths occurred in drought-prone areas. The consumption by mostly goat herds further ensured the loss of vegetation and significantly contributed to the famine in Ethiopia, Somalia, Niger, Burkina-Faso and other countries in the 1970s. If all of the above is taken into consideration over a long period of time it is evident how seemingly "good" development increases the risk of and leads to major disasters.

Considering the timeframes for reaching the MDGs it is clear that progress in reaching them has been dismally slow. Figure 2.2 below indicates current and projected progress in terms of reaching some of the targets of the MDGs for Sub-Saharan Africa. It is therefore clear that it is most unlikely that the MDGs will be reached within the timeframe specified. In terms of disaster risk one can argue that the projected benefits that development would bring in terms of reducing disaster risk will be greatly affected. Similarly, the argument can also be used that it is exactly the lack of integrating disaster risk reduction into development planning that contributes towards the slow achievement of the MDGs. Disasters therefore impact (and will continue to impact) on developmental gains. The dilemma is quite clear. If the only hope for reducing disaster risk is within the field of development, it is hard to foresee any tangible improvement for most of Africa in this regard.

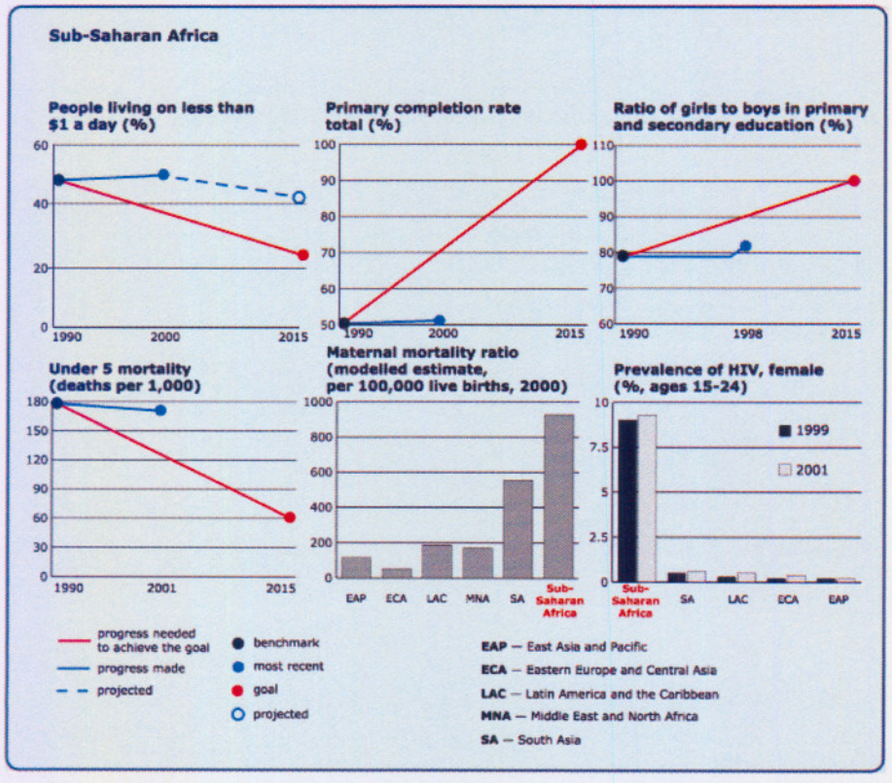

Figure 2.3: Progress in reaching the MDGs – Sub-Saharan Africa
(World Bank, 2003)

The need for the mainstreaming of disaster risk reduction into development was further emphasised by the World Conference on Disaster Reduction. *The Hyogo Declaration* as well as the *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters* (UN, 2005), places considerable emphasis on the importance of disaster risk reduction towards sustainable development.

It would be imprudent to assume that Africa is only a spectator in the international arena of development. The poorest continent in the world is taking its own initiatives towards development (and ultimately disaster risk reduction). These initiatives are also in line with international development paradigms.

2.6.2 New Partnership for Africa's Development (NEPAD)

Each country in the world has its own agenda towards the implementation of the MDGs. Within the African context the New Partnership for Africa's Development (NEPAD) is being used as this implementing agent. The New Partnership for Africa's Development is a pledge by African leaders, based on a common vision and a firm and shared conviction, that they need to eradicate poverty, ensure sustainable growth and development, and at the same time participate actively in the world economy and body politic (NEPAD, 2001). For this purpose, as with the MDGs, NEPAD has certain long-term objectives and goals which it aims to achieve within certain timeframes. The long-term objectives of NEPAD include:

i. to eradicate poverty in Africa and to place African countries, both individually and collectively, on a path of sustainable growth and development and thus halt the marginalisation of Africa in the globalisation process; and
ii. to promote the role of women in all activities.

The goals set forth in order to achieve the above objectives include :

i. to achieve and sustain an average gross domestic product (GDP) growth rate of over 7 per cent per annum for the next 15 years; and
ii. to ensure that the continent achieves the agreed Millennium Development Goals.

The strategy has the following expected outcomes:

i. Economic growth and development and increased employment.
ii. Reduction in poverty and inequality.
iii. Diversification of productive activities, enhanced international competitiveness and increased exports.
iv. Increased African integration (NEPAD, 2001).

Comparable with the arguments followed in order to achieve the MDGs, NEPAD has also taken steps to ensure that disaster risk reduction is addressed. This is quite evident in the Africa Regional Strategy for Disaster Risk Reduction, jointly developed by the AU and NEPAD (AU/NEPAD, 2004). The need to address disasters comprehensively came to the fore during the process of developing NEPAD's operational programmes by the NEPAD Secretariat, which provided the impetus to the development of the regional disaster risk reduction strategy (AU/NEPAD, 2004). Once again it is stated that disaster risk reduction should be addressed within the development context.

It can be rightfully argued that the MDGs as well as NEPAD provide a strategic framework within which African nations should strive towards sustainable development. As has been seen, these strategies influence the application of disaster risk reduction significantly. Although not a clear sequence of events, the incorporation of disaster risk reduction into development planning is also obvious within the South African Public Sector planning (see Chapter 3).

The South African President Thabo Mbeki, along with the Nigerian President Olusegun Obasanjo were the creators of NEPAD. It is thus quite obvious that the aims and objectives of NEPAD will feature within the South African development policy. Thus the question could be asked whether an emphasis on disaster risk reduction and improved environmental management within development planning would also be present.

A discussion on the development of disaster risk reduction would be incomplete without a summary of the most recent internationally acceptable aspects which comprise this concept.

2.7 COMPONENTS OF DISASTER RISK REDUCTION

Sources contributing towards the understanding of disaster risk reduction are legion and the extent of this thesis is not adequate to cover all known and credible sources. This section will explain the most important and widely accepted components of disaster risk reduction. Two mainstream models will be used to explain the aspects which comprise disaster risk reduction. It should be noted that in most cases those aspects which are important for disaster risk reduction are similar to that needed for disaster risk management. The terms disaster risk management and disaster risk reduction will therefore be used interchangeably within the accepted definition of these terms as per Chapter 1.

Each model will be analysed and coded in order to compile a generic list of disaster risk reduction aspects which will form the foundation for assessing the different disaster risk reduction frameworks in Chapter 4.

2.7.1 The Disaster Pressure and Release Model

First published in 1994 by Blaikie *et al* (1994:23) and then again in 2004 (by Wisner *et al,* 2004:49-52), the Disaster Pressure and Release Model (PAR)

has become the internationally accepted model for the explanation of the progression of vulnerability and the progression to safety (risk reduction). Although already published in 1994, this model is even more relevant today (UN/ISDR, 2004c:71). The Pressure Model indicates that these are certain underlying causes, dynamic pressures and unsafe conditions which contribute to vulnerability. Linking the above to a hazardous trigger event, increases the risk in communities. The Pressure Release Model explains reversing the risk pressure created by the aspects mentioned above in order to create safe communities. In order to reduce the risk of communities as per the Pressure Model one needs to engage in certain risk reduction activities. Figure 2.4 and 2.5 below provide an explanation of this model.

From both models it becomes clear that the authors suggest pertinent components which needs to be present in order to address disaster risk and in doing so achieve safe conditions.

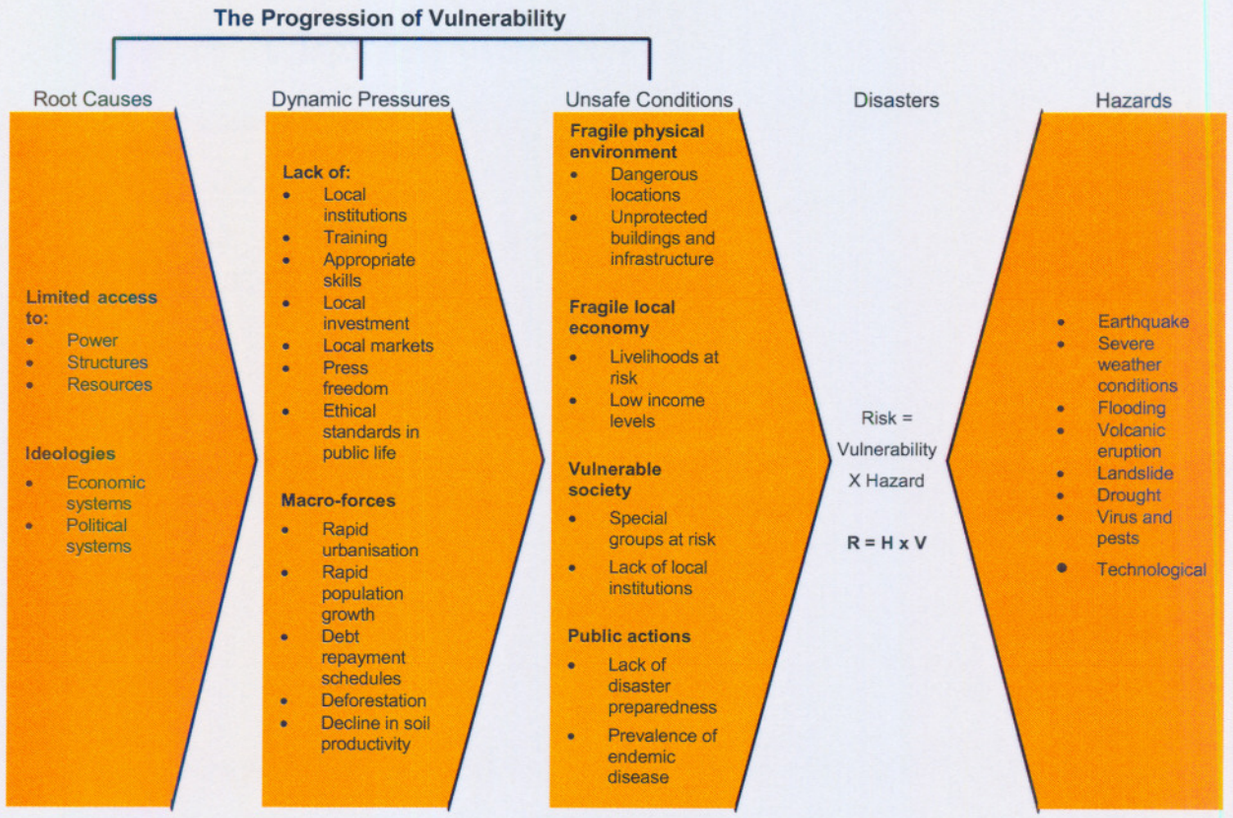

Figure 2.4: The Pressure Model

(Wisner *et al*, 2004:51)

Wisner *et al* (2004:330) identify seven risk reduction objectives which follow logically on the PAR model. These include:

i. **C** = **Communicate** understanding of vulnerability.
ii. **A** = **Analyse** vulnerability
iii. **R** = focus on **Reverse** of PAR model
iv. **D** = emphasise sustainable **Development**
v. **I** = **Improve** livelihoods
vi. **A** = **Add recovery**
vii. **C** = extent to **Culture**.

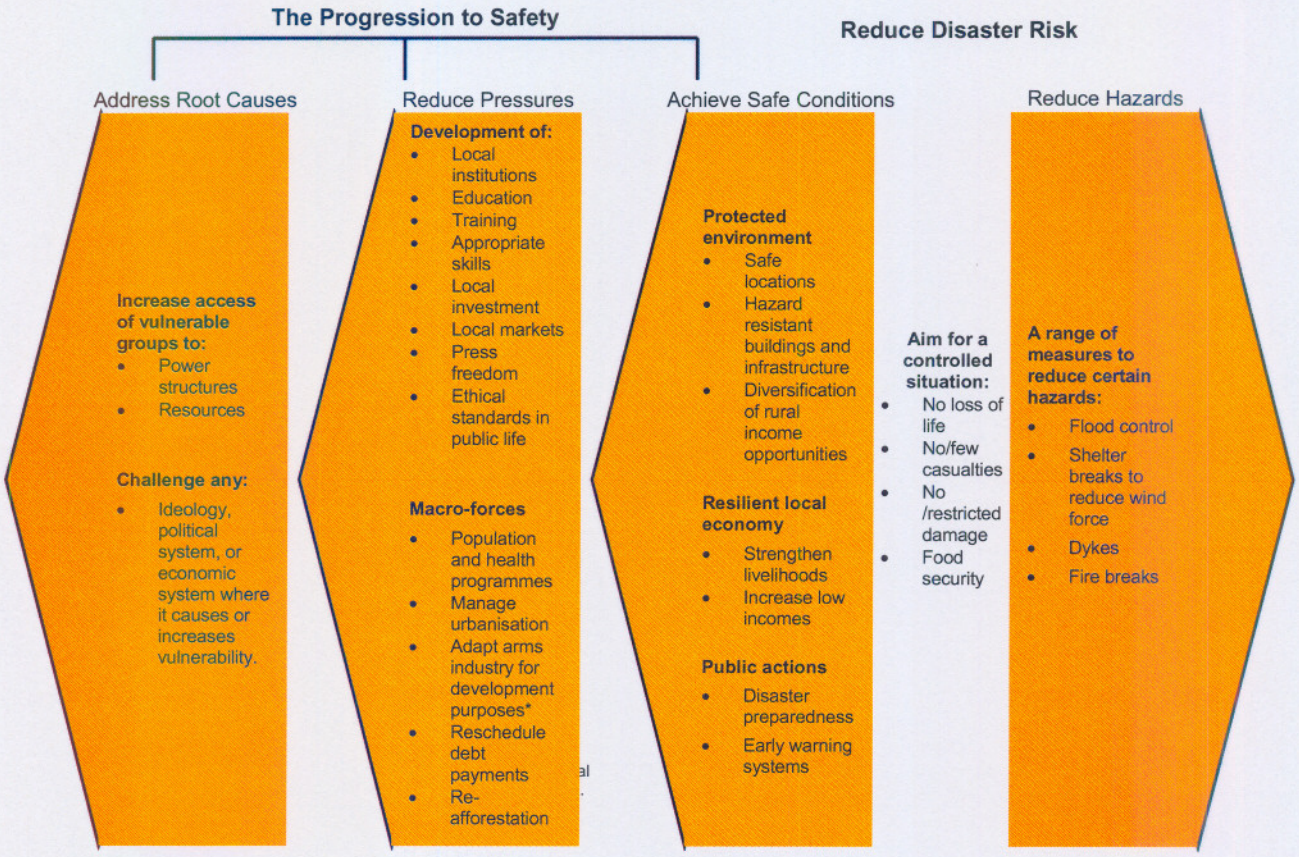

Figure 2.5: The Pressure Release Model
(Adapted from Wisner *et al*, 2004)

From the above seven objectives certain disaster risk reduction aspects can be identified and is explained in the table below (the code *PAR* will be used for this model):

Objective	Aspects of disaster risk reduction
PAR1. Communicate understanding of vulnerability (Wisner *et al*, 2004:330-333)	PAR1.1 Training and education PAR1.2 Acquisition of knowledge PAR1.3 Capacity building PAR1.4 Public awareness (Wisner *et al*, 2004:330) PAR1.5 Public participation PAR1.6 Risk communication PAR1.7 Governance PAR1.8 Self organisation and actions by civil society (Wisner *et al*, 2004:331) PAR1.9 Risk perception (Wisner *et al*, 2004:332) PAR1.10 Local knowledge and trust (Wisner *et al*, 2004:333) PAR1.11 Regional networks (Wisner *et al*, 2004:334)
PAR2. Analyse vulnerability (Wisner *et al*, 2004:333-342)	PAR2.1 Hazard assessment PAR2.2 Capacity/Vulnerability analysis PAR2.3 Risk assessment PAR2.4 Hazard mapping (Wisner *et al*, 2004:333) PAR2.5 Interdisciplinary research (Wisner *et al*, 2004:339)
PAR3. Focus on reverse of PAR model (Wisner *et al*, 2004:342-348)	PAR3.1 Access to resources PAR3.2 Political will PAR3.3 Mitigation efforts PAR3.4 Structural measures (building codes and retrofitting) PAR3.5 Economic development (Wisner *et al*, 2004:343) PAR3.6 Conflict prevention PAR3.7 Governance (Wisner *et al*, 2004:345-347)
PAR4. Emphasise sustainable development (Wisner *et al*, 2004:348-350)	PAR4.1 Land use planning (Wisner *et al*, 2004:348-349) PAR4.2 Environmental protection PAR4.3 Improved service delivery (Wisner *et al*, 2004:349)
PAR5. Improve livelihoods (Wisner *et al*, 2004:351-353)	PAR5.1 Local investments PAR5.2 Gender sensitivity (Wisner *et al*, 2004:351) PAR5.3 Collective action PAR5.4 Community self-protection PAR5.5 Diversification (income sources and production) PAR5.6 Review livelihood activities in terms of disaster risk PAR5.7 Land reform and access to resources PAR5.8 Increase food security PAR5.9 Facilitating local networks

Objective	Aspects of disaster risk reduction
	PAR5.10 Developing buffers and safety nets (Wisner *et al*, 2004:352-353)
PAR6. Add recovery (Wisner *et al*, 2004:352-366)	PAR6.1 Linking relief and development PAR6.2 Business continuity (Wisner *et al*, 2004:353) PAR6.3 Sustainable development (Wisner *et al*, 2004:354) PAR6.4 Increase resilience and build enhanced capacity (Wisner *et al*, 2004:357-359) PAR6.5 Micro credit and financial instruments (Wisner *et al*, 2004:361) PAR6.6 Address vulnerability (Wisner *et al*, 2004:364) PAR6.7 Indigenous coping mechanisms (Wisner *et al*, 2004:366)
PAR7. Extend to culture (Wisner *et al*, 2004:367-374)	PAR7.1 Cost/benefit analysis (Wisner *et al*, 2004:367) PAR7.2 Environmental protection (Wisner *et al*, 2004:368) PAR7.3 Community involvement and participation (Wisner *et al*, 2004:369-373) PAR7.4 Mitigation (Wisner *et al*, 2004:369)

Table 2.3: Risk reduction components of the PAR model

Although the PAR model provides us with an understanding of disaster risk reduction within different societies, it was never meant to address disaster risk reduction on a strategic level, but rather within at-risk communities. The following section will focus on the conceptual framework for disaster risk management as espoused by Jegillos (1999-2003).

2.7.2 A Conceptual Framework for Disaster Risk Management

Jegillos (1999:7-16; 2003:1-8) provides a conceptual framework (see Figure 2.6 below) for disaster risk management. Within this framework he makes mention of certain requirements for effective disaster risk management. Jegillos argues that one of the prerequisites for any disaster risk management to be effective is the establishment of clear policy guidelines. Such a policy needs to "addresses all aspects of disaster risk management that ensure mitigation as a proper priority" (Jegillos, 2003:4). Hazard, vulnerability and

capacity assessments and monitoring must also be undertaken in order to accurately identify adequate prevention and mitigation measures. Closely linked to the above assessments is the examination of current risk management practices. Aspects such as benefits, costs, participation, equity, support gained from various sectors, sustainability, resources, and adequacy of these practices need to be considered.

Following the need for a clearly defined policy, Jegillos (2003:4) further argues that reform and change in different sectors must be established. This will require a multi-disciplinary focus and a readiness by various sectors and government to institute continuous improvements in the current risk management practices. Bettering current practices should be included in a risk management plan. This dynamic plan must be integrated into development planning in order to determine the immediate and long term cost/benefit implications of not taking mitigation action. A further important component of disaster risk management is the establishment of a permanent organisation and planning centre (Jegillos, 2003:5). Jegillos is of the opinion that such a centre should function as the focal point for disaster risk management in order to identify, plan for and implement various types of risk reduction measures. This centre will further be responsible for ensuring that multi-stakeholder risk assessments are conducted and that different plans and programmes are adequately communicated to government and the public.

A system for an effective post emergency or disaster review is another requirement. This review must included advice to government and public on whether, as a result of a particular disaster, mitigation measures are adequate or whether additional measures are needed. Jegillos goes further and says that effective linkages of measures and policies within regional and national systems are also important. A national strategy that looks at the bigger picture and systems, spatial considerations, communication and information systems, warning and assessment systems, and codes and standards should form part of effective disaster risk management.

Beside the holistic planning and development of programmes mentioned above, the implementation of specialist programmes is also needed. These programmes could include the implementation of programmes that specifically target reduction of vulnerability of priority sectors such as local business, agriculture, urban poor, and basic social services. Linked to the above is the existence of strategies to implement public awareness and education programmes in order to ensure stakeholder and community participation in risk management.

Beside the national and regional focus of disaster risk management, Jegillos (2003:5) further emphasises the support for traditional and indigenous measures of risk reduction. The recognition of coping mechanisms of individuals and communities need to be considered and strategies to strengthen them must be encouraged. This community focus continues in the support for the development of self-reliance and self-help at community level.

Figure 2.6 below aims to explain the interaction of some of the elements mentioned above. It starts by indicating that some macro or national aspects need to be in place for the foundation towards risk reduction. These include:

i. policy;
ii. financial and other resource support;
iii. strategies and programmes; and
iv. multi-stakeholder contributions to risk reduction.

Once the above is present one can begin to transform hazards into productive resources, vulnerability into strengths, and improve communities' capacities and maximise their opportunities towards sustained development. Jegillos (2003:7) says that the reduction of risk to vulnerable elements is reliant on the above.

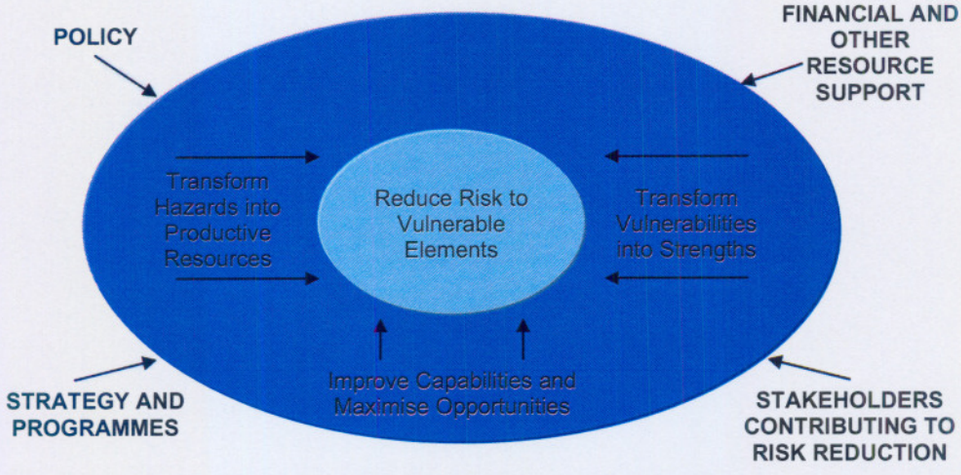

Figure 2.6: Conceptual Framework: Disaster Risk Management

(Jegillos, 1999:9)

From the discussion above the following table can be drawn (the code *CF* will be used for this model):

Component	Aspect
CF1. Policy	CF1.1 Clear policy guidelines CF1.2 Reform and change in different sectors CF1.3 Establishment of permanent organisation and planning centre CF1.4 Linkages of measures and policies within regional and national systems
CF2. Strategy and programmes	CF2.1 Hazard, vulnerability and capacity assessments CF2.2 Assessment of current risk management practices CF2.3 Multi-disciplinary focus CF2.4 Risk management plan CF2.5 Effective post emergency or disaster review CF2.6 Spatial considerations CF2.7 Public awareness and education
CF3. Stakeholder contribution to risk reduction	CF3.1 Participation CF3.2 Equity CF3.3 Multi-sector involvement CF3.4 Communication CF3.5 Consideration of traditional and indigenous measures of risk reduction
CF4. Financial and other resource support	CF4.1 Cost/benefit implications CF4.2 Sustainability CF4.3 Resources CF4.4 Information systems

	CF4.5 Warning and assessment systems CF4.6 Codes and standards

Table 2.4: Risk reduction components of the Conceptual Framework for Disaster Risk Management

The section to follow will provide a comparative table for the above three models in order to compile a generic list of disaster risk reduction components which will be used as the foundation for discussion in Chapter 4.

2.7.3 Generic aspects of disaster risk reduction

The following table represents the list of generic disaster risk reduction components and aspects as identified through the above assessment of the two models. In each instance the components and aspects of each model are compared.

The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	Generic aspect (code: Z)
PAR1.7 Governance PAR3.7 Governance	CF1.1 Clear policy guidelines CF1.4 Linkages of measures and policies within regional and national systems	Z1. Policy
PAR1.7 Governance PAR3.4 Structural measures (building codes and retrofitting) PAR3.7 Governance	CF1.2 Reform and change in different sectors CF4.6 Codes and standards	Z2. Legislation
PAR 3.5 Economic development PAR5.1 Local investments PAR5.5 Diversification (income sources and production) PAR5.10 Developing buffers and safety nets PAR6.5 Micro credit and financial instruments PAR7.1 Cost/benefit analysis	CF4.1 Cost/benefit implications	Z3. Financial instruments
PAR3.1 Access to resources activities in terms of disaster risk PAR5.7 Land reform and access to resources	CF4.3 Resources	Z4. Resources
PAR3.5 Economic development PAR4.3 Improved service	CF1.2 Reform and change in different sectors CF1.3 Establishment of	Z5. Institutional capacity

The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	Generic aspect (code: Z)
delivery	permanent organisation and planning centre	
PAR3.4 Structural measures (building codes and retrofitting) PAR4.1 Land use planning PAR6.2 Business continuity PAR6.6 Address vulnerability PAR6.7 Indigenous coping mechanisms	CF2.2 Assessment of current risk management practices CF2.4 Risk management plan CF3.5 Consideration of traditional and indigenous measures of risk reduction	Z6. Risk reduction practices
PAR2.1 Hazard assessment PAR2.2 Capacity/Vulnerability analysis PAR2.3 Risk assessment	CF2.1 Hazard, vulnerability and capacity assessments	Z7. Risk assessment
PAR3.2 Political will		Z8. Political commitment
	CF4.5 Warning and assessment systems	Z9. Early warning systems
PAR1.10 Local knowledge and trust PAR2.4 Hazard mapping	CF4.4 Information systems	Z10. Information management
PAR1.4 Public awareness PAR1.6 Risk communication	CF3.4 Communication	Z11. Communication
PAR1.1 Training and education PAR1.2 Acquisition of knowledge PAR1.3 Capacity building	CF2.7 Public awareness and education	Z12. Education and training
PAR1.2 Acquisition of knowledge PAR1.4 Public awareness PAR1.9 Risk perception	CF2.7 Public awareness and education	Z13. Public awareness
PAR1.2 Acquisition of knowledge PAR2.5 Interdisciplinary research		Z14. Research
PAR2.4 Hazard mapping PAR4.1 Land use planning PAR4.2 Environmental protection PAR7.2 Environmental protection	CF2.6 Spatial considerations	Z15. Environmental management
PAR1.5 Public participation PAR1.10 Local knowledge and trust PAR6.7 Indigenous coping mechanisms	CF3.2 Equity CF4.2 Sustainability	Z16. Social development practices
PAR3.3 Mitigation efforts PAR3.6 Conflict prevention PAR5.8 Increase food security PAR7.4 Mitigation		Z17. Preparedness and mitigation
PAR3.3 Mitigation efforts PAR7.4 Mitigation		Z18. Emergency management
PAR1.11 Regional networks	CF1.4 Linkages of measures and	Z19. Regional linkages

The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	Generic aspect (code: Z)
PAR5.9 Facilitating local networks	policies within regional and national systems	
PAR4.1 Land use planning PAR4.2 Environmental protection	CF2.6 Spatial considerations	Z20. Natural resource management
PAR6.1 Linking relief and development	CF2.5 Effective post emergency or disaster review	Z21. Rehabilitation and reconstruction (recovery)
PAR1.5 Public participation PAR1.8 Self organisation and actions by civil society PAR5.3 Collective action PAR5.4 Community self-protection PAR6.7 Indigenous coping mechanisms PAR7.3 Community involvement and participation	CF3.1 Participation CF3.2 Equity CF3.5 Consideration of traditional and indigenous measures of risk reduction	Z22. Public participation
PAR4.3 Improved service delivery PAR5.2 Gender sensitivity PAR5.6 Review livelihood PAR5.7 Land reform and access to resources PAR5.8 Increase food security PAR5.10 Developing buffers and safety nets PAR6.3 Sustainable development PAR6.4 Increase resilience and build enhanced capacity PAR6.6 Address vulnerability	CF3.2 Equity CF4.2 Sustainability	Z23. Livelihoods
PAR2.5 Interdisciplinary research PAR3.4 Structural measures (building codes and retrofitting) PAR4.1 Land use planning PAR4.2 Environmental protection PAR5.7 Land reform and access to resources		Z24. Multi-sectoral role-player involvement

Table 2.5: Comparative components and aspects of disaster risk reduction

The generic aspects contained in the above table have also been coded (using "Z" to refer to this coding). The coding to these aspects will be used throughout this thesis for referral purposes. The application can be seen in Chapter 4.

In addition to the literature review conducted above, some additional aspects can be identified through other sources which are not necessarily addressed by these two models. In comparison it is important to remember that the main aim of any framework is to capture progress in risk reduction (Lavelle, 1999). Benson and Clay (2004:1) indicate that governments need appropriate risk management strategies for possible future disasters. Such strategies must include medium-term financial planning covering eight to ten years. Secondly, Hewitt (1983) emphasises the fact that large-scale events should not typify and dominate the problem of disaster and in doing so public money is redirected to low probability, high-impact events. The medium-term financial plans should therefore make provision for a wide range of lower level damaging events that recurrently affect different regions, localities and communities throughout the world (Lavell, 1999). Lavell (1999) continues by emphasising that fundamental change in economic growth models can also be used as an indicator to disaster risk reduction.

2.8 CONCLUSION

Chapter 2 aimed to provide the reader with an in-depth investigation on the historical development of the term disaster risk reduction. Firstly, a literature study of the scientific understanding of disaster risk reduction was provided. This study showed that the term "disaster" is an ambiguous one which is interpreted differently by each scientific discipline. This leads to a different strategic focus as to the required measures for disaster risk reduction. Secondly, this chapter aimed to explain the complex historical development of disaster risk reduction. It was found that the modern focus on disaster risk reduction cannot be ascribed to a logical flow of events linked to a specific timeframe. Rather, it was shown that various professional constituencies and international organisations contributed to the development of the term. Although some aspect such as the relief agenda and disaster response played a major role in the development of the term, it was the relative lack of prevention measures to disaster events which cemented this international focus. Furthermore, a discussion on the most significant international policies

and mechanisms was also provided in order to indicate the gradual embodiment of disaster risk reduction within the international system. The linkage with disaster risk reduction and the relief agenda was also discussed in order to show that disaster risk reduction should not be seen as an entity on its own but rather an aspect which requires integration into different disciplines. Lastly, a literature study was made in order to determine the components and aspects which contribute to disaster risk reduction. Two different models were assessed and a generic list of disaster risk reduction components was drawn. These components will serve as the basis for discussion in subsequent chapters.

Cognisance should be taken of the fact that aspects of disaster risk reduction must find application within Government. The following chapter will focus on the South African state system and the institutional arrangements for disaster risk management. It will aim to address the manifestation of disaster risk reduction within the South African context.

CHAPTER 3:
DISASTER RISK REDUCTION IN THE SOUTH AFRICAN GOVERNMENT

3.1 INTRODUCTION

In order for any form of disaster risk reduction to be successful it is imperative that the disaster risk reduction process is driven from within the state system. Previous chapters have shown that every government has a moral obligation to ensure the safety and well-being of her citizens. The absence of a political will and clear policy guidelines to ensure disaster risk reduction measures are implemented, will only lead to further risk creating behaviour and unsustainable development practices. Disaster risk management should find embodiment at all management levels in government, especially in private sector involvement in public goods and services.

Chapter 2 provided an introduction to the concept of disaster risk reduction within the international arena. This chapter will provide the reader with an understanding of disaster risk reduction within the South African environment. The chapter starts by giving an overview of the South African Government structure. This is important in order to understand the environment in which disaster risk reduction must occur. The development of disaster management and now, disaster risk management, in the South African context will be discussed. The development of disaster management from civil defence and subsequently the development of disaster risk management and disaster risk reduction from disaster management will enjoy attention. The institutional arrangement, policy and legislative imperatives and current structures for disaster risk management will be discussed. The next section focuses on a generic explanation of the South African state system.

3.2 THE SOUTH AFRICAN GOVERNMENT STRUCTURE

In 1994 the new democratic dispensation in South Africa brought with it a totally new focus on the government structure and functions of South Africa. On all levels of government structures and institutions changed in order to align with the vision of the new Government of cooperative governance (see Chapter 3 of the Constitution). South Africa adopted a structure not consistent with the traditional thought in government structures and systems. South Africa cannot be called a traditional federal or unitary state. Rather, the South African Government opted for a healthy merger between these two forms of state and introduced a three-layered state system, in which each level is given some form of autonomy. The Constitution provides for three distinct spheres of government: national, provincial and local. Each of these spheres has to a certain degree executive, legislative as well as judicial authority. The following section will shed light on the South African Government structures, and in doing so will provide a foundation to the investigation of the functioning of disaster management within the greater South African public sector.

3.2.1 The South African form of government

Within the contemporary government system, the notion of a federal or unitary form of government is widely recognised (Van Niekerk, Van der Waldt & Jonker, 2001:52). The form of state, by and large, depends on the constitution of the state in question as well as the structures for governance.

A federal state implies that the state consists of a number of geographically autonomous units that are given the powers to govern its own affairs in an independent manner (Venter and Johnston, 1991:58; Denhardt, 1991:70-72). These different territories are equal in stature and status and appoint the necessary executive bodies to fulfil the functions of government within their respective areas. The sum of these sovereign areas makes up the federal state which is governed by a fairly ridged, written constitution. The federal

government is also responsible for appointing an executive (Van Niekerk, Van der Waldt & Jonker, 2001:53).

A unitary state is a political system where all the political powers vest in a central government. A unitary government has the freedom to create or abolish any government institution which it deems fit in order for government to function. The central legislative authority is empowered to promulgate, repeal or amend laws in respect of any matter affecting the state. The legislative authority can further assign any power to any governmental body to enable them to perform their duties and functions. The legislative authority determines the relations between governmental bodies and at the different hierarchical levels of government (Van Niekerk, Van der Waldt & Jonker, 2001:55).

When assessing the South African situation it becomes clear that South Africa is one of the few states in the world that conforms to elements of both a unitary as well as a federal form of state. The following section will shed more light on the spheres of government, thus clearly indicating the functioning of the South Africa state system.

3.2.2 Spheres of Government

South Africa has three distinct different spheres of government i.e. national, provincial and local sphere. In South Africa, each sphere of government is autonomous but also interlocked with the other spheres (Venter, 2001:171). This "interlocking" of spheres implies equality between these spheres that contrasts with the more explicit hierarchical conception implied by "levels" of government as might be the case in a unitary state. Each of these spheres is given certain powers and functions according to the Constitution of the Republic of South Africa (South Africa, 1996). Figure 3.1: The South African Spheres of Government is a graphic representation of these spheres of government.

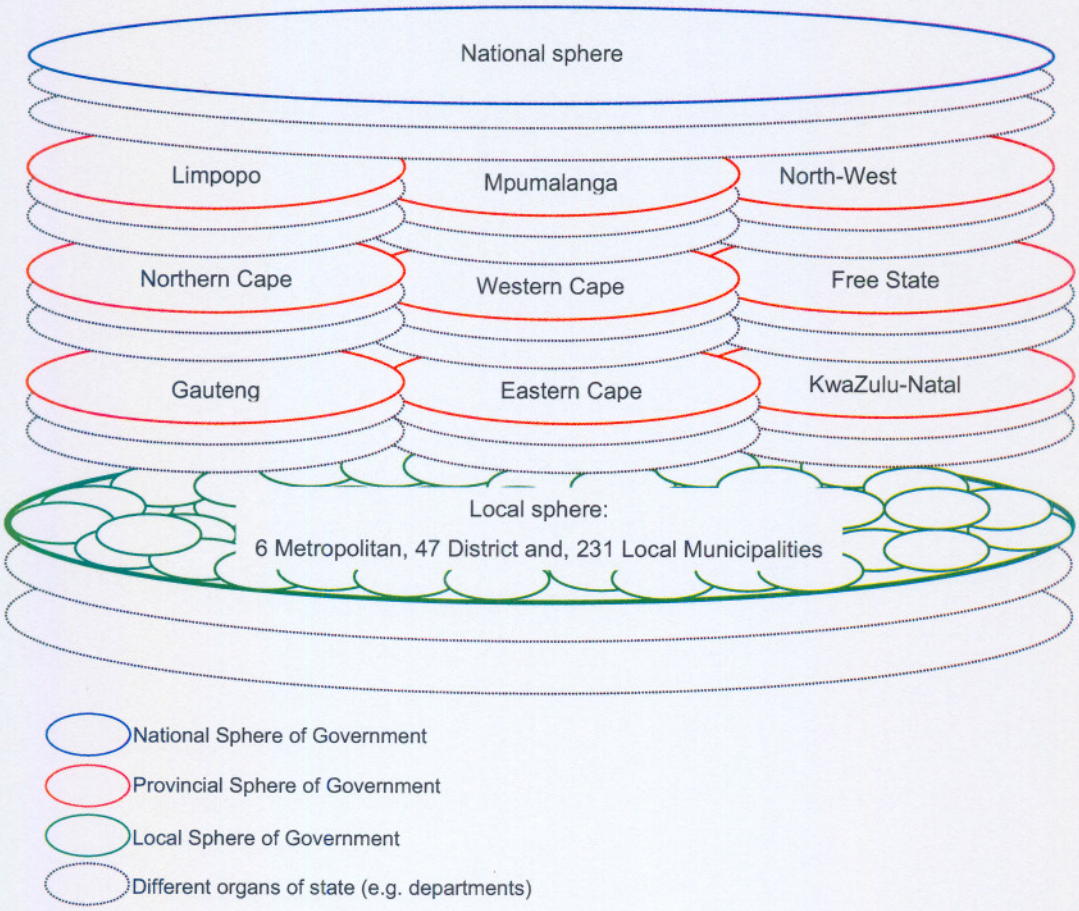

Figure 3.1: The South African Spheres of Government

Each of the spheres indicated above will later enjoy attention in relation to its legislative, executive and judicial competence.

South Africa consists of nine provincial governments. These geographical areas were demarcated due to their inherent developmental potential. It is therefore not uncommon to find that the major economic activity and level of development of a particular region were used as the benchmark for its demarcation. The current nine provinces adhere to the nine geographical developmental areas identified by the Development Bank of Southern Africa in the 1980s. The Convention for a Democratic South Africa (CODESA)

adopted these nine developmental regions as the new provinces of the Republic of South Africa post 1994.

On local government level, various areas in South Africa were not under the direct control of local municipalities. A demarcation process (Anon, 2003), which started in June 2000 and concluded in December of that same year, ensured "wall-to-wall" local municipalities in South Africa. This means that the whole of South Africa now falls under local municipal control.

The Constitution and the Municipal Structures Act 117 of 1998 specify categories of municipalities and accordingly allocate certain powers and duties to them. According to section 1 of the above-mentioned Act, municipalities are divided into three categories: metropolitan municipalities are classified as "A" municipalities; local municipalities are classified as category "B" municipalities; and category "C" municipalities are district municipalities. Typically, category C municipalities have a number of category B municipalities within its area of responsibility. Category A municipalities have full control of their area and has no category B municipalities within their jurisdiction. Figure 3.2: Classification of municipalities in South Africa provides a brief explanation of the above.

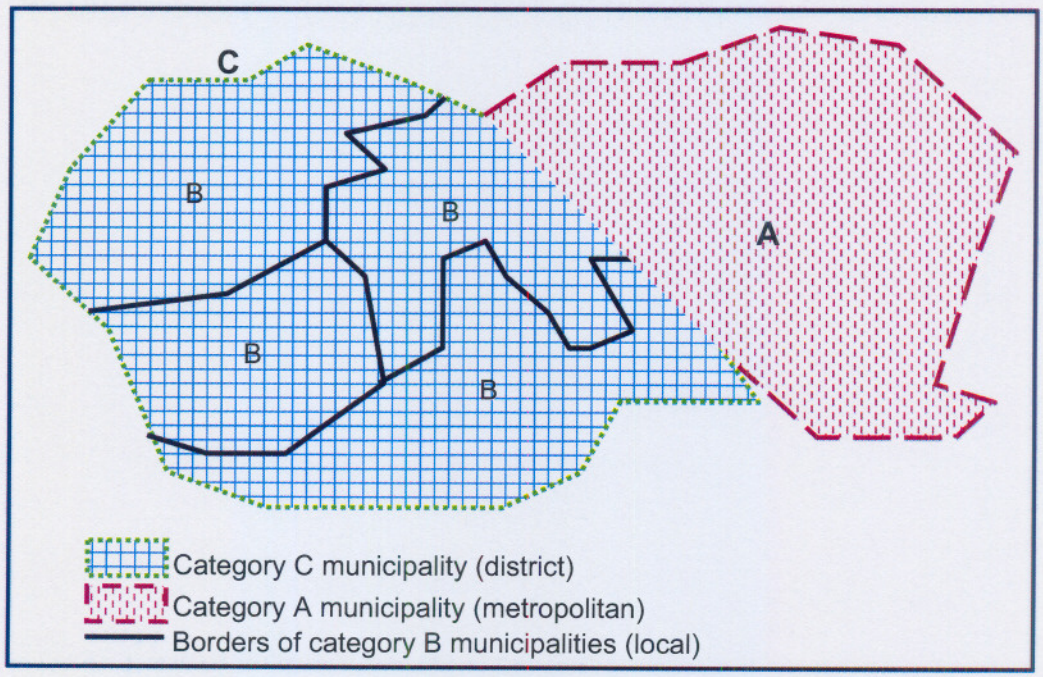

Figure 3.2: Classification of municipalities in South Africa

In subsequent sections the government function and activity of disaster management will be explained according to the three spheres of government. Disaster management remains a management and coordinating function and therefore it is important to explain the relation between the different spheres of government in terms of their management function.

3.2.3 Management and decision-making levels in the South African Government

As with any other management environment, certain management levels can be identified in the South Africa public sector. These management levels are directly related to the hierarchical structure inherent in any public sector. Du Toit *et al.* (1998:174-177), Robbins and De Cenzo (1995:3), Kroon (1990:13-15), Kast & Rosenzwieg (1979:111-114), Hannagan (1995:6, 19, 20) as well as Pearce and Robinson (1989:7-9), all identify three different levels of

management, that of strategic (top management), tactical (middle management) and operational (junior management). All of the above-mentioned authors are of the opinion that planning and policy-making competence is directly related to the level of management. The higher up in the management hierarchy, the more one becomes involved in strategic management as opposed to operational planning at the lower level.

A distinction between these levels of management is crucial for the understanding of the function and activity of disaster management (see sections 3.5.1 and 4 below for an in depth discussion on these two concepts). It should, however, be noted that due to the nature of the South Africa public sector and intergovernmental relations (Van der Waldt *et al*. 2001:106-107; South Africa, 1996:Chapter 3) one cannot only refer to the management levels inherent in each sphere of government, each public sector institution, each government department and each section within a department. A much broader focus on the decision-making levels of government should also take place (i.e. between the different spheres of government). For the purpose of this thesis a two pronged approach towards the understanding of the interaction between the spheres of government (i.e. decision-making) and the internal management levels to those spheres will be used. Mullins (1994:304) indicates that in practice there is not a clear distinction between determination of policy and decision-making. The interrelatedness of these two aspects should be kept in mind.

Figure 3.3: Management and decision-making levels in the South African Government below explains the different levels of management according to the different spheres of government (decision-making level).

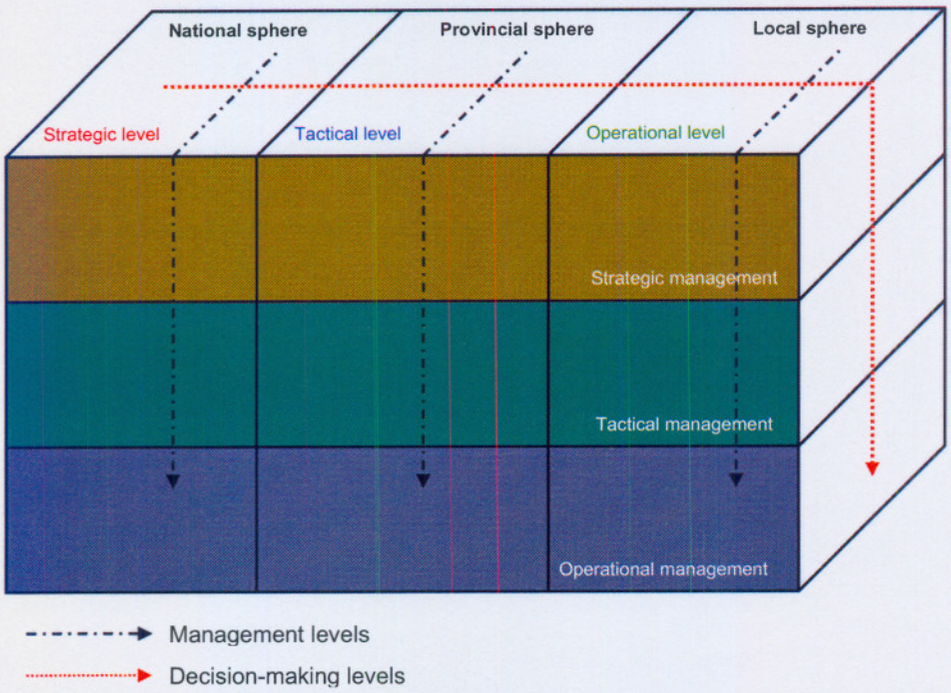

Figure 3.3: Management and decision-making levels in the South African Government

From the above one can see that each sphere of government is allocated a certain responsibility in terms of decision-making. Kast and Rosenszweig (1979:113) equate the decision-making levels to what they call organisation sub-systems. They argue that within any organisation one will find a macro organisational system which governs the direction and decision-making of all management levels. A similar model is used to explain the South African situation. Typically the strategic level (of decision-making) in the South Africa government environment refers to the macro policies implemented by government (e.g. Growth, Employment and Redistribution policy – GEAR, Reconstruction and Development Plan – RDP, fiscal policy, black empowerment policy and Integrated Development Process). On the tactical level the objectives of the strategic plan or policy are implemented. This is done through the development of functional policies and strategies that will ensure the realisation of the macro policy within certain unique circumstances (e.g. within each province). The operational level aims to put the objectives of

the macro policy and functional strategies and policies into concrete actions, thus yielding tangible results. It would, therefore, be wrong to assume that only the national sphere makes decisions of a strategic nature or that the local level only focuses on operational issues. The vertical dotted line in Figure 3.3: Management and decision-making levels in the South African Government above indicates that different management levels are indicative to each sphere of government. Within each sphere one will find the different levels of management which are responsible for strategic, tactical as well as operational management of the particular organ of state in question. The reason for indicating the decision-making levels (orange dotted line) is to facilitate the discussion of a disaster risk reduction framework for the Republic as a whole. In order for a framework to be successfully implemented it is imperative that a distinction between these levels of decision-making is made. The application of these levels to the framework will become evident in subsequent chapters. A brief explanation of the decision-making levels follows.

3.2.3.1 Strategic level

On the strategic level decisions are made in response to new and complex problems and mostly deal with much broader issues (as mentioned above) (Pearce & Robinson, 1989:65). Strategic level decisions describe a plan of action that enables an organisation (or government) to move from where it is to where it wants to be (Hannagan, 1995:116). Van der Waldt and Du Toit (1997:125-126), Schoderbek as well as Cosier and Apin (1991:148) proclaim different macro environments (i.e. technological, legal, environmental, socio-cultural, political, and economic) which impact on government's strategic decision-making. These environments require constant assessment so as to inform strategic level decision-makers. The decision by the National Party in the late 1980s to engage in negotiations with the then banned political parties, and to release political prisoners is an example of a strategic level decision within the national sphere of government.

3.2.3.2 Tactical level

Kroon (1990:179-180) is of the opinion that on the tactical level implementation of the strategic objectives should take place. He argues that tactical decision-making should focus on objectives, functional strategies, functional policy and budgets. When relating this back to the South African environment one could say that each provincial sphere of government has a constitutional obligation to perform its duties within its own circumstances taking into account its own resources, needs and capacities. This will obviously differ from one provincial government to the next. Tactical level decision-making allows the alignment with national aims while not forsaking the sovereignty of the provincial government.

3.2.3.3 Operational level

On the operational level, municipalities must ensure that national policies and provincial strategies are implemented in order to render public goods and services to the general population (Venter, 2001:163; Mullins, 1994:303). Schoderbek, Cosier and Apin (1991:167) indicate that at the operational level one is likely to find standing plans, policies, procedures and rules which relate to strategic and tactical decisions. It is common in the South African public sector that strategic and tactical policies are implemented through a project management approach. In doing so the local governmental level ensures that all aspects of the policy or decision are addressed within a given timeframe, budget and performance indicator (Knipe *et al.*, 2002).

The above said, a much broader focus on the South African government will follow which will emphasise the separation of powers on all levels of government. In doing so the different levels mentioned will become clear.

3.2.4 *Trias Politica*

The Constitution of the Republic of South Africa (Act 108 of 1996) creates executive, legislative and judicial authorities on three spheres of government. Although the separation of powers (also called the *trias politica*) in the Lockean tradition implies complete autonomy by each authority, it does not hold completely true for South Africa (Venter, 2001:67). The executive powers vest in the President (and Cabinet), legislative authority in Parliament, and judicial powers in the courts. The President (executive) is elected by Parliament (legislature) which also has the power to dismiss him/her. The President, Deputy President as well as Cabinet needs the confidence of the National Assembly (see section below) to remain in power. The Executive has both legislative and executive powers. The President has no veto powers over legislation and must assent to laws passed in Parliament. The current Constitution gives the President power to promulgate regulations with the forces of law, thus giving him/her legislative competence (Venter, 2001:67). Furthermore, the President has judicial authority in as much as appointing judges and to pardon or reprieve offenders. From this it is clear that the separation of power or *trias politica* is somewhat imprecise when compared to the classic notion of the balance of powers derived from the United States of America. It remains, however, to briefly discuss each of the components of the South African state systems as mentioned above. Figure 4 below provides a graphical representation of the discussions to follow in order to aid understanding.

3.2.4.1 Legislative authority

The supreme law-making institution in South Africa is Parliament. The Constitution indicates that Parliament consists of two "houses": the National Assembly (NA) and the National Council of Provinces (NCOP). For all means and purposes, one could argue that the National Assembly is the upper house

of Parliament and that the NCOP is the lower house. This distinction is, however, not true in all cases but will be used for the sake of clarity and comparison. The NA, as the upper house of Parliament, is the primary institution into which representatives are voted through a proportional representation system for a five-year period. The NA consists of between 350 and 400 members and is presided over by a Speaker, assisted by a Deputy Speaker. The NA is also responsible for electing the President of the Republic. The election of the President is, however, not a formal affair as in other countries (e.g. the United States of America). It is widely accepted that the leader of the winning political party in a general election becomes the next President. There is therefore no formal campaigning for the office of President. The NA is also the forum for the public consideration of issues, passing legislation and scrutinising and overseeing executive action (Burger, 2003:342; South Africa, 1996).

The NCOP is responsible for looking after the affairs of the nine provinces in South Africa. The NCOP consists of 90 members; ten from each province (South Africa, 1996). 54 of these members are permanent and 36 are special delegates (Burger, 2003:343). The NCOP must represent the interests of provinces at the national sphere of government, and for this purpose is given a mandate by the provinces to make decisions on their behalf. The NCOP is therefore the national forum for public consideration of issues affecting the provinces.

On a provincial level, the legislative authority vests with each provincial legislature. Each provincial legislature can therefore pass legislation concurrent with their legislative competence as set out in Schedule 4 and 5 of the Constitution (See Table 3.1: Functional areas of concurrent provincial legislative and executive competence). Each provincial legislature consists of between 30 and 80 members. The exact number of members are determined through a formulae set out by national legislation (Burger, 2003:345). The members are elected on proportional representation basis.

Functional areas of concurrent provincial legislative competence (Schedule 4)	Functional areas of executive provincial competence (Schedule 5)
• Administration of indigenous forests • Agriculture • Airports other than international and national airports • Animal control and diseases • Casinos, racing, gambling and wagering, excluding lotteries and sports pools • Consumer protection • Cultural matters • Disaster management • Education at all levels, excluding tertiary education • Environment • Health services • Housing • Indigenous law and customary law • Industrial promotion • Language policy and the regulation of official languages • Media services directly controlled or provided by the provincial government • Nature conservation • Police • Pollution control • Population development • Property transfer fees • Provincial public enterprises • Public transport • Public works • Regional planning and development • Road traffic regulation • Soil conservation • Tourism • Trade • Traditional leadership • Urban and rural development • Vehicle licensing • Welfare services	• Abattoirs • Ambulance services • Archives other than national archives • Libraries other than national libraries • Liquor licenses • Museums other than national museums • Provincial planning • Provincial cultural matters • Provincial recreation and amenities • Provincial sport • Provincial roads and traffic • Veterinary services

Table 3.1: Functional areas of concurrent provincial legislative and executive competence

When considering the local government sphere in South Africa it becomes clear that local government has been given a dynamic role. The Constitution makes provision for the establishment of the South Africa Local Government Association (SALGA), or organised local government as it is referred to in Section 163. It is the task of SALGA to represent the interests of local government at national level. This is done through the nomination of ten part-time representatives of SALGA to the NCOP as well as representatives to the

Financial and Fiscal Commission (FFC). On the local government level the legislative as well as executive powers vest in the municipal council as espoused by Schedule 4 and 5 of the Constitution. The fact that a council possesses both legislative and executive powers once again blurs the clear lines of the *trias politica*. This will, however, be discusses in subsequent sections. Table 3.2: Functional areas of concurrent municipal legislative and executive competence indicates the areas of concurrent legislative competence of the municipal sphere of government.

Functional areas of concurrent municipal legislative competence (Schedule 4)	**Functional areas of executive municipal competence (Schedule 5)**
• Air pollution • Building regulations • Child care facilities • Electricity and gas reticulation • Fire fighting services • Local tourism • Municipal airports • Municipal planning • Municipal health services • Municipal public transport • Municipal public works • Pontoons, ferries, jetties, piers and harbours • Storm water management system in built-up areas • Trading regulations • Water and sanitation services	• Beaches and amusement facilities • Billboards and the display of advertisements in public places • Cemeteries, funeral parlours and crematoria • Cleansing • Control of public nuisances • Control of undertakings that sell liquor to the public • Facilities for the accommodation, care and burial of animals • Fencing and fences • Licensing of dogs • Licensing and control of undertakings that sell food to the public • Local amenities • Local sport facilities • Markets • Municipal abattoirs • Municipal parks and recreation • Municipal roads • Noise pollution • Pounds • Public places • Refuse removal, refuse dumps and solid waste disposal • Street trading • Street lighting • Traffic and parking

Table 3.2: Functional areas of concurrent municipal legislative and executive competence

3.2.4.2 Executive authority

Jonker (in Van Niekerk, Van der Waldt & Jonker, 2001:72) specifies that the President is the head of state as well as the head of the national executive. The President is responsible for the upholding and defence of the Constitution as the supreme law of South Africa. He or she is elected by the NA, and her/she appoints the Deputy President as well as Cabinet. The Deputy President is responsible for assisting the President with executive government functions. He/she is also the full-time representative of the President in the NA. The President has the mandate to compile his/her own Cabinet according to his/her needs in order to govern effectively. The composition of the Cabinet is directly related to the goals and objectives of the government of the day and will vary in size and composition. Cabinet is appointed from the members of the NA. Each minister is responsible for a certain government portfolio which translates into the administrative functions of government in order to govern effectively. Ministers must therefore strive to give effect to government policies. The President has the right to dismiss and appoint Cabinet members as he/she deems fit.

On the provincial sphere of government, the executive consists of the premier of the province and the executive council (Jonker in Van Niekerk, Van der Waldt & Jonker, 2001:75). The premier of a province is elected by the provincial legislature. An executive council consists of between five and ten members and is appointed by the premier and is known as Members of the Executive Committee (MECs). Besdziek (in Venter, 2001:178) says that the provincial executive is responsible for:

i. implementing the legislation that is passed in a province;
ii. implementing national legislation that applies to the competencies listed in Schedule 4 and 5;
iii. administering in the province national legislation outside of those Schedules but for which administration has been assigned to the province;

iv. developing provincial policy; and
v. coordinating and overseeing the functioning of the province's administrative departments.

MECs have similar functions as Cabinet ministers on the national sphere of government. Each MEC is given a particular portfolio in order to govern effectively and implement the policies of the province and that of national government. In terms of the hierarchical functioning of government, an MEC may assign any power and function in terms of any national legislation or any provincial legislation to a municipal council (Section 126 of the Constitution) up to the extent that a municipality has the competence and resources to implement that power or function effectively. Schedules 4 and 5 also specify the concurrent executive competence of a provincial government (See Table 3.2: Functional areas of concurrent municipal legislative and executive competence).

As has been mentioned earlier, the executive authority on local government level rests with the municipal council. As with the legislative powers, a municipality's executive powers are enshrined in the Constitution (See Table 3.2: Functional areas of concurrent municipal legislative and executive competence). Zybrands (in Venter, 2001:210-211) indicates that once a council has been elected, a special council meeting is convened in order to elect councillors to the positions of speaker, executive mayor and executive committee. The speaker does not have any executive authority. This is because he or she is first amongst equals, being elected by fellow councillors. The role of the speaker is to chair council meetings and these duties should be performed in a neutral manner. The Constitution does not provide for the position of executive mayor but only for that of the chairperson of council (i.e. the speaker), Parliament, however, deemed it fit to create the position of executive mayor. An executive mayor is not elected to office by the general public but is decided upon by the political party system. The "election" of an executive mayor by the council is therefore in most cases only of academic value as this incumbent has been decided in long before elections took place.

An executive mayor can also appoint councillors to his/her executive committee.

3.2.4.3 Judicial authority

The Constitution proclaims that the judicial authority of the Republic is vested in the courts. Through Section 165(2), the courts are made independent to any other government structure, and only subjected to the Constitution. Section 166 identifies the following courts:

i. The Constitutional Court.
ii. The Supreme Court of Appeal.
iii. The high courts, including any high court of appeal that may be established by an act of Parliament to hear appeals from other courts;
iv. Magistrates' Courts.
v. Any other court established and recognised by an act of Parliament (Van Niekerk, Van der Waldt & Jonker, 2001:78).

Malherbe (in Venter, 2001:93) indicates that that there is a hierarchy of the above courts which is the product of the difference in their jurisdiction. The magistrates' courts are lower courts and are below the High Courts, the Supreme Court of Appeal and the Constitutional Court. A number of special courts have also been established in terms of national legislation. The judicial function is a national matter and the provincial and local governments do not have any legislative and executive powers in this regard.

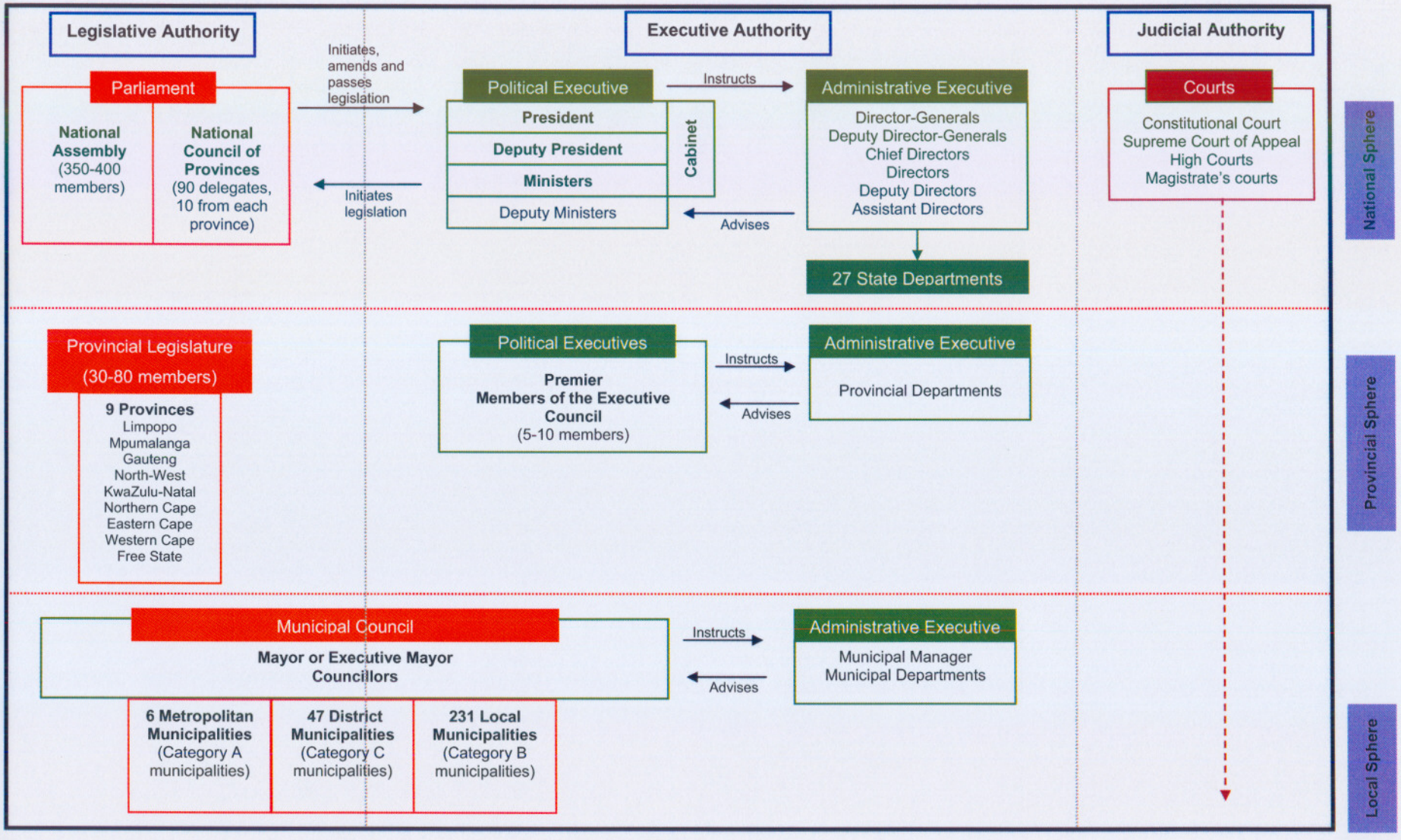

Figure 3.4: The South African state structure

(Adapted from Venter, 2001:162-163 and Van Niekerk, Van der Waldt & Jonker, 2001:70)

3.3 THE DEVELOPMENT OF DISASTER RISK MANAGEMENT IN SOUTH AFRICA

Until June 1994, South Africa did not have a holistic approach when dealing with disasters and issues of risk. Until then South Africa had followed the traditional trend that viewed disasters as resulting from "acts of nature" as rare, inevitable events that could not be predicted or avoided. Because of this belief, the approach to dealing with such disasters focused solely on actions that were reactive – in other words, the focus was only on *post*-disaster measures designed to deal with the consequences or adverse effects of a disaster. The following section will discuss the development of disaster management in South Africa from its earlier roots of civil protection. It will show the progression that took place in thought and interpretation of disastrous events, up to the contemporary focus on disaster risk reduction.

3.3.1 The establishment of civil protection/defence in South Africa

Cronje (1993:3) argues that the first embodiment of civil protection can be dated back to Noah and the Ark. Others are of the opinion that civil defence had its origin in Europe (Potgieter, 1980:12). In 1931, efforts were made to establish civil defence efforts on a global scale (Van der Westhuizen, 1986:1). The French Surgeon-General, George Saint-Paul, founded the "*Lieux de Gèneve Association*" (Association of Geneva Zones - LGA). The LGA was the forerunner for the International Civil Defence Association (International Civil Defence, 1981:1). The aim of the Geneva Zones was to create safety zones in each European country, where women, children, the sick and elderly could take refuge in time of war. Very few countries recognised and established these safety zones. During the First and Second World Wars, governments in Europe, rightfully developed the perception that they might sustain losses due to air raids. This saw an increased and renewed focus on civil defence.

De Wet (1979:2-3), in his assessment of the origins of civil defence, however, quotes authors such as Douhet and Mitchell (in Brown, 1968) who argued the origin of civil defence due to possible chemical warfare. This notion was emphasised during 1918 when the International Committee of the Red Cross (ICRC) lobbied government against the use of chemical agents at times time of war. Although the chemical warfare agenda dominated over that of civil defence in these early years, the need for bunkers (against possible air raids) revived the focus on civil defence at the height of the Second World War.

The bombing of London on 10 and 11 May 1940 by the German Luftwaffe heralded a new area in modern warfare. Civilian targets were no longer excluded from attack. South Africa declared war on Germany on 6 September 1939, and the fear of possible air raids on South African cities became a reality. Van der Westhuizen (1986:2 quoting Pringle, 1942:27) argues that since 1939, South Africa had more major natural disasters within it borders than military attacks. This accounts for the slow development of civil defence in South Africa (for an authoritative account of the development of civil defence in South Africa in the Second World War era - 1939-1945 - see Van der Westhuizen, 1986:2-5). The Second World War ended without any significant impact on South African soil and all civil defence services that had been established were disbanded.

It was not until the 1950s that civil defence once again enjoyed attention from the South African government. In 1956, a meeting of various government departments was held in Cape Town and the idea of civil defence resurfaced. On 1 February 1957 a director for civil defence was appointed under the Department of Justice. In May of 1959 a Council for Civil Defence Services was established but was disbanded in 1962 to make way for the Directorate for Emergency Planning. In 1963, this Directorate was replaced by the Directorate of Civil Defence (Du Plessis, 1971:12; Van der Westhuizen, 1986:7). It was not until 1965 that the then Minister of Justice, Mr. B.J. Vorster, established the emergency planning as an independent department. With the promulgation of the Civil Defence Act 39 of 1966, a Directorate Civil

Defence was instituted. The last mentioned act mainly focused on establishing civil defence as a function of national government and accordingly many local and provincial authorities refrained from rendering civil defence services. In 1969, the Directorate Civil Defence was moved to the Department of Defence (Potgieter, 1980:76) as it was argued that due to the vast resources of the National Defence Force, civil protection would be able to function more effectively (Du Plessis, 1971:13).

Up until this point in history, the main focus of civil defence in South Africa was on that of an external military threat, be it conventional warfare or nuclear attack. Several gaps in the Civil Defence Act of 1966 were identified. Two of these gaps were that provision should also be made in legislation for actions in terms of natural disasters as well as the function of civil defence on provincial and local government level. In 1977, after wide consultation which started in 1975 (Van der Westhuizen, 1986:11) the Civil Defence Act 39 of 1966 was revoked and replaced by the Civil Protection Act 67 of 1977. This act provided for the promotion of civil defence at all tiers of government.

Civil defence in South Africa co-existed with many of the other functions within the civil service and in most cases the responsibilities to perform the civil defence function were given to an already appointed civil servant (i.e. the Chief Traffic Officer, a clerk or fireman) (Reid, 2004; Van der Westhuizen, 1986). Internationally, however, in the years to follow the Second World War, whilst the traditional perceptions remained, there was a growing realisation that the focus had to broaden to include not only human made disasters, but also major catastrophes resulting from natural hazards such as floods, tornadoes, and earthquakes, to name but a few. There was a further realisation that by introducing preparedness programmes, the effects of a disaster could be minimised and consequently an increasing emphasis on community disaster preparedness programmes began to emerge. As a result, the term "Civil Defence" was disposed of in many countries and replaced by the more appropriate term "Civil Protection" (Anon, 1977). In South Africa, the Civil Defence Act was amended by the Civil Defence Amendment Act, No 82 of

1990, whereby all references to Civil Defence were amended to read "Civil Protection".

Up until 1994, civil protection services were rendered under the Civil Protection Act 67 of 1977 (as amended) and the Fundraising Act 107 of 1978. The first act provided for the operations of civil protection at all tiers of government, while the Fundraising Act provided mechanisms for the funding of disaster social rehabilitation (South Africa, 1998b). Internationally, however, there was increasing recognition that through better planning, and by placing a greater emphasis on the introduction of development strategies to improve the resilience of communities, the risk of disaster might be reduced or even eliminated.

The declaration of the International Decade for Natural Disaster Reduction (IDNDR) in 1989 (see previous chapter) was a clear international call to all member countries of the United Nations to revisit their approach to dealing with disasters in order to ensure disaster prevention, mitigation, relief, and preparedness. This new-found interest in the field of disaster management slowly but surely brought on the paradigm shift from the civil protection approach to the more holistic disaster management.

3.3.2 1994: A new era for disaster management

It was not until the mid 1990s, that the term "disaster management" became widely used in South Africa to refer to the guiding principles in the management of disastrous situations. In its early development, the body of knowledge and expertise responsible for the safeguarding of lives in the event of a disaster was still vested in civil protection.

The devastating floods that occurred in the Cape Flats in June 1994 and the emergence of the new democracy were the catalysts that heralded the paradigm shift in South Africa in terms of protecting our communities against

natural disasters (South Africa, 1998a). The majority of the South African population now had a chance to decide on the future of South Africa. Developments in the field of democratic and co-operative governance (South Africa, 1996), such as Integrated Development Planning (South Africa, 2000a), Land Development Objectives (South Africa, 1995), Municipal Service Partnerships (South Africa, 2000a) and the Green Paper/White Paper on Disaster Management (South Africa, 1998; South Africa, 1999), contributed to the fact that the field of disaster management became a key focus area in South Africa.

Owing to the floods in the Cape Flats, and the extreme hardship suffered by the poorest of the poor, government realised that the mechanisms espoused by the Civil Protection Act 67 of 1977 were woefully inadequate. This resulted in a Cabinet resolution to follow international trends and take a new look at the whole concept of Civil Protection. In 1995, Cabinet resolved to assess South Africa's ability to deal with risk reduction and Disaster Management. This resulted in the recommendation that a formal structure for Disaster Management be created. The Department of Constitutional Affairs (now the Department of Provincial and Local Government) was given responsibility to administer the Civil Protection Act 67 of 1977. Cabinet further resolved that a National Disaster Management Committee be created at national level. Such a Committee was created in 1996, but never became fully functional. In 1997, a task team was created and Government established an Inter-ministerial Committee for Disaster Management (IMC) (South Africa, 1999) to replace the National Disaster Management Committee. This not only demonstrated government's commitment to disaster reduction but also, in line with our new Constitution (South Africa, 1996), its commitment to making South Africa a safer place for all. To deal with the immediate effects which certain natural and human-made hazards might have on the Republic, the IMC created the Interim-Disaster Management Centre (IDMC) which comprises ten national government departments. The main aim of the IDMC was to disseminate information and design strategies to deal with disasters.

For the first time in South Africa a process of wide consultation on the new approach to the management of disasters/hazards followed, culminating in the publication of the Green Paper on Disaster Management in February 1998 (South Africa, 1998; Van Niekerk, 2001:1). The Green Paper, which highlighted the need for a holistic mechanism for the management of disasters in South Africa, was followed in 1999 by the White Paper on Disaster Management. In January 1999, for the first time in its history, South Africa had a national policy on the management of disasters (South Africa, 1999; Van Niekerk, 2001:2).

The approach to disaster management as explained in the White Paper on Disaster Management (South Africa, 1999) was in keeping with the Government's commitment to alleviate the plight of poor communities through its national efforts in poverty reduction, land reform, housing, employment creation and service expansion and delivery. Within the disaster management realm, the focus shifted from the protection of the minority through civil protection, to that of disaster management aimed at reducing the impact of disasters on all communities in South Africa (Van Niekerk, 2001:1-2). Another key focus area of disaster management became the facilitation of quick recovery of affected communities in the event of a disaster.

In early 2000, the *Disaster Management Bill for Public Discussion* was published (South Africa, 2000c). In September 2001, the public hearings on the Bill took place in Parliament and the Disaster Management Act 57 of 2002 was promulgated on 15 January 2003, without any significant objection by any of the political parties (Buys, 2003). (Figure 3.5: The path of the Disaster Management Bill through Parliament provides an explanation of the South Africa legislative process and relates this process to that which the Disaster Management Bill followed. Timeframes are also included.)

The Act ensures an effective, holistic approach to disaster management linked to developmental initiatives. The Act heralds a new era in the way in which South Africa perceives disaster risk, hazards and vulnerability. As one of the finest pieces of legislation ever promulgated in South Africa (Carrim, 2003),

the Disaster Management Act mandates each province, metropolitan, district and local municipality to engage in disaster management activities (South Africa, 2003). It calls for the establishment of structures, frameworks, plans, procedures, and strategies that cut across all government sectors. It further gives the responsibility of managing disaster risk to the highest political authority in each sphere of Government. That being so, the Disaster Management Act provides the ideal legislative framework not only enabling a holistic approach, but also entrenching the South African Government's commitment to disaster risk reduction through sustainable development in the spirit of cooperative governance (South Africa, 1996). Comprehensive consultation is also taking place in the international arena to ensure that South Africa is on a par with its counterparts in other regions of the globe (Buys, 2004).

The Disaster Management Act calls for the development of a National Disaster Management Framework (NDMF). This policy framework guides and informs all aspects of disaster risk management for the whole of South Africa. The draft NDMF was published for public comment on 28 May 2004 (South Africa, 2004), and on 18 November 2004 a consultative meeting of the Interdepartmental Disaster Management Committee adopted the recommendations of the drafting team. The final NDMF was published in May 2005.

The evolution of disaster management in South Africa (chronology)

Post 1945

1957: Director for civil protection appointed under the Department of Justice
1959: Council for Civil Defence Services was established
1962: Council for Civil Defence Services disbanded to make way for the Division for Emergency Planning
1963: Directorate Emergency Planning replaced by the Directorate of Civil Defence
1966: Promulgation of the Civil Defence Act 39 of 1966
1966: Directorate Civil Defence was instituted
1969: Directorate Civil Defence was moved to the Department of Defence 1977: Civil Defence Act 39 of 1966 was revoked and replaced by the Civil Protection Act 67 of 1977
1978: Promulgation of the Fundraising Act 107 of 1978.
1990: Civil Defence Amendment Act 82 of 1990
1994: New democratic government
1994: Floods in the Cape Flats
1994: Establish task team to look at disaster management

1995:	The Department of Constitutional Affairs (now called the Department of Provincial and Local Government) administers the Civil Protections Act 67 of 1977
1996:	National Disaster Management Committee
1997:	National Disaster Management Committee replaced by the Inter-ministerial Committee on Disaster Management to facilitate the development of a Green Paper
1998:	Green Paper on Disaster Management
1999:	White Paper on Disaster Management
1999:	Establishment of the National Disaster Management Centre
1999:	Establishment of the Inter-departmental Committee on Disaster Management (IDMC) to coordinate all disaster management related activities across national departments and provinces
2000:	First Draft Bill on Disaster Management
2000:	Second Draft Bill on Disaster Management
2000:	September – Public hearings on the Disaster Management Bill
2001:	Disaster Management Bill sent to Fiscal and Financial Commission for assessment.
2003:	15 January - Promulgation of the Disaster Management Act 57 of 2002 (DMA).
2004:	1 April – Chapters 2 (Intergovernmental Structures and Policy Framework), 3 (National Disaster Management), and 4 (Provincial Disaster Management) of the DMA become operational.
2004:	28 May – Draft National Disaster Management Framework (NDMF) is published for public comments.
2004:	1 July – Chapters 1 (Interpretation, application and administration of the Act), 5 (Municipal Disaster Management), 6 (Funding of post-disaster recovery and rehabilitation), 7 (Disaster Management Volunteers) and 8 (Miscellaneous) of the DMA become operational
2004:	Interdepartmental Disaster Management Committee workshop to adopt comments and changes on the NDMF
2005:	June – expected publication of the final NDMF.

Table 3.3: Chronology of disaster management in South Africa

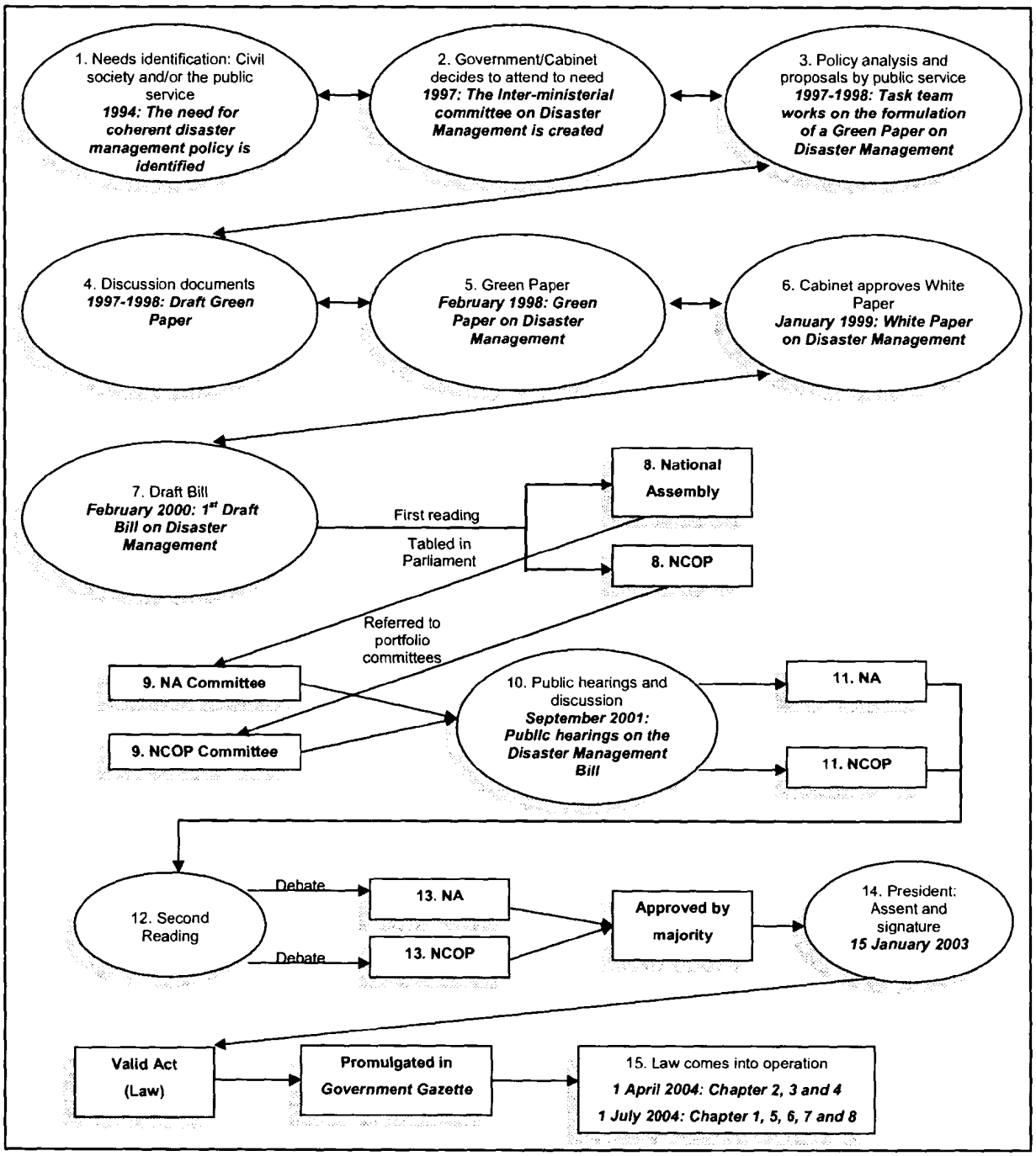

Figure 3.5: The path of the Disaster Management Bill through Parliament

(Adapted from Venter, 2001:53)

3.3.3 The legal imperative of Disaster Management in South Africa

The Constitution of the Republic of South Africa (Act 108 of 1996) places a legal obligation on the Government of South Africa to ensure the health (personal and environmental) and safety of its citizens. In terms of Section 41(1)(b) of the Constitution, all spheres of Government are required to "*secure the well-being of the people of the Republic*". Section 152(1)(d) also requires that local government "*ensures a safe and healthy environment*". In the light of the above, and the established understanding of disaster management, the primary responsibility for disaster management in South Africa rests with Government.

According to Part A, Schedule 4 of the Constitution, disaster management is a functional area of concurrent national and provincial legislative competence (see section 2.4.1 above). This means that National and Provincial governments have a legal imperative to ensure that disaster management is implemented according to legislative requirements (i.e. the Constitution and the Disaster Management Act). This does not, however, exempt the local sphere of government from disaster management responsibilities. Section 156(4) of the Constitution provides for the assignment, by agreement and subject to any conditions, of the administration of any matter listed in Part A, Schedule 4 (e.g. disaster management) that necessarily relates to local government, if that matter would most effectively be administered locally and if the municipality has the capacity to administer it.

As discussed in earlier sections, it is common cause that the impact of poverty is a pivotal factor in the progression of vulnerability to hazards. This is of particular relevance in the South African scenario, with the huge legacy left by the apartheid government of desperately impoverished and disadvantaged communities who are as a result extremely vulnerable to disasters (Van Niekerk, Reid & Mokonyama, 2002:63-64). It is in these local communities that the smaller but much more frequent hazards occur, and where the costs

in terms of loss of lives and property and the financial burden are borne painfully. There is little doubt that in order to ensure effective integrated and co-ordinated disaster management, the actual implementation and planning must be focused in the local government sphere. It is universally accepted that the application of disaster management occurs most effectively at local government level (UNISDR, 2003:188-195). Considering the activities assigned to the local sphere of government (see the Local Government: Municipal Systems Act and the Constitution), it would therefore be correct to deduce that disaster management is a crucial function of local government. Apart from the above, local government is further required under Schedules 4 and 5, Part B of the Constitution to provide for functions that are closely allied to disaster management (e.g. air pollution, building regulations, fire fighting services, municipal planning, municipal health care, and water and sanitation services). The Disaster Management Act further establishes disaster management as a function of each sphere of government through the establishment of disaster management centres (see Chapter 3, Sections 29 and 43).

From the above it is therefore clear that disaster management forms an integral part of the South African public sector. The Government's disaster management policy not only pursues these constitutional obligations but also aims to give effect to the right to life, equality, dignity, environment, property, healthcare, food, water, and social security in terms of the Bill of Rights of the Constitution. Disaster management in South Africa is, however, much more than only the response to chaotic events.

3.3.4 The shift towards disaster risk reduction

The previous sections described the evolution of disaster management from its earlier beginnings as civil defence. When one considers the development of disaster management as an activity (see section below) it becomes evident

that although these activities are referred to as disaster management, it in actual fact entails disaster risk reduction. For unknown reasons, the international defunct terms of "disaster management" is still used in the South African context to describe what is widely accepted as being disaster risk reduction. This is quite evident when one reads the different policy documents and legislation on disaster management. With reference to the definition of disaster risk reduction in Chapter 1, the Green Paper on Disaster Management (1998:viii) clearly stipulates that its objective is to "*outline possible management strategies that can be pursued to deal with disasters* ***and risk*** *in a more comprehensive manner*". The White Paper on Disaster Management (1999) indicates that "*in line with international trends and our national objectives of efficient and effective management of our nation's resources, priority is given in this* ***new approach to prevention****. Preparedness measures for more efficient rescue operations will remain necessary. But much greater attention must be directed to the introduction of* ***preventive strategies*** *aimed at saving lives and protecting assets before they are lost*". The definition given to disaster management as per the Disaster Management Act (see Chapter 1) makes it quite evident that the term of disaster management clearly includes the broader ideals of disaster risk reduction. It would, therefore, be wrong to assume that "disaster management" in its current embodiment only refers to the outdated principles of disaster response. Disaster management in the South African context rather aims to encompass all the elements of disaster risk reduction as discussed in the previous chapter.

It would, however, be naïve to assume that the whole of the public sector understands, and are implementing disaster risk reduction in its guise as disaster management. For this reason a distinction will be made between what the author calls Disaster Management as an activity and disaster management as a function of government.

3.3.5 The integration of disaster management

It has already been ascertained that disaster management in South Africa is established as a public sector function within each sphere of government according to legislation. But, disaster management goes beyond pure line function responsibility. Disaster Management as an activity of all levels of government relates to an integrated, multi-sectoral, multi-disciplinary approach aimed at reducing the risk associated with hazards and vulnerability. It therefore needs to become an integral part of the development planning process in order to be successful (this aspect will be discussed later on). The following section will argue that in order to successfully integrate issues of disaster risk reduction into all aspects of the South African government one should consider Disaster Management as an activity of all spheres and organs of state.

3.3.5.1 Disaster Management: The activity

Disaster management in South Africa consists of a labyrinth of cross-cutting facets requiring the participation of a host of sectors and disciplines not only from within the spheres of government and different government departments, but also involving the private sector, civil society, non-governmental organisations (NGOs), community based organisations (CBOs), research institutions, and institutions of higher learning, to name but a few (Van Niekerk, 2004a). In the context of disaster management, none of these role players can act in isolation of the other. The cornerstone of successful and effective disaster management is the integration and coordination of all of the role-players and their activities into a holistic system aimed at disaster risk reduction and sustainable development (Van Niekerk, 2004b; Van Niekerk, 2004c). In order for Disaster Management to be more successful the knowledge and mechanisms have to be based on more solid scientific precepts (Gunn, 1993:17). Therefore, Disaster Management as an activity

involves a wide array of different role-players and professional constituencies (Jeggle in Rosenthal, Comfort & Boin, 2001:334-335).

Jeggle (in Rosenthal, Comfort & Boin, 2001:335) points out that there are distinctive managerial and functional implications for the organisation of risk and disaster management for the future. It is clearly spelled out in The White Paper on Disaster Management (South Africa, 1998a), that one of the key policy proposals is the "*urgent integration of risk reduction strategies into development initiatives*" (Van Niekerk, 2002). For this purpose, government has enforced the integration of disaster management planning into all developmental planning that must take place (South Africa, 1998b; South Africa, 2003). Experience in the international as well as local arena has shown that activities relating to disaster management cannot function separate to the broader government context (South Africa, 1998). Isolated planning by numerous government institutions and functions led to duplication and waste of valuable public resources (DPLG, 2001). In an effort to ensure the optimal allocation and use of resources, the South African government embarked on an integrated planning strategy called Integrated Development Planning (see section below). Within this planning framework, activities relating to disaster management must be incorporated into all actions of different line functions and sectors of state.

3.3.5.1.1 Integrated Development Planning

Integrated Development Planning is a process by which municipalities prepare a five-year strategic plan that is reviewed annually in consultation with communities and stakeholders (Coetzee, 2000:9; Venter, 2003:9). The Integrated Development Plan (IDP) is a product of the integrated development planning process. The IDP is a principal strategic planning mechanism which guides and informs all development planning, budgeting, management and decision-making in a municipality. This plan seeks to promote integration by balancing social, economic and ecological (human and environmental) pillars

of sustainability without compromising the capacity of the institution (e.g. local municipality) to implement its ideals. The IDP also aims to coordinate actions across sectors and spheres of government, including disaster management (PIMMS, 2003).

According to the Municipal Systems Act 32 of 2000, all municipalities (i.e. metropolitan, district and local municipalities) have to undertake an integrated development planning process to produce integrated development plans. As the IDP is a legislative requirement, it has a legal status and it supersedes all other plans that guide development at local government level. According to the above-mentioned Act, every new council that comes into office after local government elections has to prepare its own IDP which will guide them for the five years. The new council has the option to either adopt the IDP of its predecessor, should it feel it is appropriate to do so, or develop a new IDP taking already existing planning documents into consideration.

Integrated development planning should be an interactive and participatory process which requires involvement of a number of stakeholders. Because of its participatory nature, it takes a municipality approximately six to nine months to complete an IDP. The timing of developing an IDP is closely related to the municipal budgeting cycle. However, during this period, delivery and development is not at a standstill. The IDP is reviewed annually which results in the amendment of the plan, should this be necessary. The development of a disaster management plan as part of the IDP is a crucial and legal obligation (South Africa, 1998; South Africa 2003).

The IDP has certain core components that need to be alluded to. These components function as different phases in the development of the IDP:

A. Analysis phase

The analysis phase involves an assessment of the existing level of development, which includes identification of communities with no access to basic services (or communities at risk). Challenges in

development should be identified and prioritised (Venter, 2003:64). Emphasis should be placed on identifying the root causes of under development (and risk) or the lack of service delivery and should not only focus on the "symptoms" of the problem. The prioritisation of the challenges will provide municipalities with a guideline for development (and therefore disaster risk reduction), especially in the light of scarce resources. A proper analysis will inevitably lead to realistic solutions.

B. Strategy development phase

When developing strategies, a municipality needs to develop the following:

- *The municipality's vision (including internal transformation needs).*
- *The council's development priorities and objectives.*
- *The council's development strategies.*

The challenges identified in the first phase provide the impetus to strategy development.

C. Projects identification phase

In order to realise the strategies identified in the preceding phase, certain projects must be identified. These projects can take on a variety of forms e.g. infrastructure development, local economic enhancement projects such as tourism, establishment of new government structures to address needs (i.e. departmentalisation – See Roux *et al.*, 1997:47), projects to enhance service delivery (Knipe *et al.*, 2003:5-10), and training and capacity building programmes, to name but a few. Venter (2003:65) is of the opinion during this phase municipalities need to obtain clarity on the target groups (e.g. at-risk communities), physical location of a project, project schedule and responsibilities, as well as a detailed project budget. The identification of key performance indicators for each project is also imperative.

D. Integration phase

The integration phase aims to ensure that all the projects identified are integrated into an understandable and holistic whole, taking into

account the limited resources available to the municipality (Venter, 2003:65). The following plans and programmes aim to achieve this integration:

- *A spatial development framework.*
- ***Disaster management plan.***
- *Integrated financial plan (both capital and operational budget).*
- *Key Performance Indicators and performance targets.*
- *Other integrated programmes.*

E. Approval phase

Following all planning and integration, the municipal council in question must approve all plans and projects associated with the IDP. In doing so, a final political authorisation is given and the council takes ownership of all development that will take place in their municipality for the next five years.

Disaster risk reduction measures must be incorporated into all phases of the IDP. Chapter 1 provided a definition of disaster management. In considering this definition, it becomes clear that disaster management must therefore function as an integrated, multi-sectoral, multi-disciplinary approach towards planning, disaster risk reduction, emergency preparedness and disaster recovery.

The above said, in light of the IDP, disaster management must further be integrated into all development planning that takes place in government. This can be established through a parallel planning process with the phases of the IDP. Table 3.4: Disaster Management - Development Planning integration, provides an explanation of this planning process.

INTEGRATED DEVELOPMENT PLAN	DISASTER MANAGEMENT INTEGRATION
Phase 1: Analysis Compilation and reconciliation of the following information: • Existing information in terms of. development (what is available?) • Community and stakeholder analysis (who should be involved?) • Municipality level analysis o Spatial o Gender o Environment o Economic o Institutional (what is the current situation relating to the above?) **The above should ensure the identification of priority issues and an in-depth analysis of these priority issues.**	**Phase 1: Analysis** Compile disaster management information: • Hazard assessment (Which types of hazards are prevalent?) • Vulnerability assessment o Social/Cultural environment o Economic environment o Political environment o Natural/Ecological environment o Physical environment (To what extent is the municipality and its inhabitants vulnerability in terms of the above?) • Capacity assessment o Livelihoods analysis o Capacity analysis o Resilience analysis o Critical facility analysis (What is available in order to cope with the effects of a hazard/disaster?) • Historical disaster occurrences (Which disasters have occurred in the past?) • Historical loss parameters (magnitude of disasters and their effects) • Communities-at-risk (Who is at risk of hazards?) **The above analysis is specific to a particular line function e.g. Department of Health needs to link this analysis to their disaster risk reduction priorities e.g. biological hazards like cholera)**
Phase 2: Strategy • Vision of the municipality • Objectives of each priority issue (as per Phase 1) • Localised strategic guidelines: o Spatial o Poverty/Gender o Environmental o Economic o Institutional • Develop strategies for each priority issue • Identify projects in order to implement the above strategies	**Phase 2: Strategy** • Formulate Disaster Management strategies: o Prevention and mitigation strategies o Vulnerability reduction strategies o Capacity building o Contingency plans o Emergency preparedness • Operationalise disaster management in the municipality – identify projects: o Setting up structures (as per section 4 above) o Community awareness o Volunteer structures It is imperative that the above strategies be integrated into already identified projects as per the parallel IDP process, e.g. Department of Works might have identified an infrastructure project to supply water to a community with will reduce vulnerability to epidemics and drought in that area.

INTEGRATED DEVELOPMENT PLAN	DISASTER MANAGEMENT INTEGRATION
	At this stage, it is also important to assess projects identified by other line functions in the municipality according to the disaster risk these projects impose.
Phase 3: Projects Design projects: • According to the projects identified and according to the minimum specifications by government. ⟷	**Phase 3: Projects** Design disaster management projects: • According to the disaster management projects identified e.g. establishment of the district disaster management centre or livelihoods analysis) • Includes all disaster management related activities for ALL other projects e.g. all project plans MUST be assessed according to their disaster risk they pose, e.g. building a new dam).
Phase 4: Integration Compilation of integrated plans and programmes: • Sector programmes (e.g. water or housing) • Five year financial plan • Five year Capital investment programmes • Five year action programme ⟷ • Integrated spatial development framework • Integrated local economic development programme • Integrated environment programme • Integrated poverty alleviation programme • Institutional plan • Integrated HIV/AIDS programme • Development and performance management indicators • Disaster Management Plan	**Phase 4: Integration** Compile Disaster Management Plan, include: • Risk profile of municipality (hazards and vulnerability prevalent) • Risk reduction strategy • Disaster response strategy o Field operation guides o Standard operating procedures • Emergency preparedness • Disaster Management Information System o GIS (link with spatial development framework) o Electronic database (link with other sectors) o Communications Provide input to other relevant plans: • Financial implications of the Disaster Management Plan • Actions that need to be taken as part of disaster management (roles and responsibilities) • Spatial indication of areas/communities-at-risk • Institutional implications e.g. addressing capacity to prevent disasters or establishing the disaster management centre. • Performance management indicators
Phase 5: Approval Adoption of IDP including Disaster Management Plan, and submission to various bodies in terms of the Municipal Systems Act 32 of 2000. ⟷	**Phase 5: Approval** Adoption of the Disaster Management Plan, and submission to various bodies in terms of the Disaster Management Act 57 of 2002.

Table 3.4: Disaster Management - Development Planning integration

(Adapted from Coetzee, 2003)

From the table above, it is clear how disaster management can be integrated into all aspects of the development planning process. Each sector of government is hereby made responsible to engage in disaster risk reduction activities. By doing so, a municipality ensures that all hazards, vulnerabilities and capacities are taken into consideration in project development and execution. All high-risk developments can therefore be identified before project implementation, and remedial action can be taken.

Although still in its development phase, more municipalities in South Africa are realising the importance of integrating the activities of disaster management in its planning process. The above section spelled out Disaster Management as an activity of government in which all organs of state have a stake. The following section will shed light on the establishment of disaster management as a function of all spheres of government.

3.3.5.2 Disaster management: The function

The historical context of the development of disaster management in South Africa alluded to the reactive focus prevalent in South Africa for so many years. The structures existing after the 1994 elections were totally inadequate and in most cases inoperable. The new disaster management focus in South Africa ensured that adequate political buy-in existed from the start for the establishment of certain structures to govern disaster management on all levels of government.

Disaster management as a function of government entails the development of a unique responsible management element within the public sector that will guide, oversee and advise on disaster management related issues. The White Paper on Disaster Management indicates that, "*in South Africa, the capacity for managing disasters varies from ongoing service and infrastructure provision, as part of longer-term development initiatives, to that of emergency preparedness and response (usually triggered by a rapid-onset event)*" (South

Africa, 1999). A number of shortcomings were identified that hamper effective disaster management. These include the lack of:

i. an effective and comprehensive disaster management strategy;
ii. coordination and clear lines of responsibility for those involved in disaster management;
iii. government capacity, particularly of local government and in rural areas, to implement disaster management; and
iv. integration of civil society into effective disaster management activities, particularly those concerned with risk reduction (South Africa, 1999).

One of the ways to overcome the above-mentioned challenges was to development a management structure at national level to drive the function of disaster management in South Africa. From the inception of the Green Paper on Disaster Management (South Africa, 1998) the establishment of a National Disaster Management Centre became evident. The envisaged aim of the National Disaster Management Centre (NDMC) was to function as a conduit and repository of information relating to disasters, hazards, vulnerability and disaster risk. The NDMC would further be the co-ordinating body for the implementation of cross-sectoral management activities (Disaster Management as an activity).

The Disaster Management Act makes provision for the establishment of disaster management structures on all government spheres. The development of disaster management structures, however, gradually occurred within the provincial and the local sphere of government since 1994. The need to implement such mechanisms was spontaneously recognised by a number of provinces and municipalities even before the promulgation of the new legislation. This is evident in the establishment of disaster management structures in municipalities such as the Western District Council (now Cacadu District Municipality) in the Eastern Cape, the West Rand District Municipality in Gauteng, and the disaster management centre of the City of Cape Town.

This new legislation, however, as it applies to the local sphere of government, places the onus on district (after consultation and in partnership with local municipalities) and metropolitan municipalities to establish disaster management centres and structures within their administration and area of responsibility. These disaster management centres have the same responsibilities as the NDMC but to the extent that these powers and duties apply to the provincial or local sphere. An area of current concern is that the legislation is silent on the exact placement of this function within the administration of the local authority. The absence of clear guidelines has already led to misinterpretations and the duties and powers have in some instances been allocated to an already existing incumbent within the municipality (e.g. the Fire Chief or Traffic Chief) as was the case with civil protection. Considering the activities that this function should fulfil, the appointment of a new, independent official remains imperative.

The following section explains in more detail some of the political and management structures that are established in terms of the Disaster Management Act. Figure 3.8 assists in the better understanding of the structures discussed below.

3.4 DISASTER MANAGEMENT INSTITUTIONAL ARRANGEMENTS IN SOUTH AFRICA

Since the discussions on disaster management started in 1994, it was evident that the new democratic government realised the importance of establishing government structures which will largely be responsible for the implementation of the Disaster Management Act. Initially the emphasis was on the creation of a national disaster management centre (South Africa, 1998a) that will have ultimate responsibility for disaster management in the Republic as a whole. As the legislative process developed, more emphasis was placed on the

importance of escalating the function of disaster management down to local government level through the provinces (South Africa, 1999).

The following section will provide an in-depth discussion on the function of disaster management at all three spheres of government. The core responsibilities of each sphere as alluded to in section 2.3 will be made applicable to these disaster management structures. The discussion will focus on primary political as well as administrative executive responsibility in terms of Disaster Management Act.

3.4.1 The National Government Sphere

From the Green Paper/White Paper process to the final promulgation of the Disaster Management Act certain aims and objectives for Disaster Management in South Africa have been set out and debated. Most of these aims and objectives still remain true. The Green Paper on Disaster Management indicates that the national government must set out its role in order to ensure certain objectives for disaster management are met (South Africa, 1998b:76). These objectives include:

i. Risk reduction measures to be incorporated into development planning, this leading to sustainable development.
ii. Addressing environmental degradation within the disaster management area of responsibility.
iii. Ensuring a reduction in the loss of life, damage and destruction of essential resources and property on which communities depend.
iv. Ensuring effective coordination, participation and cooperation amongst all role-players on all levels of government, civil society as well as the international arena.
v. Creating the necessary infrastructure for disaster risk reduction.

The White Paper indicates that it aims to:

i. Provide an enabling environment for disaster management.
ii. Promote proactive disaster management through risk reduction programmes.
iii. Improve South Africa's ability to manage emergencies or disasters and their consequences in a coordinated, efficient and effective manner.
iv. Promote integrated and coordinated disaster management through partnerships between different stakeholders and through cooperative relations between all spheres of government.
v. Ensure that adequate financial arrangements are in place.
vi. Promote disaster management training and community awareness.

As will be seen with subsequent discussions, the South African Government has already made great strides in achieving these said objectives. From these objectives it is clear that they have a distinct strategic focus to them.

Previous mention was made of the fact that the Department of Provincial and Local Government (DPLG) has overall responsibility for Disaster Management at national level. As a national government department, DPLG has numerous tasks to fulfil of which Disaster Management is but one. The National Disaster Management Centre is seated within DPLG. DPLG is therefore responsible for the implementation of the strategic objectives of Disaster Management for the country as a whole. These strategic objectives are already defined in the different government documents and must also be clearly defined in the National Disaster Management Framework which is the ultimate national policy on Disaster Management (as per the Disaster Management Act, Section 7). The NDMF spells out the correct course of action in order to realise the aims of Disaster Management and disaster risk reduction, as previously alluded to.

The Draft National Disaster Management Framework (South Africa, 2004:12) explains the policy-making cycle that must be used in terms of disaster management at the national level. The interrelatedness of the structures that will be discussed later is quite clear in Figure 3.7.

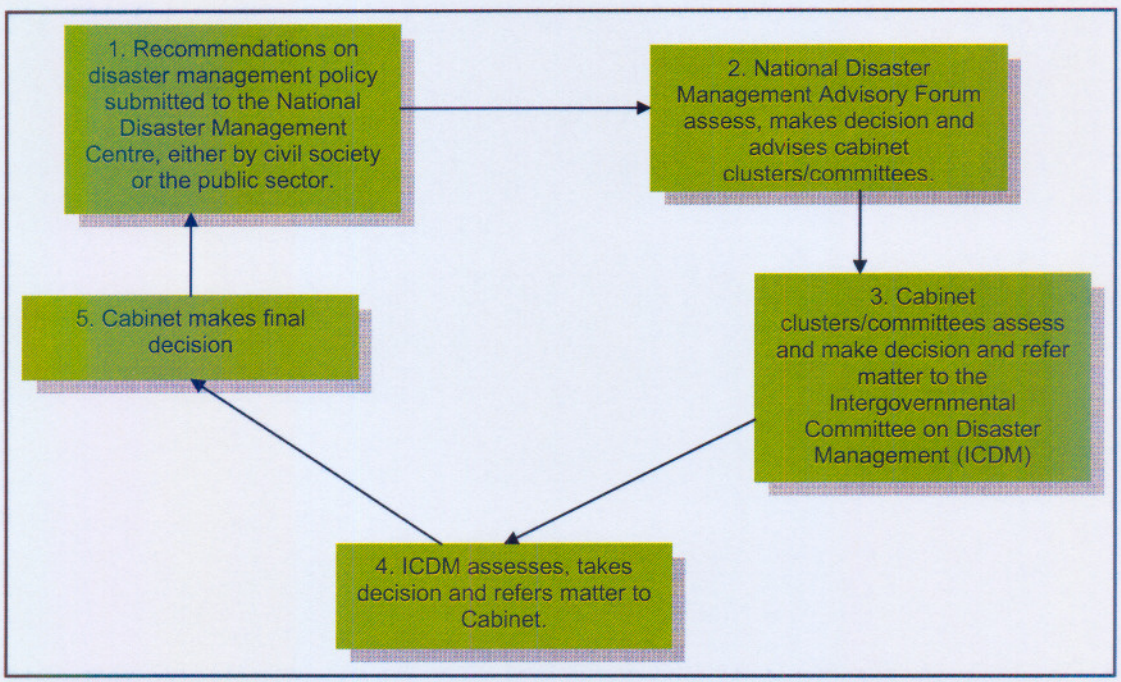

Figure 3.6: The Disaster Management policy-making cycle
(South Africa, 2004:12)

The Disaster Management Act is quite specific in relation to the different structures that must be created on national level. These structures will be discussed.

3.4.1.1 The Intergovernmental Committee on Disaster Management (ICDM)

Section 4 of the Disaster Management Act specifies that the President must establish an Intergovernmental Committee on Disaster Management (ICDM). This committee consists of cabinet members, members of Provincial

Executive Councils and representatives of organised and local government, involved in disaster management. The Minister of the Department of Provincial and Local Government serves as the chairperson of this committee. The functions of this committee are to advise Cabinet on issues concerning disaster management, and to assist and advise the Minister on the establishment of a national framework (policy) (see section below) for disaster management. From the composition of the ICDM indicated in the table below, it becomes clear that this body is the supreme political executive authority on disaster management.

National Government	Provincial Government	Local Government
Cabinet Ministers holding the following portfolios: • Agriculture and land affairs • Defence • Education • Environmental Affairs and Tourism • National Treasury • Foreign Affairs • Health • Home Affairs • Housing • Provincial and Local Government (Chairperson) • Public Works • Safety and Security • Social Development • Water Affairs and Forestry	Nine provincial representatives, one MEC (Member of the Executive Committee) for each of the nine Provinces with the portfolio of Disaster Management.	Members of municipal councils as selected by SALGA (number of representatives is not specified by the NDMF).

Table 3.5: Composition of the ICDM

(South Africa, 2004:10-11)

The ICDM must further ensure that mechanisms are put in place that will give effect to the principles of cooperative governance as per Chapter 3 of the Constitution (see Section 4(3) of the Disaster Management Act). It should further establish joint standards of practice between all spheres of government, and between a particular sphere and other relevant role-players (South Africa, 2004:11). The ICDM can also make use of other forums to address disaster management issues e.g. the Ministers and Members of

Provincial Executive Council forums (MINMECs). The MINMECs are sectorally-based meetings of national ministers and provincial MECs, established to promote cooperation, coordination and communication between the national departments and their provincial counterparts (Van der Waldt *et al.*, 2002:114).

The Disaster Management Act is unequivocal in stating that the Minister of Provincial and Local Government should prescribe a national disaster management framework. Taking the above-mentioned structure of the ICDM into consideration, one can argue that the ultimate responsibility for the establishment and enforcing the NDMF will be the ICDM. A closer look at the NDMF is necessary.

3.4.1.2 The National Disaster Management Framework (NDMF)

Before an in-depth explanation of the national disaster management framework can be provided it is imperative to make a distinction between the NDMF and the framework under investigation in this thesis. As has been stated previously, the NDMF is a policy document which implies a strategic document (see section below), which provides strategic direction for the country as a whole. The disaster risk reduction framework of this thesis is not aimed at providing policy direction but rather aims to investigate the extent the policy direction given by the NDMF is in line with the requirements of all spheres of government (and legislation) as well as international best practices. It is therefore important that this distinction is made.

The national disaster management framework (NDMF) is "*a legal instrument specified by the Disaster Management 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*" (South Africa, 2004:7; South Africa, 2003:Section 6).

The NDMF is divided into four key performance areas (KPAs) and three "enablers" (South Africa, 2005:2). Each of the KPAs is informed by specific objectives as set out in the Disaster Management Act. The three enablers are aspects which need to be present in all four of the KPAs in order for them to be implemented successfully. In order to measure the successful implementation of the different KPAs, the framework specifies Key Performance Indicators (KPIs) for each of the KPAs. The KPAs and enablers are:

i. KPA1: Integrated institutional capacity for disaster risk management
ii. KPA2: Disaster risk assessment
iii. KPA3: Disaster risk reduction
iv. KPA4: Response and recovery
v. Enabler 1: Information management and communication
vi. Enabler 2: Education, training, public awareness and research
vii. Enabler 3: Funding arrangement for disaster risk management

These KPAs, enablers and their respective KPIs will enjoy further attention in Chapter 5. Firstly, a discussion on the requirements of the NDMF as per the Disaster Management Act follows.

The Disaster Management Act specifies that the NDMF must recognise the types of disasters, hazards and risks that can occur in the whole of Southern Africa, as well as the severity thereof. The framework should give priority to developmental measures that will reduce vulnerability of disaster-prone areas, communities-at-risk and vulnerable households. The Act indicates that the NDMF must guide the development and implementation of the concept of disaster management. The national framework should aim at ensuring an integrated and common approach to disaster management by all spheres of government, NGOs, the private sector and communities, and should also aim at facilitating the implementation of disaster management standards in the Southern African region as a whole.

The framework must establish prevention and mitigation as the core principles of disaster management. It should further aim to facilitate closer regional co-operation with other Southern African states. By allocating different responsibilities to different spheres of government, the NDMF must also give effect to cooperative governance (as per Chapter 3 of the Constitution of South Africa). Guiding development (within the Land Development Objectives as stipulated by the Development Facilitation Act 67 of 1995, and the Integrated Development Plan) and the implementation of disaster management within national, provincial and local government must also be achieved. This must be done on a cross-functional and multi-disciplinary basis and responsibilities in these regards must be allocated to different organs of state.

Another function of the NDMF is to facilitate the involvement of non-governmental organisations (NGOs), community-based organisations (CBOs), communities, volunteers and the private sector in disaster management. Partnerships between these organisations must also be established. A major function of the NDMF will be to provide incentives for disaster management training and capacity building. The NDMF has a role to play when it comes to financing disaster management. In this regard, the Disaster Management Act stipulates that the NDMF must establish certain mechanisms through which the different sectors of state can contribute financially to post-disaster recovery and rehabilitation, and the payment of compensation to victims of disasters and their dependants.

This brief introduction to the NDMF will not aim to explore the framework as this will occur in Chapter 5. The administrative executive authority for Disaster Management at national level is the National Disaster Management Centre (NDMC).

3.4.1.3 The National Disaster Management Centre (NDMC)

It can be argued that the most fundamental aspect of the disaster management legislation is the establishment of a National Disaster Management Centre (NDMC). This is a first step to operationalise disaster management in South Africa. Since the inception of the Green Paper on Disaster Management (South Africa, 1998a), the establishment of a centre at national level was palpable. The Green Paper investigates different possibilities for the NDMC and initially envisaged the NDMC to be a coordinating body consisting of numerous government departments. The White Paper on Disaster Management (South Africa, 1999) emphasised this need but also started to scale the function and establishment of decentralised centres down to provincial and municipal level.

Although the NDMC only became a statutory function through the Disaster Management Act, the NDMC has already been in operation since 1999 and functions from within DPLG. It therefore first reports to a minister and not the highest political executive authority as is the case in many other countries (e.g. Tanzania, Madagascar, Nigeria, Ethiopia, Zambia, New Zealand, India, Bangladesh and Japan, to name but a few). The draft NDMF questions the current placement within a government department (South Africa, 2004:13) and alludes to the possibility of establishing the function within the Office of the Presidency (for which a minister without portfolio is responsible) or as an agency of government similar to that of the National Roads Agency in South Africa, or the Federal Emergency Management Agency in the United States of America. Until the matter of the placement of the NDMC is taken up within the political disaster management structures (i.e. the ICDM), the NDMC will remain within DPLG.

The NDMC is the highest administrative executive authority for disaster management in South Africa. The object of the NDMC is to promote an integrated and co-ordinated system of disaster management for South Africa as a whole (South Africa, 2003:Section 9) and to establish and maintain

institutional arrangements that will enable the implementation of the provisions of the Disaster Management Act (South Africa, 2004:14). The NDMC is given the responsibility to implement measures that will provide for the development of progressive disaster risk profiles to inform planning and implementation of risk reduction strategies. The emphasis of the NDMC falls on the prevention and mitigation of disasters by all levels and sectors of state. The Centre is responsible for gathering information on disasters and related hazards and to keep an updated database encompassing all elements of disaster management and disaster risk reduction in South Africa, as well as Southern Africa. The Centre must also classify and record disasters (local, provincial or national disasters) (South Africa, 2003:Section 23).

One of the fundamental responsibilities of the NDMC is that it must act as a repository and conduit of information concerning hazards, disasters, impending disasters and disaster management. The NDMC functions as the supreme body in the monitoring, implementation and review of disaster management legislation and policy. This is obviously done through the policy-making mechanism as explained earlier on in this chapter. The National Centre must further promote the recruitment, training and participation of volunteers and communities in disaster management (see Chapter 7 of the Disaster Management Act).

The Disaster Management Act (Sections 5(1)(e)(vi) and 7(2)(f)(i) and (j)), places a particular emphasis on the involvement and recognition of indigenous knowledge in mitigation and prevention. The NDMC must strive towards the incorporation of indigenous knowledge within structural and non-structural mitigation strategies and practices. The promotion of disaster management training, education, capacity building and awareness in schools and the promotion of disaster management research are further functions of the NDMC. Prominence is given to the creation of a culture of risk avoidance with the general population (South Africa, 2004:14).

The NDMC is required to maintain a directory of all the role-players in disaster management within the whole of Southern Africa (Section 16(1)). Besides the upkeep of the directory, the NDMC must actively establish communication links with all of these role-players and engage in constructive dialogue to solve problems relating to disaster risk and vulnerability. The above-mentioned directory forms part of a much larger database that the NDMC (with the help of the Provincial and Municipal Disaster Management Centres) maintains. This database contains all relevant information that will assist all Disaster Management Centres on all levels of government in the prevention and mitigation of disasters. Section 17(3) of the Disaster Management Act stipulates that the NDMC must take reasonable steps to ensure that the database is electronically accessible to any person free of charge.

A further responsibility of the NDMC is the development of guidelines in the compilation of disaster management plans and strategies (Section 19). Such plans include disaster risk reduction plans, prevention and mitigation plans, contingency plans, response and recovery plans, standard operating procedures (SOPs) and field operations guides (FOGs). The NDMC is also responsible for the provision of support and assistance to all sectors of state in the preparation of the above-mentioned plans. The alignment and integration of all the above-mentioned plans play an important role, and the NDMC must strive to ensure such integration. The integration of the mentioned disaster planning forms an integral part of the IDP process, as mentioned previously. All of the functions and activities of the NDMC must occur within the NDMF.

Fundamental to the management of the different disaster management centres is the appointment of a head of such a centre (HOC). The Disaster Management Act is specific on the powers and duties of the HOCs. Sections 10, 31 and 45 stipulate the requirements for the appointment of the head of the disaster management centre on the different levels of government. In each instance, the highest executive authority appoints the HOC (e.g. the Minister

at national level, the Member of the Executive Council for Disaster Management at provincial level, and the municipal council at local level).

The South African Government realised early on that the multi-disciplinary and multi-sectoral nature of disaster management necessitate the involvement of a number of professional contingents which function outside the government sphere. In order to ensure wide participation, the Disaster Management Act established the National Disaster Management Advisory Forum.

3.4.1.4 The National Disaster Management Advisory Forum (NDMAF)

The Disaster Management Act (see Section 5) stipulates that the responsible Minister for Disaster Management must establish a National Disaster Management Advisory Forum (NDMAF). The NDMAF is a national body where all spheres of government and external role-players consult and coordinate their actions (South Africa, 2004:25). Through these actions, the NDMAF can make recommendations to the ICDM on matters concerning the NDMF. The forum must also advise different organs of state, statutory functionaries, the private sector, NGOs or communities on any matter relating to disaster management. The NDMAF should provide advice to the NDMC on all matters pertaining to its activities. Neither the Disaster Management Act, nor the draft NDMF provides adequate guidance to the exact functions of the NDMAF, which allows the NDMAF to be fluid and flexible to changing conditions and needs. The NDMF only stipulates that the NDMAF should play a role in:

i. drafting disaster management plans;
ii. promoting joint standards of practice;
iii. developing the disaster management information system;
iv. contributing critical information to the directory of institutional role players;

v. assisting with effective communication links;
vi. advising and making recommendations on training and public awareness; and
vii. participating in the review of programmes and policy.

The main emphasis of the forum is to provide technical expertise to the NDMC.

This forum should consist of the Head of the National Disaster Management Centre – who chairs the forum, senior representatives of each national department whose Minister is a member of the ICDM (see Table 3.5: Composition of the ICDM), a senior representative of each provincial government, representatives of local government and representatives of other disaster management role-players such as:

- organised business;
- Chamber of Mines;
- organised labour;
- insurance industry;
- organised agriculture;
- traditional leaders;
- religious and welfare organisations;
- medical and para-medical and hospital organisations;
- organisations representing disaster management professions in South Africa;
- other relevant NGOs, international organisations and relief agencies in the field of disaster management;
- statutory bodies regulating safety standards in particular industries,
- institutions of higher education;
- institutions that can provide scientific and technological advice or support to disaster management;
- experts in disaster management designated by the Minister; and

- persons co-opted by the forum for a specific period or specific discussions.

Beside the legislative responsibility of the NDMAF to provide expert technical advice to the NDMC, the draft NDMF does provide for the establishment of ad hoc committees for the purposes of integrated and coordinated planning (South Africa, 2004:28). One such committee is the National Interdepartmental Committee on Disaster Management (NIDMC).

3.4.1.5 The National Interdepartmental Committee on Disaster Management (NIDMC)

Although not a statutory body, it is widely recognised that an Interdepartmental Disaster Management Committee (IDMC) must be established in order to facilitate interaction between different government departments at all levels of government (Reid, 2003). Such an integration is discussed in the Green and White Paper on Disaster Management. The aim of the IDMC is to provide a forum where different government departments can coordinate and integrate their actions and activities relating to disaster management. The aim of the NDIMC is not so much to provide advice to the NDMC, as is the case with the NDMAF, but to rather function as an administrative executive body for all internal disaster management planning and activities. The NIDMC will comprise all relevant government departments as per the distinction made for the ICDM. This committee allows technocrats to compile disaster plans and strategies, and provides an accountability mechanism between departments. The NIDMC further forms the foundation of the NDMAF. Whereas the NDMAF is an advisory body, the NIDMC should be seen as the executing body.

Previous mention was made of the important role that provinces have to fulfil. The structures on provincial level, although similar to that established on national level will be discussed.

3.4.2 The Provincial Government Sphere

The role of the provincial government sphere is clearly spelled out in legislation. According to the Constitution, the provincial sphere plays a facilitating and coordinating role for the implementation of national government policy within the provinces. This means, the concurrent legislative and executive powers given to the provinces through the Constitution, ensures that provinces act as an extension of certain national government departments. This tactical level focus of provincial governments is consistent with the theoretical work of Kroon (1990:179-180). The provincial sphere should therefore focus on functional policies, strategies, objectives and budgets for disaster management in its area of responsibility (i.e. what is needed, relevant and within the competency of the specific province to provide).

The policy-making mechanism on provincial level should follow a similar path as described by the NDMF for the national sphere of government. For policy-making procedures to be effective it is therefore important that the appropriate mechanisms be established and empowered.

In order to ensure continuity in disaster management practices and principles throughout South Africa, similar structures as are established at national level are also established on provincial level.

3.4.2.1 Provincial Political Forum for Disaster Management

The Disaster Management Act does not make provision for the establishment of a dedicated political forum for disaster management as is the case with the ICDM. It could, however, be argued that the importance that the legislation places on political executive involvement in disaster management should also escalate to provincial level. Currently the established political structures are used for disaster management purposes. Each Provincial Executive Committee consists of a number of portfolio committees. The Green Paper on Disaster Management (1998b:78) indicates that the Local Government MINMEC as well as the Intergovernmental Forum (IGF) agreed to locate responsibility for disaster management under the MECs dealing with local government and their Heads of Department. It is envisaged, where this does not occur yet, that the portfolio committee on local government will become responsible for executive political decisions in terms of disaster management.

In light of the concurrent legislative and executive powers given to the provincial sphere of government the importance of a political forum for disaster management cannot be denied. The role of this political forum/portfolio committee is to provide tactical embodiment of national government disaster management policy in line with that of the provincial government in question. The functions of this political embodiment are closely related to that of the ICDM but on a provincial level. In light of the composition of the ICDM it can be argued that the MEC which serves on the ICDM will be the chairperson of the political committee in each province.

The ICDM will be responsible to ensure the development of a provincial disaster management framework and to advise the Premier on issues of disaster management. This political committee will also provide the strategic direction for disaster management for each province in line with national policy.

3.4.2.2 The Provincial Disaster Management Framework (PDMF)

Each provincial government must compile a Provincial Disaster Management Framework (South Africa, 2003). This framework must be consistent and in line with the provisions of the NDMF. Although the Disaster Management Act does not assign clear responsibly to any provincial body for the development of the PDMF, it can be argued that the highest political executive body for disaster management identified will initiate this provincial policy development process. The Provincial Disaster Management Centre (PDMC) will be the most likely provincial department that will development the PDMF in conjunction with the Provincial Disaster Management Advisory Forum (PDMAF) and the Provincial Interdepartmental Committee on Disaster Management.

On a tactical level, the PDMF should address issues to ensure that the ideals of the NDMF find embodiment within the province. This will involve the development of an integrated and uniform approach to disaster management for all provincial departments (see Section 28 of the Disaster Management Act). The PDMF should further provide impetus to the development of functional strategies, programmes and projects for disaster risk reduction. A logical assumption to make is that all PDMFs should engage and facilitate disaster management at local government level.

3.4.2.3 The Provincial Disaster Management Centre (PDMC)

The draft NDMF indicates that the MEC responsible for disaster management must establish institutional capacity for disaster management in the province (South Africa, 2004:16). Such arrangements must be consistent with National Government and must allow for seamless intergovernmental cooperation.

Chapter 4 of the Disaster Management Act provides for the establishment of Provincial Disaster Management Centres (PDMCs). As with the NDMC

various provinces have already established these centres within their administration. The roles and responsibilities of the PDMC are similar to that of the NDMC but as it pertains to provincial level. The PDMC must, as is the case of the NDMC, maintain a database on all hazards, vulnerability, disaster and disaster management related information within its area of responsibility. The PDMCs must further relay all its information to the NDMC. All PDMCs are required to function within the NDMF and PDMF of the province. PDMCs must provide the link between national objectives and provincial and municipal disaster management activities and priorities (South Africa, 2004:16).

The placement of the PDMC within the management hierarchy as well as competencies, however, currently varies from province to province. These PDMCs do not fall within the office of the highest political incumbent (e.g. the Office of the Provincial Premier), but is established within another department. This certainly remains an area of concern especially in the light of adequate decision-making in the event of a disaster or impending disaster, but even more important, enforcing organs of state to engage in prevention and mitigation measures cannot adequately occur from within a government line function. The draft NDMF (2004:13) argues the merit of establishing the PDMC in a position that cuts across departments with individual responsibilities, and is close to the highest level of decision-making in the province.

3.4.2.4 The Provincial Disaster Management Advisory Forum (PDMAF)

The establishment of the PDMAF is not a legal obligation ("*may*" as to "*must*" – see Section 37 of the Disaster Management Act). The draft NDMF stipulates that the absence of such a body will greatly impede the functioning of disaster management in the provinces, and that it is strongly recommended that each province considers the establishment of a PDMAF. In the event that a province opts not to establish a PDMAF, alternative structures must be

identified (South Africa, 2004:26). The composition and duties of a PDMAF are consistent with that of the NDMAF as it pertains to the provincial sphere of government.

3.4.2.5 The Provincial Interdepartmental Committee on Disaster Management (PIDMC)

The PIDMC is less of a legal obligation than the PDMAF. But, as is the case with the NIDMC, the provincial IDMC will provide the provinces with an internal disaster management committee consisting of all the government departments that will serve on the PDMAF (or similar structure). The roles and responsibilities of the PIDMC are similar to the NIDMC but as it pertains to the provincial sphere of government.

3.4.3 The Local Government Sphere

The most important government sphere for the effective implementation of disaster management is local government. Local government is where most of the operational activities relating to disaster management will occur (South Africa, 1998b:80). The local sphere of government must therefore ensure that the functional strategies, policies, programmes and projects find embodiment at community level. This is done through the development and implementation of standing plans, local policies, procedures and rules. The IDP is the functional plan in which municipalities need to operationalise all services and public goods. The IDP, as has been discussed previously, also serves as the operational plan for development and disaster risk reduction in any municipality.

Each town, city and rural area in South Africa has a different risk profile and therefore faces a variety of different threats of different magnitude. Most of the South African municipalities are still focussing on a reactive approach towards

disasters and risk. This is due to the lack of awareness, resources or political will. The legislation as discussed in this chapter is obviously geared towards changing the current situation. The integrated approach towards disaster management on local government level cannot be overemphasised. Local government is the sphere that bears the brunt of a disaster or impending disaster and this sphere will also be the first to respond. It therefore goes without saying that the operationalisation of disaster management on local government level is imperative for disaster risk reduction to be successful.

As is the case with the provincial disaster management structures, each district and metropolitan municipality must establish a Municipal Disaster Management Framework (MDMF) (see Section 42 of the Disaster Management Act), and a Municipal Disaster Management Centre (MDMC), but may establish a Municipal Disaster Management Advisory Forum (MDMAF) (Section 51 of the Disaster Management Act) and a Municipal Interdepartmental Disaster Management Committee (MIDMC). All of these must be consistent with the provisions of the Disaster Management Act, the NDMF, the relevant PDMF and the structures established in the other spheres of government as discussed earlier.

Due to the structure of local government in South Africa, the Disaster Management Act is quite specific on the interaction between metropolitan, district and local disaster management centres. District municipalities (Category C) first need to consult with the local municipalities (Category B) in their area of responsibility on the establishment and management of the above disaster management institutional arrangements (see Section 43 of the Disaster Management Act). As has been seen in preceding sections, a metropolitan municipality, on the other hand, is an autonomous unit and does not have any local municipalities in its area of jurisdiction.

Although on operational level in terms of national policy implementation, the local sphere of government still has an obligation to ensure good, proper and accepted management practices through the development of strategic polices

for its own functionality. The policy-making process on local government level has already been established, and for this purpose political committees drive this practice. It can be argued that the disaster management policy-making process will follow the same route as that of national and provincial government. For disaster management purposes it is therefore important that a clear indication of the political incumbent for disaster management is made at local government level. The following section will explain the role of municipal disaster management with a special emphasis on the interaction between district and local municipalities.

3.4.3.1 Municipal Political Forum dealing with Disaster Management

On the municipal level, the political incumbent responsible for disaster management is, as with provincial level, not legislated. The Disaster Management Act does, however, clearly indicate that the council elected for each category A and C municipality holds ultimate responsibility for disaster management (see Sections 45, 50 and 54). From this perspective one can therefore argue that a clear indication of a political incumbent for disaster management is necessary. As is the case on provincial level, it only makes logical sense that the portfolio or mayoral committee assigned to oversee disaster management will hold this responsibility.

The Disaster Management Act stipulates that the municipal disaster management centre (MDMC) must report back to council on an annual basis. This reporting should be done through the appropriate portfolio or mayoral committee. Section 54 of the Disaster Management Act further stipulates that the council of a district and metropolitan holds primary responsibility for the coordination of events in the case of a local state of disaster. In terms of post-disaster recovery and rehabilitation, Section 56 states that any financial assistance rendered by any national or provincial organ of state to the local sphere will take into account the presence of any prevention and mitigation

measures and if it is found to be lacking will hold the municipality council in question responsible for the recovery of the losses. The need for political ownership of disaster management on a political level for local government is quite evident. All disaster management related actions should still occur within the municipal disaster management framework.

3.4.3.2 The Municipal Disaster Management Framework (MDMF)

The development of a MDMF is a legislative responsibility (see Section 42 of the Disaster Management Act). As with the national and provincial frameworks, the MDMF aims to ensure an integrated, coordinated and uniform approach to disaster management in the municipality in question. The presence of a MDMF in a category C municipality becomes even more significant, as this policy document must regulate the interaction between the different local municipalities and the district municipality. The section mentioned above once again stresses the consultative process between district and local municipalities in the development of the framework.

The integrated approach to be followed in the development is also important as the MDMF will ensure a uniform approach between municipal organs of state as well. It should be mentioned that although the MDMF will be more operational in nature, it still remains a strategic policy document for the local government sphere. The framework will spell out clear objectives but will not link these to definite timelines and budgets, but will provide the impetus towards the development of such specific plans. These plans will address the realities at local municipal level and will be guided by the MDMF.

The consistence of the MDMF with the provincial and national frameworks is also important. The MDMF is the policy document for local government that will drive the activities of the municipal disaster management centre.

3.4.3.3 The Municipal Disaster Management Centre (MDMC)

The establishment of a municipal disaster management centre is compulsory (see Section 43 of the Disaster Management Act). Each metropolitan and district municipal council must establish such a centre (South Africa, 2004:18). A key responsibility of MDMCs is to provide support to the relevant PDMC and the NDMC. It must ensure that the local disaster management policy is implemented and that the objective and priorities of provincial and national disaster management are achieved.

A district MDMC must be established and operated in partnership with the local municipalities in its area of jurisdiction (see discussion later on). The MDMC holds responsibility to ensure that appropriate institutional capacity for disaster management is established for the implementation of the Disaster Management Act, and that these institutional arrangements are consistent with that on provincial and national level (South Africa, 2004:19). Each MDMC must develop progressive risk profiles that will inform the IDP and the development of the municipal disaster management plan. The main aim of any MDMC is to make sure that the focus is on risk and vulnerability reduction in communities most at risk. MDMCs are responsible for the compiling of disaster plans as per the Integrated Development Process, and should ensure effective and rapid response through response and recovery plans (South Africa, 2004:18). The NDMF stresses the importance of awareness creation by MDMC and the fostering of a culture of risk avoidance. This means, training, education, capacity-building and research should enjoy priority. The MDMCs must further provide the PDMCs and the NDMC with information in disaster management related issues as per their request. Each MDMC must function within the provisions of the NDMF and PDMF of that province.

3.4.3.4 *The Municipal Disaster Management Advisory Forum (MDMAF)*

The Disaster Management Act places no legal obligation on the local sphere of government for the establishment of an MDMAF. The NDMF, however, says that it is difficult to envisage how, in the absence of such a forum, disaster management could effectively be implemented (South Africa, 2004:26). It is therefore clear that, although the NDMF cannot enforce the establishment of an MDMAF, it strongly suggests this. Without an MDMAF, the principles of cooperative governance to which the Constitution and the Disaster Management Act refer will become very difficult to realise. In the absence of such a body as the MDMAF, the municipality is obliged to make use of an existing or similar body on which issues of disaster management can be discussed.

The composition of the MDMAF is indicated by Section 51 of the Disaster Management Act. The structure, composition and duties of the MDMAF are similar to that of a PDMAF and the NDMAF.

3.4.3.5 *The Municipal Interdepartmental Committee on Disaster Management (MIDMC)*

It has become practice in South Africa to also establish an MIDMC (ACDS, 2004a; ACDS, 2004b). The role of the MIDMC is similar to that of a PIDMC and the NIDMC. The merits for the establishment of such an institutional arrangement have already been done and will not enjoy further discussion.

It does remain important to discuss the interaction of the local and district disaster management structures.

3.4.3.6 *Local municipality disaster management vs. district municipality disaster management*

The previous sections emphasised that the Disaster Management Act gives the legal obligation for disaster management to the district municipality. This does not, however, mean that the local municipalities have no role to play. District municipalities act as intermediaries between provinces and local municipalities for effective resource distribution and service delivery. The district municipality should therefore be the focal point around which disaster management is organised. The Disaster Management Act does not preclude any local municipality from establishing its own disaster management structures. The only requirement placed on local municipalities is that all their actions (and that of the district) should be coordinated and should be done on a partnership basis. The Disaster Management Act further stipulates in Section 54 that upon agreement, a local municipality can accept responsibility for the coordination and management of local disasters up to the extent that it has capacity. This therefore assumes that a local municipality can development its own disaster management capacity. Considering the emphasis that the Disaster Management Act places on community risk reduction it is unthinkable that all the ideals of the Act will be achieved from a centralised district municipality. The decentralisation of disaster management functions to local municipalities is therefore imperative. One could further argue that some local municipalities (e.g. Buffalo City in the Eastern Cape Province as compared to the Amatole District in which it falls) possess more capacity to deal with disaster risk than the newly established district municipalities. A thorough assessment of the capacities in and between district and the local municipalities is imperative in order to determine how issues of disaster management can best be dealt with.

Where district and local municipalities have agreed on decentralised structures, similar institutional capacity is established as is the case for the district municipality. Various consultants, practitioners and academics have argued the merits of different models towards disaster management

implementation on the local sphere of government. Some (Reid, 2004) argue that a district should decentralise its disaster management officials to local municipalities. The district in this regard retains full responsibility of disaster management and also ensures funding to the local municipality through its decentralised structures. The author is of the opinion that decentralisation should occur through a partnership agreement between local and district municipalities, where the local municipality accepts responsibility for disaster management and also appoints a full-time official for disaster management. Such an official will have a staff function to the district municipality disaster management centre and a line function responsibility towards the municipal manager of the local municipality.

From the above arguments it is therefore clear that local municipalities have a direct role to play in ensuring disaster risk reduction in its area of responsibility.

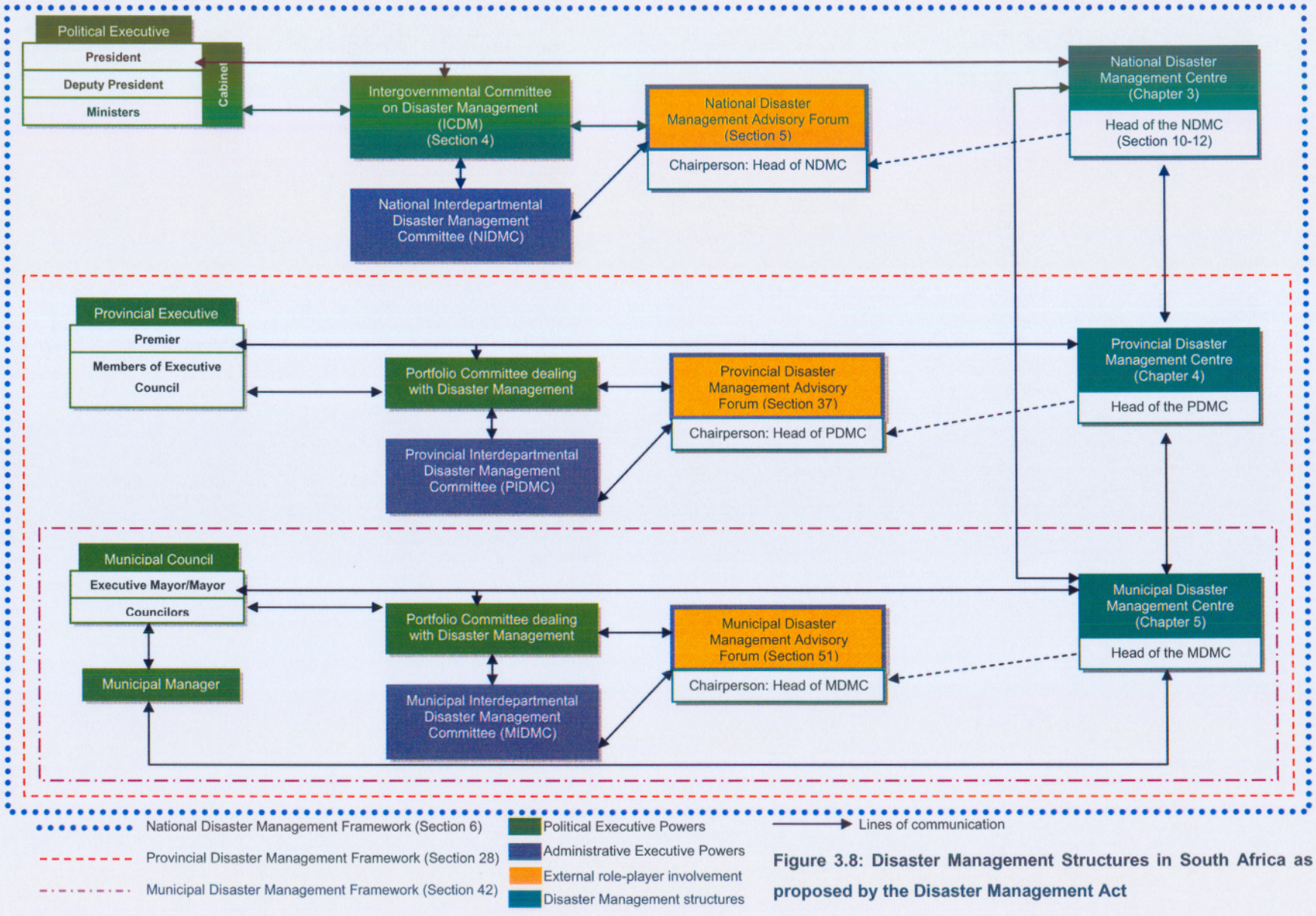

Figure 3.8: Disaster Management Structures in South Africa as proposed by the Disaster Management Act

3.5 CONCLUSION

This chapter aimed to explain the South African government structure. The form of government of South Africa was discussed as well as the different spheres and tiers of government. The different levels of decision-making and management also enjoyed attention. It was found that the strategic level of management is the most crucial for direction in the implementation of disaster risk reduction measures. The *trias politica* of South Africa was also discussed and the embodiment of disaster risk management within this structure at all levels was given. Subsequently this chapter focused on the development of disaster risk management in South Africa. A historical overview of the civil defence to disaster management process was given, and the new focus on multi-sectoral disaster risk management was emphasised. In conclusion the institutional arrangements of disaster management in the public sector were highlighted.

Chapters 2 and 3 aimed to provide the reader with a background study to the development of the concept disaster risk reduction in the international as well as national South African environment. It further provided the foundation to the comparative analysis of Chapter 4. It remains imperative to emphasise that the critical analysis to follow is aimed at the strategic level of decision-making as espoused in this chapter. The analysis of different international disaster risk reduction frameworks is crucial in determining acceptable benchmarks in disaster risk reduction. Through such an analysis communalities and differences can be identified and contribute to the development of a more inclusive framework.

CHAPTER 4:
INTERNATIONAL DISASTER RISK REDUCTION FRAMEWORKS: A COMPARATIVE ANALYSIS

4.1 INTRODUCTION

The heightened focus on issues of disaster risk reduction within the international area, and in Africa in particular, is signified by the expanded role of the ISDR and other UN agencies (see Chapter 2). The seminal publication by the ISDR ("Living with Risk" – ISDR, 2004b) laid the foundation towards international dialogue in instruments for measuring success in disaster risk reduction application. In various other parts of the globe, scientists, academics and practitioners alike identified the need for guiding frameworks in the implementation and success of disaster risk reduction. The following chapter aims to investigate four prominent frameworks which guide disaster risk reduction.

Chapter 2 and 3 provided the reader with an investigation of the development of the disaster risk reduction within the international as well as the South African arena. This provides the impetus towards the comparative analysis of different international strategies and frameworks for disaster risk reduction as per this chapter. The aim of this chapter is to study different frameworks critically which could either guide or influence South African disaster risk reduction. Each framework is assessed according to set criteria. The main aims and objectives of these frameworks are identified, and its target audience and applicability at different levels are highlighted. The format of each framework also enjoys attention and similarities and differences in these frameworks are considered. Furthermore, the generic elements of disaster risk reduction identified in Chapter 2 are used as a foundation for the comparative analysis. Each framework is coded and compared to the findings

of Chapter 2. Firstly, it is necessary to ascertain the importance of a comparative analysis of different frameworks.

4.2 THE NEED FOR AND METHOD OF COMPARATIVE ANALYSIS OF DIFFERENT FRAMEWORKS

The comparative analysis of different disaster risk reduction frameworks will allow the researcher to identify communalities as well as unique aspects underlying each framework. This discussion will also facilitate a better understanding of how disaster risk reduction is perceived and measured. All of the aspects identified in each strategy and framework will be scrutinised and compared. These similarities and differences will be used as the basis for discussion and comparison between the proposed South African National Disaster Management Framework (see Chapter 5) and international best practices, in order to develop a comprehensive multi-sectoral disaster risk reduction framework (See Chapter 7).

The following frameworks will be analysed:

A) The UN/ISDR and UNDP Disaster Risk Reduction Framework.
B) The Instituto de Estudios Ambientales (IDEA) / Inter-American Development Bank (IADB) Indicators for Disaster Risk Management.
C) Disaster Risk Reduction Mainstreaming Framework – research by Mitchell (2003) from the Benfield Hazard Research Centre, UK.
D) Social Internalisation of Risk Prevention and Management Index (SINT-RISK Index).

Each framework will be analysed according to certain criteria. This criteria aim to provide a uniform approach in order to ensure a foundation for comparison. The following criteria will be used to explain each framework:

i. Aims and objectives of the framework.
ii. The development of the framework.
iii. Target audiences and applicability.
iv. Format of the framework.
v. Literature review.

The components of each framework will be coded according to the internationally accepted elements which comprise disaster risk reduction (see Chapter 2), as well as the elements identified from research (see Chapter 6). Table 4.1 provides a list of all the elements which will be used in order to relay all framework components to standardised coding. The following coding will be used for the different elements identified from the initial analysis of the frameworks and relevant literature (see Chapter 2):

ELEMENT	CODE GIVEN
1. Policy	Z1
2. Legislation	Z2
3. Financial instruments	Z3
4. Resources	Z4
5. Institutional capacity	Z5
6. Risk reduction standards	Z6
7. Risk assessment	Z7
8. Political commitment	Z8
9. Early warning systems	Z9
10. Information management	Z10
11. Communication	Z11
12. Education and training	Z12
13. Public awareness	Z13
14. Research	Z14
15. Environmental management	Z15
16. Social development practices	Z16
17. Preparedness	Z17
18. Emergency management	Z18
19. Regional linkages	Z19
20. Natural resource management	Z20
21. Rehabilitation and reconstruction	Z21
22. Public participation	Z22
23. Livelihoods	Z23
24. Multi-sectoral role-player involvement	Z24

Table 4.1: Literature review (Chapter 2 and 3)

Each of the elements and their respective codes above will be relayed to the corresponding component(s) in each of the frameworks under analysis. This

will in turn ensure that a standardised format for comparison is reached. It should be noted that this analysis is based on the strategic management level of disaster risk management at all levels of Government (see Chapter 3).

In order to facilitate a better understanding of the aspects which comprise the frameworks, internationally acceptable terms will be used to refer to the components of each framework. They are:

i. *Themes*

   Themes refer to an implicit or recurrent idea or a topic of discourse or discussion (Dictionary.com, 2004). A theme in terms of this chapter is the clustering of different components evident from the literature review and research in order to provide a logical structure to the framework.

ii. *Variables*

   Variables refer to the intrinsic elements of which a theme comprises of. It is therefore the underlying aspects which support and contribute to a theme.

iii. *Indicators*

   Indicators (also called success factors for the purpose of this thesis – see Chapter 7 in this regard) are explicit measures used to determine performance of a particular variable. It is a measuring instrument (qualitative or quantitative in nature) of what actually happens against what has been planned in terms of quality.

4.3 ANALYSIS OF DIFFERENT INTERNATIONAL FRAMEWORKS

In the following section the researcher will discuss the most significant international frameworks for disaster risk reduction as listed above. The specific aim and objectives of the framework in question will be discussed. A critical analysis of the different themes, variables, indicators and criteria will be given. The level of application of each of the variables identified will be highlighted.

4.3.1 The UN/ISDR and UNDP Disaster Risk Reduction Framework

One of the most important and widely consulted frameworks to emanate from international thinking since 2000 is the UN/ISDR Disaster Risk Reduction Framework (from now on referred to as the ISDR framework and coded "A") (ISDR, 2003). The basic goal of this framework is to encourage and increase effective disaster risk reduction practices on a global scale. This development of the framework is in line with the findings of the review of the IDNDR as well as the ISDR Framework for Action (ISDR, 2001).

4.3.1.1 Aims and objectives of the framework

The framework firstly, aims to serve as a review mechanism for disaster risk reduction since the inception of the Yokohama Strategy in 1994 (for the period 1994-2004), secondly, to shape priority areas for the next decade (2005-2015), and thirdly to provide impetus towards the programme of action of the second world conference on disaster risk reduction held in Kobe, Japan in January 2005 (Schlosser & Aysan, 2003).

The framework is expected to:

i. provide a basis for political advocacy as well as practical action and implementation;
ii. reflect the multidimensional, inter-disciplinary nature of disaster risk reduction;
iii. relate to a variety of users;
iv. assist users in determining roles, responsibilities and accountabilities for their own contexts;
v. assist users in highlighting areas where capacities are to be developed;
vi. to adapt to different hazard situations, and not be hazard specific;
vii. provide the basis for setting targets and benchmarks, adapt to different circumstances and contexts, against which progress can be measured and gaps identified (Schlosser & Aysan, 2003; ISDR, 2004b:392).

The framework can also provide impetus towards the better understanding and application of disaster risk reduction in a more effective and coherent manner (ISDR, 2004a:392). The final framework (to be completed after January 2005) could also enhance the activities of the ISDR on a global scale and contribute towards the better understanding and attainment of the objectives of the Johannesburg Plan of Action and the Millennium Development Goals.

4.3.1.2 The development of the framework

The *Draft Framework to Guide and Monitor Disaster Risk Reduction* was jointly developed by the UNDP and the ISDR (ISDR/UNDP, 2003). The suggestion of the framework stemmed from the idea that a common "convention" to define disaster risk reduction would hold certain benefits such as an increase in commitment as well as guide coordinated action for disaster risk reduction. This global "convention" could then be applied to different regions and adapted for country specific requirements.

The ISDR and UNDP jointly hosted an international online conference from 25 August–30 September 2003 to discuss the draft framework (see http://www.unisdr.org/dialogue). This online conference was one of many consultative meetings planned. The purpose of the online conference was to provide a forum for international stakeholders to exchange views and identify the course of action needed to develop the draft framework into a workable document for understanding, guiding and monitoring disaster risk reduction at all levels (Schlosser & Aysan, 2003). The objectives of the online conference were to:

i. discuss how to achieve ownership and wider participation, determine the possible audience (users and contributors), raise potential technical and political challenges;
ii. obtain feedback on the content of the draft framework;
iii. obtain feedback on the use of the draft framework for monitoring and measuring progress or achievements in disaster risk reduction, including benchmarks and indicators; and
iv. reflect on next possible steps to develop the framework further.

An amended edition of the draft framework was published as part of the final version of the ISDR's global review of disaster risk reduction initiatives: Living with Risk (ISDR, 2004a). The current framework as it stands seems to still be in draft format awaiting further consultation following the Kobe conference in January 2005.

4.3.1.3 Target audience and applicability

The initial draft framework indicated that the first target audience was the UN and the international community. It was felt that by increasing its own performance in disaster risk reduction within wider development issues, will better serve other actors along the chain (ISDR/UNDP, 2003). Schlosser and Aysan (2003) indicate that after the online consultative conference, the target audience identified for the utilisation of the framework changed to include

actors from a variety of different environments and levels of application. Comments by participants during the online conference indicated that the framework is useful on all levels (e.g. international, regional, national and local) and, through refinement, could be applied to any given environment and country (Mitchell, 2003:6).

The applicability of the framework seems to be more suited for regional (e.g. SADC and/or AU) and national application. Although participants of the online conference indicated that the final framework should be flexible enough for application on all levels and circumstances, this has not yet been proven by this particular framework.

4.3.1.4 Format of the framework

The ISDR Framework uses both qualitative and quantitative indicators. The framework consists of five thematic areas (themes) namely:

i. Political commitment and institutional development (Governance) (A1).
ii. Risk identification and assessment (A2).
iii. Knowledge management (A3).
iv. Risk management applications and instruments (A4).
v. Disaster preparedness, contingency planning and emergency management (A5).

Each of the above thematic areas (themes) consists of a number of components (variables) measured by certain characteristics (indicators) and very tentative criteria for benchmarks[5]. Table 4.2 provides an overview of the framework. The coding for each of the elements of the framework is also provided in the table.

[5] For a full tabular description of the ISDR Framework refer to Annexure 1 of Chapter 4.

THEMES	VARIABLES	INDICATORS
A1. Political commitment and institutional development (Governance)	A1.1 Policy and planning	A1.1.1 Risk reduction as a policy priority A1.1.2 Promotion of risk reduction in post-disaster reconstruction A1.1.3 Integration of risk reduction in development planning and sectoral policies (poverty eradication, social protection, sustainable development, climate change adaptation, desertification, energy, natural resource management, health, education, etc)
	A1.2 Legal and regulatory framework	A1.2.1 Laws, acts and regulations A1.2.2 Codes, standards A1.2.3 Compliance and enforcement A1.2.4 Responsibility and accountability
	A1.3 Resources	A1.3.1 Resource mobilisation and allocation: financial (innovative and alternative funding, taxes, incentives), human, technical, material, Sectoral.
	A1.4 Organisational structures	A1.4.1 Implementing and coordinating bodies A1.4.2 Intra- and Inter-ministerial, multidisciplinary & multisectoral mechanisms A1.4.3 Local institutions for decentralised application A1.4.4 Civil society, NGOs, private sector and community participation
A2. Risk identification and assessment	A2.1 Risk assessment and data quality	A2.1.1 Hazard analysis: characteristics, impacts, historical and spatial distribution, multi-hazard assessments, hazard monitoring including of emerging hazards A2.1.2 Vulnerability and

THEMES	VARIABLES	INDICATORS
		capacity assessment: social, economic, physical and environmental, political, cultural factors A2.1.3 Risk monitoring capabilities, risk maps, risk scenarios
	A2.2 Early warning systems	A2.2.1 Monitoring and forecasting A2.2.2 Risk scenarios A2.2.3 Warning and dissemination A2.2.4 Response to warning
A3. Knowledge management	A3.1 Information management and communication	A3.1.1 Information and dissemination programmes and channels A3.1.2 Public and private information systems (including disaster, hazard and risk databases & websites) A3.1.3 Networks for disaster risk management (scientific, technical and applied information, traditional knowledge)
	A3.2 Education and training	A3.2.1 Inclusion of disaster reduction from basic to higher education (curricula, material development and institutions) A3.2.2 Vocational training A3.2.3 Dissemination and use of traditional/local knowledge A3.2.4 Community training programmes
	A3.3 Public awareness	A3.3.1 Public awareness policy and programmes and materials A3.3.2 Media involvement in communicating risk and awareness raising
	A3.4 Research	A3.4.1 Research programmes and institutions for risk

THEMES	VARIABLES	INDICATORS
		reduction A3.4.2 Evaluations and feedback A3.4.3 National, regional and international cooperation in research, science and technology development
A4. Risk management applications and instruments	A4.1 Environmental and natural resource management	A4.1.1 Interface between environmental management and risk reduction practices, in particular in coastal zones, wetland and watershed management, integrated water resource management; reforestation, agricultural practices, ecosystem conservation
	A4.2 Social and economic development practices	A4.2.1 Social protection and safety nets A4.2.2 Financial instruments (involvement of financial sector in disaster reduction: insurance/reinsurance, risk spreading instruments for public infrastructure and private assets such as calamity funds and catastrophe bonds, micro-credit and finance, revolving community funds, social funds) A4.2.3 Sustainable livelihoods strategies
	A4.3 Technical measures	A4.3.1 Land use applications, urban and regional development schemes A4.3.2 Structural interventions (hazard resistant construction and infrastructure, retrofitting of existing structures, drought, flood and landslide control techniques) A4.3.3 Soil conservation and hazard resistant agriculture practices
A5. Disaster preparedness, contingency planning and	A5.1 Preparedness and contingency planning	A5.1.1Contingency plans (logistics, infrastructure)

THEMES	VARIABLES	INDICATORS
emergency management		A5.1.2 National and local preparedness plans A5.1.3 Effective communication and coordination system A5.1.4 Rehearsal and practice of plans
	A5.2 Emergency management	A5.2.1 Civil protection and defence organisations and volunteer networks

Table 4.6: Coding for the ISDR/UNDP draft framework to guide and monitor disaster risk reduction

(ISDR/UNDP, 2003; ISDR, 2004b:393-395)

4.3.1.5 Literature review

In analysing the ISDR Framework in relation to the elements identified in Chapter 2 (also see section 2 above), a comparison can be made and is explained in Table 4.3. In all cases the appropriate coding will be used.

LITERATURE ELEMENT	CORRESPONDING ISDR FRAMEWORK ELEMENT(S)
Z1	A1.1 A1.1.1
Z2	A1.2 A1.2.1 A1.2.2 A1.2.3
Z3	A1.3.1 A4.2 A4.2.2
Z4	A1.3 A1.3.1
Z5	A1.4 A1.4.1 A1.4.2 A1.4.3
Z6	A1.2.1 A1.2.2
Z7	A2.1 A2.1.1 A2.1.2 A2.1.3 A2.2.2 A2.2.3
Z8	A1.1.1 A1.1.3
Z9	A2.2

	A2.2.1 A2.2.2 A2.2.3
Z10	A3.1 A3.1.1 A3.1.2 A3.1.3
Z11	A2.2.3 A3.1 A3.3.2 A5.1.3
Z12	A3.2 A3.2.1 A3.2.2 A3.2.3 A3.2.4
Z13	A2.2.3 A2.2.4 A3.3 A3.3.1 A3.3.2
Z14	A3.4 A3.4.1 A3.4.2 A3.4.3
Z15	A4.1 A4.1.1
Z16	A1.1.3 A3.1.3 A3.2.3 A4.1.1 A4.2 A4.2.1
Z17	A5.1 A5.1.1 A5.1.2 A5.1.4
Z18	A5.2 A5.2.1
Z19	A3.1.3 A3.4.3
Z20	A4.1 A4.1.1
Z21	A1.1.2
Z22	A1.2.4 A1.4.4 A3.1.3
Z23	A3.2.4 A4.1.1 A4.2.3
Z24	A4.3 A4.3.1 A4.3.2 A4.3.3

Table 4.7: The ISDR Framework: a comparative analysis of literature review and framework analysis

4.3.2 The *Instituto de Estudios Ambientales* (IDEA)/Inter-American Development Bank (IADB) Indicators for Disaster Risk Management Model/Indices

The *Instituto de Estudios Ambientales* (IDEA) funded by the Inter-American Development Bank (IADB) convened a number of expert meetings ending in August 2003 as part of their *Information and Indicators Program for Disaster Risk Management* (referred to the IADB/IDEA Indicators Program). One of the main aims of the IADB/IDEA Indicators Program is to develop a model for assessing and comparing disaster risk at a national level between different countries of Latin America (the coding "B" will be used to refer to this framework).

4.3.2.1 Aims and objectives of the model/indices

The aim of the IADB/IDEA Indicators Program is to construct an indicators model and indices that describe comparative levels of disaster risk in different Latin American countries (Cordona, 2003:3; Mitchell, 2003:2). Such a model will allow for the identification of the major factors which contributes to disaster risk in each country. The objectives of this IADB/IDEA Indicators Program are to provide a robust methodology (see Cardona, 2004) to different governments that can serve as a comparative assessment tool in order to track and compare the progress made in terms of disaster risk reduction in each of the countries. The reasoning behind the development of this model is the fact that the overemphasis that emergency preparedness still enjoys within certain countries has not reaped the rewards of reducing disaster impacts. Statistics show that disasters on certain continents are in actual fact on the rise (UNDP, 2004). The argument towards such an indicator programme is clear, governmental focus on reducing disaster risk will encourage different role-players to adopt a proactive role (Cardona, 2003:2), and to set priorities for the allocation of development assistance (Cardona & Maskrey, 2000).

4.3.2.2 The development of the model/indices

The model and indices were developed as part of the IADB/IDEA Indicators Program. A number of expert meetings and local consultations were held during the course of 2003 (Cordona, 2004:2). A first expert meeting was convened by the IDEA in order to discuss conceptual and operation aspects relating to the development of a system or comparative framework and indicators for disaster risk for countries in Latin America. A document spelling out the objectives of the IADB/IDEA Indicators Program was used as a base for discussion. In addition, seven documents were prepared by expert consultants dealing with diverse issues relating to the conceptual and indicator issue which the Program aims to address (Lavell, 2003:1). From the discussion papers and expert meeting some thematic topics relating to the indicators were developed. The meeting identified some key issues which the project team needed to address in the development of this model and indices (Lavell, 2003:6). Subsequently a conceptual framework was developed that served as a guide to the development of the different indices and their indicators (Cardona, 2004:4-5).

The method proposed by the IADB/IDEA Indicators Program attempts to benchmark risk using relative indicators in order to facilitate access to relevant information by national level decision-makers. This will facilitate the identification and proposal of effective disaster risk management policies and actions (Cardona, 2004:3). Cardona (2004:2) emphasises that the IADB/IDEA Indicators Program views disaster as socio-environmental in nature and therefore takes into account aspects relating to hazards from a natural/physical sciences, as well as a social science perspective. Cardona (2004:2) is of the opinion that the social construction of risk results in the materialisation of disasters (see Chapter 2). It is from the above perspective that the indices/indicator system was developed. The proposed indices/indicator system allows for the identification of essential economic and

social characteristics and a comparison of these aspects and the risk context in different countries.

4.3.2.3 Target audience and applicability

From literature it seems that this particular model is aimed at Latin American countries with applicability on a national scale. This does not, however, exclude the model from being adapted and used in other parts of the world. The nature of the model (as will be seen in the following section) necessitates the use of data and information that will not provide adequate indication of risk at a local level (Cardona, 2004:3). It seems that the model will not find applicability to risk measurement at local level, but would rather serve as a tool to inform programmes and projects on local level, and to identify acceptable risk and reduce overall disaster risk at a national level. Cordona (2003:3) indicates that the calculation of acceptable risk can be useful for decisions in terms of planning which obviously relates to a local level perspective.

4.3.2.4 Format of the model/indices

Based on the conceptual framework mentioned previously, a risk management system is proposed which represents the management and vulnerability situation of each country (Cardona, 2004:4). Four different "components" or indices have been development which attempt to reflect the principal elements which reflect vulnerability and advance risk reduction in the different countries. These four different indices will be discussed briefly as explained by Cardona (2004:5).

4.3.2.4.1 Disaster Deficit Index (DDI)

This index uses a macro-economic and financial perspective to measure the risk a country faces in possible catastrophic events. This requires an estimation of the impacts during a given exposure time and the capacity of a country to face this situation financially.

4.3.2.4.2 Local Disaster Index (LDI)

The Local Disaster Index aims to identify social and environmental risks which are sometimes more chronic at the sub-national and local levels. These risks particularly affect the more socially and economically fragile populations and cause high damaging impacts on the development of the country in question.

4.3.2.4.3 Prevalent Vulnerability Index (PVI)

The third index is made up of a variety of different indicators which characterises prevailing vulnerability conditions. This is reflected in exposure in disaster prone areas, socio-economic fragility, and lack of social resilience in general.

4.3.2.4.4 Risk Management Index (RMI)

The Risk Management Index brings together a group of indicators relating to risk management capacity in a country. These reflect the organisation, development and institutional actions taken to reduce losses and vulnerability, to prepare for crisis and to recover effectively.

Due to the fact that this study is concerned with a framework for disaster risk reduction, only the last index (RMI)[6] will be used for comparative purposes. Although the researcher agrees that it is necessary to use all four indices in order to implement the full model effectively, an in depth discussion on the remaining three indices will not add significant value to this comparative analysis which predominantly focuses on risk reduction frameworks.

4.3.2.5 Discussion of the indicators of the RMI

Cardona (2004:29) indicates that a qualitative analysis is necessary in order to measure success in risk reduction (through certain variables). This could be achieved through the use of a scale e.g. 1 to 5 or through linguistic qualifications. The RMI aims to use both of the above analyses. The RMI is divided into four different categories, which Cardona refers to as public policies:

i. Risk identification (RI).
ii. Risk reduction (RR).
iii. Disaster management (DM).
iv. Financial protection and governance (FP).

Each of the above "public policies" has six indicators for its measurement. The indicators are valued according to a linguistic qualifier scale namely: low, incipient, appreciable, notable, optimum. These qualifiers are linked to a five point weighting scale from 1-5 according to the above. The linking of the qualifiers to a numeric scale allows for its quantification and comparability. A RMI for a specific country is obtained through summing the four categories indicated above e.g.

$$RMI = RMI_{RI} + RMI_{RR} + RMI_{DM} + RMI_{FP}$$

[6] All indices and indicators with their respective performance levels are summarised in Annexure 2 of Chapter 4.

CATEGORY	INDICATOR
B1. Risk identification	B1.1 Systematic disaster and loss inventory B1.2 Hazard monitoring and forecasting B1.3 Hazard evaluation and mapping B1.4 Vulnerability and risk assessment B1.5 Public information and community participation B1.6 Training and education in risk management
B2. Risk reduction	B2.1 Risk consideration in land use and urban planning B2.2 Hydrographic basin intervention and environmental protection B2.3 Implementation of hazard-event control and protection techniques B2.4 Housing improvement and human settlement relocation from prone areas B2.5 Updating and enforcing of safety standards and construction codes B2.6 Reinforcement and retrofitting of public and private assets
B3. Disaster management	B3.1 Organisation and coordinating of emergency operation B3.2 Emergency response planning and implementation of warning systems B3.3 Endowment of equipment, tools and infrastructure B3.4 Simulation, updating and test of inter institutional response B3.5 Community preparedness and training B3.6 Rehabilitation and reconstruction planning
B4. Financial protection and governance	B4.1 Inter-institutional, multisectoral and decentralising organisation B4.2 Reserve funding for institutional strengthening B4.3 Budget allocation and mobilisation B4.4 Implementation of social safety nets and funds response B4.5 Insurance cover and loss transfer strategies of public assets B4.6 Housing and private sector insurance and reinsurance coverage

Table 4.8: Coding for the Risk Management Index

(Adapted from Cardona, 2004:30-36)

4.3.2.6 Literature review

The following literature comparison with the Risk Management Index can be made:

LITERATURE ELEMENT	CORRESPONDING RISK MANAGEMENT INDEX ELEMENT(S)
Z1	B4
Z2	B2.5 B4
Z3	B4 B4.2 B4.3 B4.4 B4.5 B4.6
Z4	B1.1 B3.3
Z5	B3.1 B4.2
Z6	B2.3
Z7	B1 B1.2 B1.3 B1.4
Z8	
Z9	B3.2
Z10	B1.5
Z11	B1.5
Z12	B1.6 B3.5
Z13	B1.5 B3.5
Z14	
Z15	B2.1 B2.2
Z16	B4.4
Z17	B2.6
Z18	B3 B3.2 B3.4
Z19	
Z20	
Z21	B3.6
Z22	B1.5
Z23	
Z24	B2.1 B2.2 B2.4 B4.1

Table 4.9: The IADB/IDEA Indicators Program – Risk Management Index: a comparative analysis of literature review and framework analysis

4.3.3 Disaster Risk Reduction Mainstreaming Framework

The Disaster Risk Reduction Mainstreaming Framework (using coding "C") was development as part of the PhD research of Thomas Mitchell in the Department of Geography at the University College London. This framework is quite extensive and displays similarities with the ISDR framework.

4.3.3.1 Aims of the framework

The main aim of the DRR Mainstreaming Framework is to mainstream disaster risk reduction measures into development policy. The methods prescribed in order to obtain this aim are not clearly specified and Mitchell (2003:9) states that this framework needs to be discussed and adapted for certain national and local requirements. By using this framework, different actors can gain a better understanding of what is required to mainstream disaster risk reduction and thus development implementation plans and targets accordingly.

4.3.3.2 The development of the framework

Mitchell (2003:2) indicates that the *Disaster Risk Reduction Mainstreaming Framework* was developed when a large number of international organisations had become concerned with disaster risk reduction frameworks at the same time. In his work he points to the ISDR framework and the IADB/IDEA Indicators Program referred to above. Mitchell claims that his framework was formulated prior to the ISDR/UNDP online conference. The development of the Disaster Risk Reduction Mainstreaming Framework was informed by experiences gained from a period of fieldwork in the Eastern Caribbean from April to July 2003, as well as from current academic and policy work (Mitchell, 2003:1-2). His broader PhD studies focused on methods

by which disaster risk reduction can be encouraged in the Small Island States of the Eastern Caribbean.

4.3.3.3 Target audience and applicability

Although Mitchell says that his framework is applicable on all levels, on perusal of the different indicators it becomes clear that most of the indicators point towards intervention on a national scale e.g. political commitment, regional linkages, national disaster management committee, and policy statements, to name but a few.

4.3.3.4 Format of the model/index

The framework consists of four groupings of different indicators. These groupings are:

i. Politics and legislation.
ii. Policy.
iii. Knowledge.
iv. Practice.

Each of these four groupings has a number of indicators (and in some cases sub-indicators) which makes up the particular grouping. The indicators (20 in total) are sub-divided into a "super goal", "criteria" and "evidence for discussion". The indicators are accompanied by one specific question per indicator aimed at providing direction towards the attainment of the "super goal". In some instances sub-indicators have been included which could serve as surrogate if the primary answers are unobtainable. Certain criteria to each super goal are provided in a linear grading scale. Three grades (A, B and C) for each indicator are given which is meant to provide the user with a broad indication as to the attainment of the indicator question. Mitchell (2003:8) says that the super goal is a characterisation of best practices and has not been

included in the grading due to the fact that, as he argues: "*best practice can often be unobtainable*". The researcher does not fully agree with the statement of Mitchell for reasons that will become clear during the discussion of best practices later on in this chapter.

Table 4.6 summarises only the indicators (and sub-indicators) as well as the super goals of this framework[7].

CATEGORY	INDICATOR
C1. Politics and legislation	C1.1 Political commitment
	C1.2 Regional linkages
	C1.3 Legislation
	C1.4 Emergency powers
	C1.5 National Disaster Mitigation Committee (or equivalent)
C2. Policy	C2.1 Policy Statements
	C2.2 Participation
	C2.3 Development Plans
	C2.4 National Disaster Administration
	C2.5 National Disaster Planning
C3. Knowledge	C3.1 Risk and Vulnerability
	C3.2 Education
	C3.3 Media
	C3.4 Community Networks
	C3.5 Research
	C3.6 Skills, Capacity and Motivation
C4. Practice	C4.1 Reconstruction/Building Codes
	C4.2 Local Community
	C4.3 Insurance and Finance
	C4.4 Poverty Reduction

Table 4.10: Coding of the Disaster Risk Reduction Mainstreaming Framework
(Mitchell, 2003:11-26)

4.3.3.6 Implementation of the framework

According to Mitchell (2004) the framework has so far enjoyed limited attention in the international arena, with most of the interested parties (e.g. Department for International Development (DFID) of the United Kingdom, and the Federal Emergency Management Agency of the United States of America)

[7] Refer to Annexure 3 of Chapter 4 for a full description of the framework in tabular format.

using the DRR Mainstreaming Framework for analytical and training purposes.

4.3.3.7 Literature review

The comparative analysis for this framework is thus as follows:

LITERATURE ELEMENT	CORRESPONDING DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK ELEMENT(S)
Z1	C2 C2.1
Z2	C1 C1.3 C1.4
Z3	C4.3
Z4	
Z5	C1.5 C2.4
Z6	C2.5 C4.1
Z7	C3.1
Z8	C1.1
Z9	C2.5
Z10	C3
Z11	C3 C3.3
Z12	C3 C3.2 C3.6
Z13	C3
Z14	C3 C3.5
Z15	C1.4
Z16	C2.3 C4.4
Z17	C1.4
Z18	C1.4
Z19	C1.2
Z20	
Z21	C4.1
Z22	C2.2 C3.4 C3.6 C4.2
Z23	C4.2 C4.4
Z24	

Table 4.11: The Disaster Risk Reduction Mainstreaming Framework: a comparative analysis of literature review and framework analysis

4.3.4 Social Internalisation of Risk Prevention and Management Index (SINT-RISK Index)

In order to characterise countries and assess their progress in disaster reduction, a compound "footprint index" is proposed by Regional Andean Programme for Risk Reduction and Disaster Prevention (PREANDINO) and the Andean Development Corporation (CAF), called the Social Internalisation of Risk Prevention and Management Index (SINT-RISK Index – coded "D") (Corrales, 2003). This footprint index consists of the measurement and graphical representation of a set of key indicators, supported by different variables. These indicators use the Social Internalisation of Risk Prevention and Management as its basis of understanding disaster risk. It allows the simultaneous measurement of a variety of different variables by making use of qualitative information as well as quantitative scales. The information required for the index is said to be collected easily (Corrales, 2003).

4.3.4.1 Aims and objectives of the index

The aim of the SINT-RISK Index is to measure the relative fulfilment of risk reduction activities in any given country based on six indicators. The model aims to also define the relationship that exists between the various levels of progress of the indicators.

4.3.4.2 The development of the model/index

The choice and combination of indicators for this index was a complex matter (Corrales, 2003). The various processes that condition or determine the progress to be assessed, as well as the lack of quantitative information on the subject, particularly in developing countries contributed to its complexity.

4.3.4.3 Target audience and applicability

The SINT-RISK Index methodology is currently being applied on a preliminary basis in the Andean Region, and it is expected that its application may be extended as a result of further development and validation in different countries (Corrales, 2003). The Index is aimed at all levels of government but is dependent on the values and weight assigned to the variables of each indicator.

4.3.4.4 Format of the model/index

The SINT-RISK Index consists of six indicators namely:

i. Institutional framework.
ii. Impact on the planning process.
iii. Impact on the creation of a culture of prevention at the level of the entire society.
iv. Impact of the participation by the national community in prevention efforts.
v. Knowledge production for risk reduction and management.
vi. Knowledge application (Corrales, 2003).

Each of these indicators consists of a number of variables which in turn are supported by criteria for their measurement. Five stages of progression are linked to each criterion as a performance measurement, which in turn is linked to a 0-4 value[8]. Table 4.8 represents the indicators, variables and criteria of the SINT-RISK Index.

INDICATOR	VARIABLE
D1. Institutional framework	D1.1 Political will (Incorporation of disaster prevention in the political values system)
	D1.2 Impact on institutional development (for risk management)

[8] See Annexure 4 of Chapter 4 for a full explanation of the SINT-RISK Index.

INDICATOR	VARIABLE
D2. Impact on the planning process	D2.1 Prevention plans
	D2.2 Incorporation of prevention measures in development plans and control mechanisms
	D2.3 Support systems for decision-making
D3. Impact on the creation of a culture of prevention at the level of the entire society	D3.1 Education and capacity building
	D3.2 Information and communications
D4. Impact of the participation by the national community in prevention efforts	D4.1 Private sector participation
	D4.2 Community participation
D5. Knowledge production for risk reduction and management	D5.1 Production of knowledge
	D5.2 Support infrastructure
	D5.3 Institutional development of the knowledge sector
D6. Knowledge application	D6.1 Best practices

Table 4.12: Coding of the SINT-RISK Index

(Corrales, 2003)

The SINT-RISK Index further makes use of a graphical representation of the index through a "footprint" indicating the progress in the application of the different risk reduction indicators. Figure 4.1 is an example of the footprint index. The value of each criterion (0-4) is represented on the corresponding radius of the circumference (0 corresponding with the centre and 4 to the outer circle.

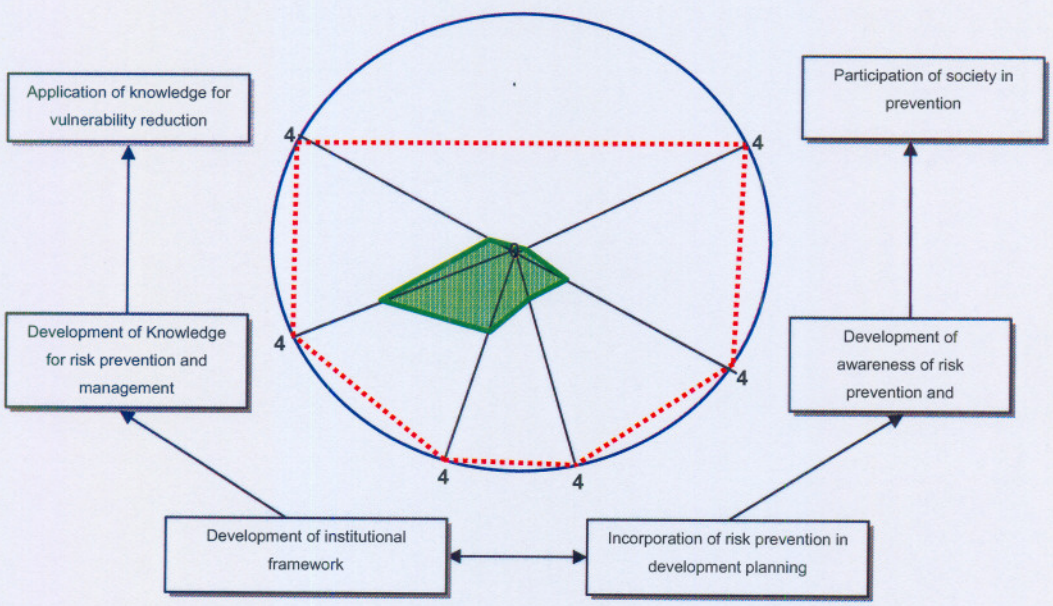

Figure 4.7: Idealised model of the SINT-RISK Index

(Corrales, 2003)

Figure 4.1 above represents two processes relating to institutional strength for disaster reduction, namely how weak or strong the existing institutional framework is in terms of its capacities to *"promote the country's awareness of the need for disaster reduction and to systematically document, modify and replicate valuable experiences in risk reduction"* (Corrales, 2003). Progress of particular criteria is indicated as a shaded area related to the maximum of the scale (a value of 4). The shaded area can thus be compared to the ideal situation (represented by the red dotted line in Figure 4.1)

4.3.4.5 Literature review

The following comparative analysis can be made between the SINT-RISK Index and the literature study:

LITERATURE ELEMENT	CORRESPONDING RISK MANAGEMENT INDEX ELEMENT(S)
Z1	D1.1
Z2	D1.1
Z3	
Z4	
Z5	D1 D1.2 D2.3 D5.3
Z6	D2.1 D2.2 D6.1
Z7	
Z8	D1.1
Z9	
Z10	D3.2
Z11	D3.2 D5 D5.1
Z12	D3.1 D5 D5.1 D5.3
Z13	D3.1 D5 D5.1
Z14	D5 D5.1 D5.3
Z15	
Z16	D2.2

LITERATURE ELEMENT	CORRESPONDING RISK MANAGEMENT INDEX ELEMENT(S)
Z17	
Z18	
Z19	
Z20	
Z21	
Z22	D4.2
Z23	D5.2
Z24	D4.1

Table 4.13: The SINT-RISK Index: a comparative analysis of literature review and framework analysis

It remains to draw a comparison between the four frameworks discussed in this chapter. The following section will provide a comparative table in order to indicate similarities and differences in the four frameworks.

4.4 COMPARISON OF THE INTERNATIONAL FRAMEWORKS

The preceding section provided an analysis of each of the frameworks according to uniform criteria. Table 4.10 contains a comparison between the different frameworks at they relate to the identified element from the literature study. Grey shaded areas indicate that the element identified from literature does not enjoy attention in the particular framework.

LITERATURE ELEMENT	ISDR FRAMEWORK ELEMENT(S)	RISK MANAGEMENT INDEX ELEMENT(S)	DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK ELEMENT(S)	SINT-RISK INDEX ELEMENT(S)
Z1	A1.1 A1.1.1	B4	C2 C2.1	D1.1
Z2	A1.2 A1.2.1 A1.2.2 A1.2.3	B2.5 B4	C1 C1.3 C1.4	D1.1
Z3	A1.3.1 A4.2 A4.2.2	B4 B4.2 B4.3 B4.4 B4.5 B4.6	C4.3	
Z4	A1.3 A1.3.1	B1.1 B3.3		
Z5	A1.4 A1.4.1 A1.4.2	B3.1 B4.2	C1.5 C2.4	D1 D1.2 D2.3

LITERATURE ELEMENT	ISDR FRAMEWORK ELEMENT(S)	RISK MANAGEMENT INDEX ELEMENT(S)	DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK ELEMENT(S)	SINT-RISK INDEX ELEMENT(S)
	A1.4.3			D5.3
Z6	A1.2.1 A1.2.2	B2.3	C2.6	D2.1 D2.2 D6.1
Z7	A2.1 A2.1.1 A2.1.2 A2.1.3 A2.2.2 A2.2.3	B1 B1.2 B1.3 B1.4	C3.1	
Z8	A1.1.1 A1.1.3		C1.1	D1.1
Z9	A2.2 A2.2.1 A2.2.2	B3.2	C2.5	
Z10	A3.1 A3.1.1 A3.1.2 A3.1.3	B1.5	C3	D3.2
Z11	A2.2.3 A3.1 A3.3.2 A5.1.3	B1.5	C3 C11	D3.2 D5 D5.1
Z12	A3.2 A3.2.1 A3.2.2 A3.2.3 A3.2.4	B1.6 B3.5	C3 C3.2 C3.6	D3.1 D5 D5.1 D5.3
Z13	A2.2.3 A2.2.4 A3.3 A3.3.1 A3.3.2	B1.5 B3.5	C3	D3.1 D5 D5.1
Z14	A3.4 A3.4.1 A3.4.2 A3.4.3		C3 C3.5	D5 D5.1 D5.3
Z15	A4.1 A4.1.1	B2.1 B2.2	C1.4	
Z16	A1.1.3 A3.1.3 A3.2.3 A4.1.1 A4.2 A4.2.1	B4.4	C2.3	D2.2
Z17	A5.1 A5.1.1 A5.1.2 A5.1.4	B2.6	C1.4	
Z18	A5.2 A5.2.1	B3 B3.2 B3.4	C1.4	
Z19	A3.1.3 A3.4.3		C1.2	
Z20	A4.1			

LITERATURE ELEMENT	ISDR FRAMEWORK ELEMENT(S)	RISK MANAGEMENT INDEX ELEMENT(S)	DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK ELEMENT(S)	SINT-RISK INDEX ELEMENT(S)
	A4.1.1			
Z21	A1.1.2	B3.6	C4.1	
Z22	A1.2.4 A1.4.4 A3.1.3	B1.5	C2.2 C3.4 C3.6 C4.1 C4.2	D4.2
Z23	A3.2.4 A4.1.1 A4.2.3		C4.2 C4.4	D5.2
Z24	A4.3 A4.3.1 A4.3.2 A4.3.3	B2.1 B2.2 B2.4 B4.1		D4.1

Table 4.14: Comparison of international frameworks

The comparative analysis conducted in this chapter forms the foundation to the focus group interviews which will be discussed in Chapter 6. The comparison above clearly indicates the similarities and differences between the different frameworks. It is therefore important to note that relative importance is placed on different elements according to the level of application of the framework as well as the area in which it is applied.

4.4 CONCLUSION

Chapter 4 provided a comparative analysis between four prominent international frameworks for disaster risk reduction. In all instances of the analysis, uniform criteria were used. Firstly, the aims and objectives of the framework were stated. Secondly, the development process of the frameworks was discussed. The target audience and applicability were highlighted, and fourthly the format of the framework enjoyed attention. Lastly, each framework was compared to the elements identified from the literature study of Chapter 2. Each framework was coded and the coding was used for comparative purposes. In doing so it was ensured that all elements can be related to a common variable (i.e. the elements identified from literature). The chapter further showed the differences and similarities of these frameworks.

In order to develop a comprehensive framework for disaster risk reduction for the South African environment it is important to first consider the existing guidelines and policy frameworks prevalent in South Africa. In Chapter 3 the application of disaster risk management in South Africa has already been investigated in-depth. The following chapter will focus on the newly (as in April 2005) developed South African Disaster Management Framework in terms of its applicability within the context identified in this chapter. Subsequently the South African Disaster Management Framework will be compared to the frameworks above in order to show the deficiencies in the framework.

CHAPTER 5:
THE SOUTH AFRICAN NATIONAL DISASTER MANAGEMENT FRAMEWORK

5.1 INTRODUCTION

The aim of this chapter is to provide an analysis of the South African National Disaster Management Framework (NDMF). The national disaster management framework comprises of four key performance areas (KPAs) and three supportive enablers (South Africa, 2005:2). These KPAs and enablers are work in unison, where the enablers are necessary for each KPA to be implemented successfully. This framework (as briefly discussed in Chapter 3) is a legal policy framework implemented through the Disaster Management Act 57 of 2002. The aim of the NDMF is not to be a measuring instrument for disaster risk reduction, but rather to provide a policy framework for uniform application of the principles of disaster risk reduction in South Africa. The analysis provided in this chapter will allow for a correlation between the international frameworks as discussed in Chapter 4 and the South African National Disaster Management Framework.

This chapter follows the same format for analysis as was used in the previous chapter. The aim and objectives of the NDMF will be cited, followed by the development of the framework. The target audience and applicability will also be highlighted and the format will be discussed in more depth. A literature review and comparison will be done and lastly all frameworks will be compared.

5.2 AIMS AND OBJECTIVES OF THE FRAMEWORK

The aim of the NDMF is to provide for a transparent and inclusive disaster risk management policy for South Africa as a whole (South Africa, 2003; South Africa, 2004; South Africa, 2005). It must give priority to developmental measures that will reduce vulnerability of disaster-prone areas, communities-at-risk and vulnerable households. The NDMF must guide the development and implementation of the concept of disaster risk management. This framework should aim at ensuring an integrated and common approach to disaster risk management by all spheres of government, NGOs, the private sector and communities, and should also aim to facilitate the implementation of disaster risk management standards in the Southern African region as a whole. The framework must establish prevention and mitigation as the core principles of disaster risk management.

The main aim of the framework is therefore not to provide a performance management tool for disaster risk management, but rather a policy document which will guide the implementation of disaster risk management in South Africa.

5.3 THE DEVELOPMENT OF THE FRAMEWORK

The development of the NDMF is a legal requirement of the Disaster Management Act 57 of 2002 (see Section 6 of the Act). The process in the development of the NDMF began shortly after the promulgation of the Disaster Management Act. A multi-disciplinary task team consisting of disaster management practitioners and academics was given the responsibility of compiling the first draft of the framework. The first draft for public comment was published on 28 May 2004. Various role-players commented on the first draft, which lead to the reformulation of the KPAs (NDMC, 2004). Initially six KPAs were identified namely:

i. KPA1: Institutional capacity for disaster management.
ii. KPA2: Risk assessment and monitoring.
iii. KPA3: Disaster management planning and implementation.
iv. KPA4: Disaster response and recovery, rehabilitation and reconstruction.
v. KPA5: Public awareness, education, training and research.
vi. KPA6: Monitoring evaluation and improvement.

After the public comments were considered a national workshop of the Interdepartmental Disaster Management Committee (soon to become the National Disaster Management Advisory Committee – see Chapter 3) was held on 18 November 2004 (NDMC, 2004). The new framework now consisting of four KPAs and three enablers were presented and discussed (see section 5 below). The final National Disaster Management Framework is expected to be published in early June 2005.

5.4 TARGET AUDIENCES AND APPLICABILITY

Being a legislative requirement, the NDMF is applicable to the whole of the Republic. Each sphere of Government and organ of state have the legal obligation to adhere to the requirements of the NDMF. Some aspects of the framework also apply beyond the borders of South Africa in as much as the NDMF should ensure an involvement of the South African Government in risk reduction and disaster response for Southern Africa as a whole, and should in particular address issues of shared cross-border risk.

All KPAs and enablers address issues of disaster risk on all spheres and tiers of Government (as per Chapter 3). The NDMF provides each provincial; district and metropolitan municipality with a guiding framework towards the development of their own disaster management framework (see Sections 28 and 42 of the Disaster Management Act). Furthermore, it gives guidance to all organs of state as to the implementation of the ideals of disaster risk management within their area of responsibility (South Africa, 2005:15-20).

Discussions with international scholars (Sakulski, 2004) indicated that besides the intended application of the framework, aspects of this framework are also being used and adapted in other parts of the globe. In particular certain regions in India are using the South African NDMF as a guiding framework for the development of their own policies (NDMC, 2004).

5.5 FORMAT OF THE FRAMEWORK

As mentioned previously in this chapter, the final NDMF consists of four KPAs and three enablers. These KPAs and enablers are informed by specified objectives and, as required by the Act, key performance indicators (KPIs) to guide and monitor progress. In addition, each KPA and enabler concludes with a list of guidelines that will be disseminated by the NDMC to support the implementation of the framework in all three spheres of government. The KPAs and enablers are:

i. KPA1: Integrated institutional capacity for disaster risk management.
ii. KPA2: Disaster risk assessment.
iii. KPA3: Disaster risk reduction.
iv. KPA4: Response and recovery.
v. Enabler 1: Information management and communication.
vi. Enabler 2: Education, training, public awareness and research.
vii. Enabler 3: Funding arrangement for disaster risk management.

Key performance area one focuses on establishing the necessary institutional capacity for implementing all aspects of disaster risk management within the national, provincial and municipal spheres and tiers of government. It addresses the application of the principle of co-operative governance for the purposes of disaster risk management and also emphasises the involvement of all stakeholders in strengthening the capabilities of national, provincial and municipal organs of state to reduce the likelihood and severity of disasters. This KPA describes processes and mechanisms for establishing co-operative

arrangements with international role players and countries within Southern Africa (South Africa, 2005).

The second KPA addresses the need for disaster risk assessment and monitoring to set priorities, guide risk reduction action and monitor the effectiveness of disaster risk reduction efforts. KPA2 outlines the requirements for implementing disaster risk assessment and monitoring by organs of state within all spheres and tiers of government (South Africa, 2005).

Key performance area three introduces disaster risk management planning and implementation to inform developmentally-oriented approaches, plans, programmes and projects that reduce disaster risks. KPA3 addresses requirements for the alignment of disaster management frameworks and planning within all spheres and tiers of government. It also gives particular attention to the planning for and integration of the core risk reduction principles of prevention and mitigation into ongoing programmes and initiatives.

The last KPA presents implementing priorities concerned with disaster response, recovery and rehabilitation. This KPA addresses requirements in the Disaster Management Act for an integrated and coordinated policy that focuses on rapid and effective response to disasters and post-disaster recovery (South Africa, 2005).

The first enabler focuses on priorities related to the establishment of an integrated and comprehensive information management and communication system for disaster risk management. More specifically, it addresses the information and communication requirements of each KPA and enablers two and three, and also emphasises the need to establish integrated communication links with all disaster risk management role players in national, provincial and municipal spheres of Government (South Africa, 2005).

Enabler two addresses disaster risk management priorities in education, training, public awareness and research. This enabler describes mechanisms for the development of education and training programmes for disaster risk management and associated professions and the incorporation of relevant aspects of disaster risk management in primary and secondary school curricula. It addresses requirements to promote and support a broad-based culture of risk avoidance through strengthened public awareness and responsibility. It also discusses priorities and mechanisms for supporting and developing a coherent and collaborative disaster risk research agenda (South Africa, 2005).

The last enabler sets out the mechanisms for the funding of disaster risk management in South Africa. It addresses the legislative framework which guides disaster management funding in the Republic and presents an overview of the recommended funding arrangements. This enabler provides insight into the different avenues of disaster risk management funding as it relates to the KPAs and enabler one and two. Enabler three focuses on the needed funding arrangements within all spheres and tiers of government specifically aimed at development planning and initiatives towards disaster risk reduction (South Africa, 2005).

Table 5.1 aims to explain the KPAs, enablers and their variables of the NDMF (the coding "SA" is used for this framework). It should be noted that although KPIs for each of these themes and variables below has been identified, they will not enjoy attention in this chapter as many of the KPIs relate to micro aspects of disaster risk management and does not fit within the focus of the framework analysis[9].

[9] Annexure 1 of Chapter 5 contains an explanation of the KPAs, enablers and subsequent KPIs.

THEME	VARIABLES
SA1: Integrated institutional capacity for disaster risk management (KPA1)	SA1.1 Development and adoption of integrated disaster risk management policy. SA1.2 Integrated direction and implementation of disaster risk management policy. SA1.3 Stakeholder participation and the engagement of technical advice in disaster risk management planning and operations. SA1.4 National, regional and international co-operation for disaster risk management.
SA2: Disaster risk assessment (KPA2)	SA2.1 Disaster risk assessment and risk reduction planning. SA2.2 Generating a National Indicative Disaster Risk Profile. SA2.3 Monitoring, updating and disseminating risk information. SA2.4 Conducting quality control
SA3: Disaster risk reduction (KPA3)	SA3.1 Disaster risk management planning. SA3.2 Setting priorities for disaster risk management planning. SA 3.3 Scoping and development of disaster risk reduction plans, projects and programmes. SA3.4 Inclusion of disaster risk reduction efforts in other structures and processes. SA3.5 Implementation and monitoring of disaster risk reduction programmes and initiatives.
SA4: Response and recovery (KPA4)	SA4.1 Early warnings. SA4.2 Assessment, classification, declaration and review of a disaster. SA4.3 Integrated response and recovery. SA4.4 Relief measures. SA4.5 Rehabilitation and reconstruction.
SA5: Information management and communication (Enabler 1)	SA5.1 Establishing an information management and communication system. SA5.2 Integrated information management and communication model. SA5.3 Data acquisition (data collection and capturing). SA5.4 Information management and communication support for key performance areas and enablers. SA5.5 Specialised system functionalities. SA5.6 Development of an integrated information management and communication system. SA5.7 Information dissemination and display module.
SA6: Education, training, public awareness and research (Enabler 2)	SA6.1 National education, training and research needs and resources analysis. SA6.2 National disaster risk management education and training framework. SA6.3 Disaster risk management education. SA6.4 Training programmes for disaster risk management. SA6.5 Creating awareness, promoting a culture of risk avoidance and establishing good media relations.

THEME	VARIABLES
	SA6.6 Research programme and information and advisory services.
SA7: Funding arrangement for disaster risk management (Enabler 3)	SA7.1 Funding arrangements as it pertains to KPA1 and Enabler 1 SA7.2 Funding arrangements as it pertains to KPA2 SA7.3 Funding arrangements as it pertains to KPA3 SA7.4 Funding arrangements as it pertains to KPA4 SA7.5 Funding arrangements as it pertains to Enabler 2

Table 5.15: Coding for the South African National Disaster Management Framework

The following diagram aims to explain the interaction between the different aspects of the NDMF.

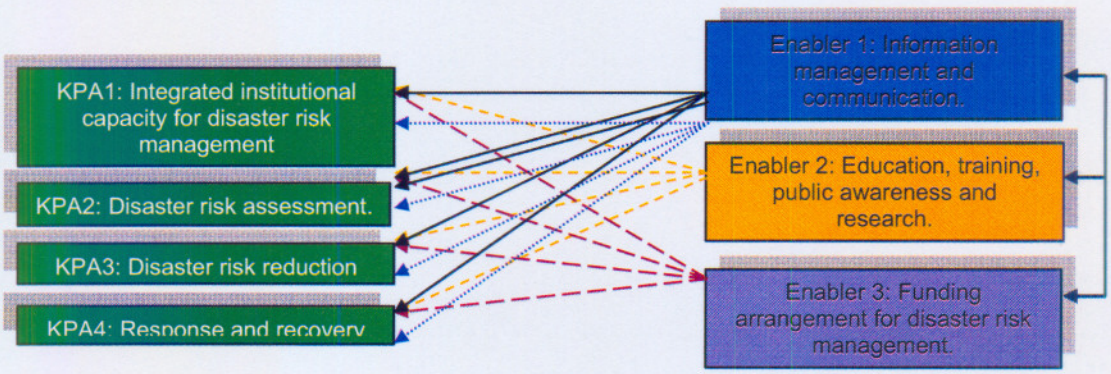

Figure 5.8: The interaction between the NDMF KPAs and Enablers

Mocke (2005) uses an analogy of a car in order to explain the interaction of the different elements of the NDMF. Firstly, he says that the KPAs should be seen as the components of a car. The quality of these components will determine the quality of the car. The enablers should be seen as the fuel for the car. Without the correct fuel the car will not function properly. Subsequently, Mocke (2005) is of the opinion that the performance indicators (see Annexure 1 of this chapter) to the KPAs and enablers are the dashboard of the car. In viewing the NDMF in the above manner it becomes evident how the interaction between the different components is envisaged. It remains to compare the aspects of the NDMF with those identified in Chapter 2 and 3.

5.6 LITERATURE REVIEW

The following comparative analysis can be made:

LITERATURE ELEMENT	CORRESPONDING NDMF ELEMENT(S)
Z1	SA1.1 SA1.2
Z2	
Z3	SA7 SA7.1 SA7.2 SA7.3 SA7.4 SA7.5
Z4	SA7 SA7.1 SA7.2 SA7.3 SA7.4 SA7.5
Z5	SA1
Z6	SA2.1 SA2.2 SA2.4 SA3 SA3.1 SA3.2 SA3.3 SA3.4 SA3.5
Z7	SA2 SA2.1 SA2.2
Z8	
Z9	SA4.1
Z10	SA2.3 SA5 SA5.1 SA5.2 SA5.3 SA5.4 SA5.5 SA5.6 SA5.7
Z11	SA2.3 SA5 SA5.1 SA5.2 SA5.4 SA5.6 SA5.7
Z12	SA6

LITERATURE ELEMENT	CORRESPONDING NDMF ELEMENT(S)
	SA6.1 SA6.2 SA6.3 SA6.4
Z13	SA5.7 SA6 SA6.5
Z14	SA6 SA6.6
Z15	SA3.1 SA3.3
Z16	
Z17	SA4
Z18	SA4 SA4.2 SA4.3
Z19	SA1.4
Z20	
Z21	SA4 SA4.3 SA4.4 SA4.5
Z22	SA1.3 SA3.4
Z23	
Z24	SA1.3

Table 5.16: The South African NDMF: a comparative analysis of literature review and framework analysis

5.7 COMPARATIVE ANALYSIS: THE SANDMF AND INTERNATIONAL FRAMEWORKS

Taking the analysis of Chapters 4 and 5 into consideration, the following table can be derived:

LITERATURE ELEMENT	ISDR FRAMEWORK	RISK MANAGEMENT INDEX	DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK	RISK MANAGEMENT INDEX	SOUTH AFRICAN NDMF
Z1	A1.1 A1.1.1	B4	C2 C2.1	D1.1	SA1.1 SA1.2
Z2	A1.2 A1.2.1 A1.2.2 A1.2.3	B2.5 B4	C1 C1.3 C1.4	D1.1	
Z3	A1.3.1 A4.2 A4.2.2	B4 B4.2 B4.3	C4.3		SA7 SA7.1 SA7.2

LITERATURE ELEMENT	ISDR FRAMEWORK	RISK MANAGEMENT INDEX	DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK	RISK MANAGEMENT INDEX	SOUTH AFRICAN NDMF
		B4.4 B4.5 B4.6			SA7.3 SA7.4 SA7.5
Z4	A1.3 A1.3.1	B1.1 B3.3			SA7 SA7.1 SA7.2 SA7.3 SA7.4 SA7.5
Z5	A1.4 A1.4.1 A1.4.2 A1.4.3	B3.1 B4.2	C1.5 C2.4	D1 D1.2 D2.3 D5.3	SA1
Z6	A1.2.1 A1.2.2	B2.3	C2.6	D2.1 D2.2 D6.1	SA2.1 SA2.2 SA2.4 SA3 SA3.1 SA3.2 SA3.3 SA3.4 SA3.5
Z7	A2.1 A2.1.1 A2.1.2 A2.1.3 A2.2.2 A2.2.3	B1 B1.2 B1.3 B1.4	C3.1		SA2 SA2.1 SA2.2
Z8	A1.1.1 A1.1.3		C1.1	D1.1	
Z9	A2.2 A2.2.1 A2.2.2	B3.2	C2.5		SA4.1
Z10	A3.1 A3.1.1 A3.1.2 A3.1.3	B1.5	C3	D3.2	SA2.3 SA5 SA5.1 SA5.2 SA5.3 SA5.4 SA5.4 SA5.5 SA5.6 SA5.7
Z11	A2.2.3 A3.1 A3.3.2 A5.1.3	B1.5	C3 C11	D3.2 D5 D5.1	SA2.3 SA5 SA5.1 SA5.2 SA5.4 SA5.6 SA5.7
Z12	A3.2 A3.2.1 A3.2.2 A3.2.3 A3.2.4	B1.6 B3.5	C3 C3.2 C3.6	D3.1 D5 D5.1 D5.3	SA6 SA6.1 SA6.2 SA6.3 SA6.4
Z13	A2.2.3	B1.5	C3	D3.1	SA5.7

LITERATURE ELEMENT	ISDR FRAMEWORK	RISK MANAGEMENT INDEX	DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK	RISK MANAGEMENT INDEX	SOUTH AFRICAN NDMF
	A2.2.4 A3.3 A3.3.1 A3.3.2	B3.5		D5 D5.1	SA6 SA6.5
Z14	A3.4 A3.4.1 A3.4.2 A3.4.3		C3 C3.5	D5 D5.1 D5.3	SA6 SA6.6
Z15	A4.1 A4.1.1	B2.1 B2.2	C1.4		SA3.1 SA3.3
Z16	A1.1.3 A3.1.3 A3.2.3 A4.1.1 A4.2 A4.2.1	B4.4	C2.3	D2.2	
Z17	A5.1 A5.1.1 A5.1.2 A5.1.4	B2.6	C1.4		SA4
Z18	A5.2 A5.2.1	B3 B3.2 B3.4	C1.4		SA4 SA4.2 SA4.3
Z19	A3.1.3 A3.4.3		C1.2		SA1.4
Z20	A4.1 A4.1.1				
Z21	A1.1.2	B3.6	C4.1		SA4 SA4.3 SA4.4 SA4.5
Z22	A1.2.4 A1.4.4 A3.1.3	B1.5	C2.2 C3.4 C3.6 C4.1 C4.2	D4.2	SA1.3 SA3.4
Z23	A3.2.4 A4.1.1 A4.2.3		C4.2 C4.4	D5.2	
Z24	A4.3 A4.3.1 A4.3.2 A4.3.3	B2.1 B2.2 B2.4 B4.1		D4.1	SA1.3

Table 5.17: Comparison of the NDMF and international frameworks

5.8 CONCLUSION

This chapter focussed on the South African National Disaster Management Framework. Firstly, the aims and objectives of the framework were discussed. It was found that the framework is not as much a performance management instrument as it is a policy guiding tool. The development of the framework enjoyed attention and the target audience and applicability were highlighted. Subsequently the format of the framework was discussed. The different KPAs and enablers were explained and their interaction enjoyed attention. As with the preceding international framework analysis, the NDMF was also compared to the literature review. Lastly, the NDMF was compared with the international frameworks in order to show overlapping and deficiencies.

The following chapter will discuss the empirical findings of the research conducted. The above analysis allowed the researcher to use the data coding and analysis techniques of Tesch (1990:142-145) to group and categorise the different aspects of disaster risk reduction. The foundation laid in Chapters 2–5 was used as a basis for discussion for the focus group interviews.

CHAPTER 6:
A MULTI-SPHERE DISASTER RISK REDUCTION FRAMEWORK FOR SOUTH AFRICA: EMPIRICAL FINDINGS

6.1 INTRODUCTION

One of the main objectives of this study was to investigate the elements that should be present in a multi-sphere framework for disaster risk reduction for the South African context. The preceding chapters laid the foundation to the empirical investigation that follows in this chapter. In order to ensure the successful investigation of the phenomenon, a qualitative research design was followed. The qualitative research dimension allowed the researcher to apply certain research techniques best suited for the phenomenon under investigation. In doing so, focus group interviews were used to gather data.

The first section of this chapter will provide the reader with insight into the research methodology that was followed. The nature of the study will briefly be discussed and the type of research tools used for data collection and analysis will be highlighted. Methods to ensure validity and reliability will be discussed further and aspects of triangulation will enjoy attention. The findings of the qualitative research will be presented in order to indicate the major themes and variables which emerged from the study. In conclusion the findings will be aligned with the new framework to be discussed in the following chapter.

6.2 METHODOLOGY

The nature of this study necessitated the researcher to use the qualitative research design. The ontological dimension of qualitative research design

addresses the nature of reality of the study in question (Dobson, 2002). By utilising this design, the researcher was able to determine different perspectives from practitioners relating to the research problem at hand (Van Schalkwyk, 2000:38). The qualitative research design, although complex, provides various methods of data collection and analyses. The validity and trustworthiness of the research is supported by the prolonged period spent in the research site, as well as the method of triangulation used.

Qualitative research concentrates on words and observations to express reality and attempts to describe people in their natural situations (Van Schalkwyk, 2000:39). The key element here is the involvement of people where their disclosures are encouraged in a nurturing and trusting environment, therefore the use of focus group interviews (see following section). Qualitative research taps into human tendencies where attitudes and perceptions are developed through interaction with other people.

The qualitative design further allowed the researcher to engage first in an intensive literature study which formed the foundation for the triangulation of data, and in doing so contribute to the validity and reliability of the study. Secondly, focus group interviews were used in order to collect further data on the phenomenon under investigation. The data was subsequently grouped and analysed according to accepted scientific practices.

6.2.1 Method of data collection

The qualitative nature of this research necessitated the researcher to use focus group interviews in order to explore, define and obtain the data relevant to the research.

6.2.1.1 Focus group interviews defined

Focus groups can be defined in various ways. From literature, aspects such as *"organised discussion"* (Kitzinger, 1994), *"collective activity"* (Powell, Single & Lloyd, 1996), *"social events"* (Goss & Leinbach, 1996) and *"interaction"* (Kitzinger, 1995) identify the contribution that focus groups make to social research.

Powell, Single and Lloyd (1996:499) define a focus group as: *"a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research."* Krueger (1988:18) defines focus groups as *"carefully planned discussions designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment".* Focus groups are a form of group interviewing, but Gibbs (1997) emphasises the fact that it is important to distinguish between the two. *"Group interviewing involves interviewing a number of people at the same time, the emphasis being on questions and responses between the researcher and participants."* Focus groups, however, rely on interaction within the group based on topics that are supplied by the researcher (Morgan, 1997:12). Therefore, the key characteristic which distinguishes focus groups from group interviews, is the insight and data produced by the interaction between the respondents (also see Krueger, 1988:17-18).

Merton and Kendall's (1946) influential article on the focused interview set the parameters for focus group interview development. Merton and Kendall indicated that focus group interviews should ensure that participants have a specific experience of, or opinion, about the topic under investigation (Morrison, 1998:147-148). An explicit interview guide should be used and the subjective experiences of participants should be explored in relation to predetermined research questions (Gibbs, 1997). In this instance, the predetermined research questions are grounded in the preceding literature review and analytical phase of the research.

The main purpose of focus group research is to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions in a way in which would not be feasible using other methods, for example observation, one-to-one interviewing, or questionnaire surveys (Gibbs, 1997; Welman & Kruger, 1999:196; Morrison, 1998:148). These attitudes, feelings and beliefs may be partially independent of a group or its social setting, but are more likely to be revealed via the social gathering and the interaction which being in a focus group entails. Compared to individual interviews, which aim to obtain individual attitudes, beliefs and feelings, focus groups elicit a multiplicity of views and emotional processes within a group context (Bless & Higson-Smith, 1995:113). The individual interview is relative easier for the researcher to control than a focus group in which participants may take the initiative. Compared to observation, a focus group enables the researcher to gain a larger amount of information in a shorter period of time (Bless & Higson-Smith, 1995:113). Observational methods tend to depend on waiting for things to happen, whereas the researcher follows an interview guide in a focus group (Gibbs, 1997). In this sense focus groups are not natural but organised events. Focus groups are particularly useful when there are power differences between the participants and decision-makers or professionals, when the everyday use of language and culture of particular groups are of interest, and when one wants to explore the degree of consensus on a given topic (Morgan & Kreuger, 1993).

6.2.1.2 Respondents selection

For the purpose of this research two different focus group interviews were used. One of the key challenges of the data collecting process was obtaining a representative sample. Not only were respondents from various disciplines necessary, but they also had to have adequate knowledge of disaster risk reduction in order to make a meaningful contribution to the study.

Respondents from multiple sectors and various disciplines were targeted to participate in the interviews. The selection of the respondents depended on their involvement in issues of disaster risk reduction at various levels of Government. Due to the nature of the phenomenon under investigation, it was imperative that all respondents understood disaster risk reduction and the aspects which it comprises. In order to ensure the above, the researcher targeted individuals who have already been part of different Disaster Management Advisory Forums at all levels of Government (see Chapter 3). In order to ensure validity and reliability of the research, a sample size of 10% of the total possible population who could partake in the research was used (e.g. the National Disaster Management Advisory Forum consists of 47 different organisations and four members of this forum were participants. Similarly respondents from both provincial and local government level were targeted.).

6.2.1.3 Method of respondent selection

Participants were targeted through an introductory e-mail and invitation explaining the background of the study and the need for their participation. An information letter was sent to respondents who indicated that they were willing to partake in the research. This letter contained information on the study in question, what a focus group interview was, aim and outcome of the focus group interviews and what was required of each participant. Respondents were also supplied with the generic list of elements of which disaster risk reduction comprises. It was indicated that this list would form the foundation of the discussions. The respondents at various levels of Government were mixed deliberately. This was done in order to ensure that various dynamics at all levels were identified and discussed simultaneously.

6.2.1.4 Process followed for the focus group interviews

All focus group interviews were video taped (with the consent of all involved) for transcribing purposes. The researcher served as moderator for each

interview. Each focus group interview commenced with a brief introduction of all the respondents and their function within disaster risk reduction. The purpose and procedures of the focus group interview were highlighted and it was stressed that the aim of the focus group interviews was to focus on the application of the principles of disaster risk reduction at a strategic management level. Some ground rules were explained and it was stressed that all comments were welcome. It was conveyed that the aim of the focus group interview was not to reach consensus but to generate ideas and explore the participants' different experiences in disaster risk reduction. These experiences would then be related to the topic under discussion.

Specific questions were asked in order to stimulate ideas. As the discussions progressed the researcher asked guiding questions as well as questions for clarity. The following generic questions were asked:

i. What is your understanding of disaster risk reduction?
ii. How would you define disaster risk management?
iii. What is the difference between disaster risk reduction and disaster risk management in the South African context?
iv. According to your knowledge and understanding, which components of disaster risk reduction can be identified?
v. Can you elaborate on the components you just identified?

Respondents were furnished with the generic list of disaster risk reduction elements as obtained from Chapter 2. Each respondent was asked to assess the elements according to the following questions:

i. Does this list of elements cover the full spectrum of disaster risk reduction in South Africa?
ii. Can you add to or remove from the list?
iii. Why have you added/removed this specific element?
iv. Can the identified element be applied in practice (on strategic level)?
v. To what extent do the identified elements contribute to disaster risk reduction in your area of expertise?

vi. Which sector/discipline specific aspects are not covered by the elements?
vii. How will these elements assist us in determining clear disaster risk reduction targets?
viii. Which additional guidelines should be included in a disaster risk reduction framework?
ix. Group the different elements into categories which make logical sense to you.
x. Rank these categories in terms of priority for implementation.

Each focus group interview was concluded with a brief summary by the moderator in order to clarify any aspects.

6.2.2 Data analysis

After the data was collected, the data was analysed and transcribed. The data was analysed according to the eight steps of data analysis as outlined by Tesch (1990:142-145). These include:

i. Thorough reading of and making notes of all transcribed material.
ii. Consider the substance of interviews conducted looking for the underlying meaning.
iii. Compile a list of all topics that came to the fore in the research.
iv. Cluster these topics.
v. By using a clustered list, once again consider the data. Code the topics and correlate coding with data (coding of Chapter 4 and 5 was used).
vi. Elaborate on the topics with the aim to turn them into certain categories and determine interrelationship.
vii. Make a final decision on the coding of the categories and alphabetise the list.
viii. If necessary, recode existing data.

The application of the above analysis is evident in section 3 below. This analysis was used throughout the research in order to develop the different themes and relating categories.

6.2.3 Methods taken to ensure validity and reliability

Each interview was conducted according to sound qualitative research techniques. A study of this nature allowed the researcher to remain independent and unbiased while collecting the data. The findings were further measured against international best practices. This measurement ensured the trustworthiness of the research. The prolonged period spent in the research site further contributed to the validity and reliability of the research.

Triangulation took place through various means. First, the focus groups in themselves were a form of triangulation. The identified elements were triangulated with the different international frameworks, the South African NDMF as well as the focus group interviews. This multi-layer triangulation contributed significantly to the validity and reliability of the study. Convergence amongst sources of information and different methods of data collection were undertaken. This ensured that checks and balances between different sources of data were in place. The themes and variables developed were referred back to the participants in order to ensure that these conclusions were accurate (see Creswell, 1994:158).

The following section will present the findings of the focus group interviews as it related to the development of a new model for multi-sectoral disaster risk reduction.

6.3 FINDINGS

In order to ensure a constructive report on the findings, this section will systematically discuss the response to the different questions posed (see section 2.1.3).

6.3.1 Interpretation of the basic concepts

One of the most significant findings of the research also relates to the basic underlying concept of the study. The relative newness of the field of study made the researcher aware that clarity on the terms within the focus groups should also be reached. Without such uniform understanding, the development of a new framework would be a pure academic exercise. This proved to be more problematic than anticipated. In answering the first three questions: *"What is your understanding of disaster risk reduction?"*, *"How would you define disaster risk management?"*, and *"What is the difference between disaster risk reduction and disaster risk management in the South African context?"*, it became apparent that much confusion reigns between participants (officials) at all levels of Government. Various interpretations of the terms exist and the envisaged application thereof varies considerably. It became apparent from the focus group interviews that the respondents functioning at the national level of Government had a better interpretation and understanding of the two concepts.

In most cases the strategic significance of disaster risk reduction vis-à-vis disaster risk management was misunderstood. Most of the respondents indicated that they interpret disaster risk reduction as a subset to disaster risk management. One respondent remarked that: *"I see disaster risk reduction as a very important, most important, element of disaster risk management"*. Some respondents remarked that the differentiation between these two terms is of pure *"academic significance"* and that the application of risk reduction measures at local level should rather be assessed. They therefore argued that

"it is not what we call it but rather what we do with it at local level that matters". Subsequently the use of the term disaster management in the South African context vis-à-vis the above mentioned terms came under scrutiny. One respondent asked weather it is necessary to change the use of terminology. *"We just got used to talk about disaster management now we are changing it again to disaster risk management and disaster risk reduction. I do not know what is what anymore"*.

Respondents from other disciplines (e.g. agriculture, information systems, meteorological services and business continuity) applied the two terms by making use of examples from their discipline. Through the use of practical examples it became apparent that the correct distinction is made in application albeit not in interpretation. A respondent from the field of agriculture remarked that good farming practices can be seen as a form of disaster risk management whereas the policies which guide land use is an example of disaster risk reduction.

From the above it is clear that interpretation as well as application plays an important role. The initial discussions on the above terms proved to be confusing and in some instances frustrating as can be seen from the responses of the participants. It clearly indicates that capacity building, training and education should continue to take place in the South African public sector in order to cultivate the correct understanding and application of the terms. This will also contribute to the expansion of the scientific multi-sectoral knowledge base of the disaster risk reduction discipline.

6.3.2 Components of disaster risk reduction

The discussion on the components of disaster risk reduction proved to be the most lengthy and in-depth. After the clarification of the terms in question, the respondents were better able to identify and link aspects of disaster risk reduction to their working environment. Table 6.1 contains a list of

components which came to the fore. The code FG will be used to refer to these components.

COMPONENTS IDENTIFIED	CODE
"Data and information management"	FG1
"The application of GIS"	FG2
"Spatial dimensions of risk (and vulnerability)"	FG3
"Application of limited resources"	FG4
"Indigenous knowledge use"	FG5
"Awareness"	FG6
"Capacity building"	FG7
"Training and education"	FG8
"Early warning systems"	FG9
"Incident management in risk reduction manner"	FG10
"Multi-stakeholder participation"	FG11
"Good farming practices"	FG12
"Drought management"	FG13
"Risk assessment and the creation of risk profiles"	FG14
"Use of risk management tools"	FG15
"Loss identification"	FG16
"Prevention"	FG17
"Proactive measures"	FG18
"Hazard identification"	FG19
"Mitigation actions"	FG20
"Development interventions"	FG21
"Building codes and regulations"	FG22
"Policies"	FG23
"Legislation and by-laws"	FG24
"Guidelines from national government on disaster management"	FG25
"Contingency planning"	FG26
"Credit risks"	FG27
"Financial implications"	FG28
"Private sector involvement"	FG29
"Institutional aspects"	FG30
"Disaster planning"	FG31
"All organs of state planning"	FG32
"Risk identification"	FG33
"Risk planning"	FG34
"Risk transfer"	FG35
"Risk management"	FG36
"Business continuity"	FG37
"Risk reduction strategies"	FG38
"Culture of risk reduction"	FG39
"Evaluate and measurement of success"	FG40
"Corporate governance"	FG41
"Communications"	FG42
"Information sharing"	FG43
"Integrated and coordinated policy"	FG44
"Development integration of disaster risk reduction"	FG45
"Agreements and understanding between different organs of state"	FG46
"Participation on Disaster Management Advisory Forums"	FG47
"Reporting"	FG48
"Clear criteria"	FG49
"Environmental planning"	FG50

COMPONENTS IDENTIFIED	CODE
"Information systems"	FG51
"Joint planning"	FG52
"Political buy-in"	FG53
"Integrated development plans"	FG54
"Common understanding"	FG55
"Financial instruments"	FG56
"Research"	FG57
"Public awareness"	FG58
"Monitoring and evaluation"	FG59
"Performance indicators"	FG60
"Checklists"	FG61
"Post-mortem/Lessons learned"	FG62
"Programme management"	FG63

Table 6.1: Disaster risk reduction components identified through focus group interviews

In comparison to the literature review the following table can be derived:

ELEMENT	FOCUS GROUP ELEMENTS
1. Policy	FG23, FG44, FG49, FG61
2. Legislation	FG24, FG25
3. Financial instruments	FG27, FG28, FG56
4. Resources	FG4
5. Institutional capacity	FG7, FG47, FG55
6. Risk reduction standards	FG15, FG17, FG18, FG20, FG22, FG30, FG37, FG38
7. Risk assessment	FG14, FG16, FG19, FG33, FG34, FG35, FG36
8. Political commitment	FG41, FG53
9. Early warning systems	FG9
10. Information management	FG1,FG2, FG43, FG48, FG51
11. Communication	FG42, FG43
12. Education and training	FG8, FG43, FG55
13. Public awareness	FG6, FG39, FG43, FG58
14. Research	FG43, FG57
15. Environmental management	FG13, FG50
16. Social development practices	FG3, FG5, FG21, FG45, FG54
17. Preparedness	
18. Emergency management	FG10, FG26, FG31
19. Regional linkages	
20. Natural resource management	FG12
21. Rehabilitation and reconstruction	
22. Public participation	FG5
23. Livelihoods	
24. Multi-sectoral role-player involvement	FG11, FG29, FG32, FG46, FG52, FG54, FG55,

Table 6.2: Comparative analysis: focus group interviews

The following new elements were identified from the focus group interviews:

i. *"Evaluate and measurement of success"* – FG40.
ii. *"Monitoring and evaluation"* – FG59.
iii. *"Performance indicators"* – FG60.
iv. *"Post mortem/Lessons learned"* – FG62.
v. *"Programme management"* – FG63.

Respondents indicated that they felt that the list above covered the full spectrum of disaster risk reduction in South Africa. The respondents felt strongly that a framework should make provision for a performance management system for disaster risk reduction. Although the framework itself is a method of performance management, respondents indicated that a monitoring and evaluation system must be implemented as part of disaster risk reduction. A framework should therefore make provision for performance management tools. One of the respondents also added *"programme management"* linked to project management tools for the successful implementation of development and disaster risk reduction projects.

The respondents did not choose to remove any of the literature elements although the aspect of livelihoods was questioned. Furthermore, a number of respondents passed comment on the logic of including the elements of rehabilitation and reconstruction in a disaster risk reduction framework. The argument was made that rehabilitation and reconstruction should contain inherent application of disaster risk reduction measures and should therefore remain part of a framework.

6.3.3 Application of components

The majority of respondents felt that all of the identified components are applicable to the strategic management (framework) level. One respondent indicated that one should move beyond only *"focussing on the strategic management level with these components"* and *"should be taken away from a pure administrative part"*. This clearly shows the need for tactical as well as

operational implementation of such a disaster risk reduction framework – and therefore the need for variables or success factors (refer to Table 6.6).

6.3.4 Grouping of the elements

Each respondent was given the opportunity to group the 24 identified elements into logical themes. In many instances one element was grouped under more than one theme. Table 6.2 is a colour coded presentation of the above grouping. The different columns under each respondent (R*n*) indicate the number of different overlapping themes which took place. One element therefore belongs to more than one grouping according to the colours below (e.g. Policy was grouped in Grouping 1 and 2 by respondent 2). It should be noted that the criteria used by each respondent in order to group the elements are unknown. All that was required was a logical grouping. As will be seen later, the inherent logic to these elements allowed for a relative accurate grouping amongst all respondents.

Element	Code	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
1. Policy	Z1												
2. Legislation	Z2												
3. Financial instruments	Z3												
4. Resources	Z4												
5. Institutional capacity	Z5												
6. Risk reduction standards	Z6												
7. Risk assessment	Z7												
8. Political commitment	Z8												
9. Early warning systems	Z9												
10. Information management	Z10												
11. Communication	Z11												
12. Education and training	Z12												
13. Public awareness	Z13												
14. Research	Z14												
15.	Z15												

Element	Code	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
Environmental management													
16. Social development practices	Z16												
17. Preparedness	Z17												
18. Emergency management	Z18												
19. Regional linkages	Z19												
20. Natural resource management	Z20												
21. Rehabilitation and reconstruction	Z21												
22. Public participation	Z22												
23. Livelihoods	Z23												
24. Multi-sectoral role-player involvement	Z24												
Added: Evaluation systems / Performance management													
Added: Programme management													
Added: Post mortem/ Lessons learned													

R = Responded

Grouping 1
Grouping 2
Grouping 3
Grouping 4
Grouping 5
Grouping 6
Grouping 7
Added by respondent
Not indicated

Table 6.3: Grouping of elements by focus groups

In order for the above grouping to have meaning, the relative frequency at which specific elements were grouped together by respondents must be determined. From that a more accurate and reliable grouping can be made. Table 6.4 indicates the frequency at which the respondents grouped specific

elements together. The colour coding to the left indicate which elements were commonly grouped together.

ELEMENT	Frequency an element was mentioned as part of a grouping								
	1	2	3	4	5	6	7	NA	NEW
1. Policy	12	1	0	0	0	0	0	0	0
2. Legislation	11	1	0	0	0	0	0	0	0
3. Financial instruments	3	7	4	2	0	0	0	0	0
4. Resources	1	10	1	1	0	0	0	0	0
5. Institutional capacity	6	4	2	0	0	0	0	0	0
6. Risk reduction standards	6	3	1	1	1	0	0	0	0
7. Risk assessment	1	4	5	1	1	0	0	0	0
8. Political commitment	8	2	2	2	1	0	0	0	0
9. Early warning systems	0	5	4	3	1	0	0	0	0
10. Information management	0	4	5	4	1	0	0	0	0
11. Communication	1	4	5	5	1	0	0	0	0
12. Education and training	1	4	6	3	0	0	0	0	0
13. Public awareness	1	5	7	3	0	0	0	0	0
14. Research	1	6	8	1	0	0	0	0	0
15. Environmental management	3	0	3	5	1	0	0	1	0
16. Social development practices	3	3	1	4	1	0	0	1	0
17. Preparedness	2	2	3	3	3	0	0	0	0
18. Emergency management	1	1	4	3	3	0	0	0	0
19. Regional linkages	3	2	1	5	0	1	0	1	0
20. Natural resource management	2	3	3	4	0	0	0		0
21. Rehabilitation and reconstruction	2	0	2	5	2	0	1	0	0
22. Public participation	0	3	6	4	0	1	0	0	0
23. Livelihoods	1	3	3	1	1	1	0	2	0
24. Multi-sectoral role-player involvement	7	3	0	0	2	1	0	0	0
Evaluation systems / Performance	0	0	0	0	0	0	0	0	1

ELEMENT	Frequency an element was mentioned as part of a grouping								
	1	2	3	4	5	6	7	NA	NEW
management									
Programme management	0	0	0	0	0	0	0	0	1
Post mortem/Lessons learned	0	0	0	0	0	0	0	0	1

Table 6.418: Frequency at which elements were grouped together

From the above table the following groupings therefore emerged:

a. ***Grouping 1:***

- Policy;
- legislation;
- institutional capacity;
- risk reduction standards;
- political commitment; and
- multi-sectoral role-player involvement.

b. ***Grouping 2:***

- Financial instruments; and
- resources.

c. ***Grouping 3:***

- Risk assessment;
- education and training;
- public awareness;
- research;
- public participation; and
- livelihoods.

d. ***Grouping 4:***

- Early warning systems;
- information management;
- communication;

- environmental management;
- social development practices;
- regional linkages;
- natural resource management; and
- rehabilitation and reconstruction.

e. ***Grouping 5:***

- Preparedness; and
- emergency management.

f. ***New aspects:***

- Performance management systems;
- programme management; and
- post mortem/lessons learned.

By using the data analysis steps of Tesch (1990:142-145) it becomes evident that the groupings used by the respondents cannot be viewed in isolation. All of the models and frameworks used in the research should therefore once again be assessed in order to ensure all aspects of the data have been taken into consideration. The following section will provide an elaboration of the emerging themes of the research, linked to the already assessed frameworks as well as the empirical research findings.

6.3.5 Emerging themes

In order for the final framework to have meaning and before it can be implemented, it is imperative to ensure that a logical and coherent grouping of elements exists. Table 6.5 contains all the different elements identified through this study, grouped according to the different groupings used by the respondents in the focus group interviews. It should be noted that the grouping used by the respondents can be biased and no criteria was given to the respondents in order to aid this grouping exercise, except that the

grouping should make logical sense to them. As has been mentioned earlier, Tesch, clearly indicates that grouping and re-grouping should take place to ensure the final themes are grounded in the elements.

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
Grouping 1:								
Policy	PAR1.7 Governance PAR3.7 Governance	CF1.1 Clear policy guidelines CF1.4 Linkages of measures and policies within regional and national systems	A1.1 Policy and planning A1.1.1 Risk reduction as a policy priority	B4. Financial protection and governance	C2. Policy C2.1 Policy Statements	D1.1 Political will (Incorporation of disaster prevention in the political values system)	SA1.1 Development and adoption of integrated disaster risk management policy. SA1.2 Integrated direction and implementation of disaster risk management policy.	FG23*"Policies"* FG44*"Integrated and coordinated policy"* FG49*"Clear criteria"* FG61*"Checklists"*
Legislation	PAR1.7 Governance PAR3.4 Structural measures (building codes and retrofitting) PAR3.7 Governance	CF1.2 Reform and change in different sectors CF4.6 Codes and standards	A1.2 Legal and regulatory framework A1.2.1 Laws, acts and regulations A1.2.2 Codes, standards A1.2.3 Compliance and enforcement A1.2.4 Responsibility and accountability	B2.5 Updating and enforcing of safety standards and construction codes B4. Financial protection and governance	C1. Politics and legislation C1.3 Legislation C1.4 Emergency powers	D1.1 Political will (Incorporation of disaster prevention in the political values system)		FG24*"Legislation and by-laws"* FG25*"Guidelines from national government on disaster management"*
Institutional capacity	PAR3.5 Economic development PAR4.3 Improved service delivery	CF1.2 Reform and change in different sectors CF1.3 Establishment of permanent organisation and planning centre	A1.4 Organisational structures A1.4.1 Implementing and coordinating bodies A1.4.2 Intra- and Inter-ministerial, multidisciplinary & multisectoral mechanisms A1.4.3 Local institutions for decentralised application	B3.1 Organisation and coordinating of emergency operation B4.2 Reserve funding for institutional strengthening	C1.5 National Disaster Mitigation Committee (or equivalent) C2.4 National Disaster Administration	D1. Institutional framework D1.2 Impact on institutional development (for risk management) D2.3 Support systems for decision-making D5.3 Institutional development of the knowledge sector	SA1: Integrated institutional capacity for disaster risk management (KPA1)	FG7*"Capacity building"* FG47*"Participation on Disaster Management Advisory Forums"* FG55*"Common understanding"*
Risk reduction standards	PAR3.4 Structural measures (building	CF2.2 Assessment of current risk	A1.2.1 Laws, acts and regulations	B2.3 Implementation of	C2.5 National Disaster Planning	D2.1 Prevention plans	SA2.1 Disaster risk assessment and risk	FG15*"Use of risk management tools"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
	codes and retrofitting) PAR4.1 Land use planning PAR6.2 Business continuity PAR6.6 Address vulnerability PAR6.7 Indigenous coping mechanisms	management practices CF2.4 Risk management plan CF3.5 Consideration of traditional and indigenous measures of risk reduction	A1.2.2 Codes, standards	hazard-event control and protection techniques	C4.1 Reconstruction/Building Codes	D2.2 Incorporation of prevention measures in development plans and control mechanisms D6.1 Best practices	reduction planning. SA2.2 Generating a National Indicative Disaster Risk Profile. SA2.4 Conducting quality control SA3: Disaster risk reduction (KPA3) SA3.1 Disaster risk management planning. SA3.2 Setting priorities for disaster risk management planning. SA 3.3 Scoping and development of disaster risk reduction plans, projects and programmes. SA3.4 Inclusion of disaster risk reduction efforts in other structures and processes. SA3.5 Implementation and monitoring of disaster risk reduction programmes and initiatives.	FG17*"Prevention"* FG18*"Proactive measures"* FG20*"Mitigation actions"* FG22*"Building codes and regulations"* FG30*"Institutional aspects"* FG37*"Business continuity"* FG38*"Risk reduction strategies"*
Political commitment	PAR3.2 Political will		A1.1.1 Risk reduction as a policy priority A1.1.3 Integration of risk reduction in		C1.1 Political commitment	D1.1 Political will (Incorporation of disaster prevention in the political values system)		FG41*"Corporate governance"* FG53*"Political buy-in"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
			development planning and sectoral policies (poverty eradication, social protection, sustainable development, climate change adaptation, desertification, energy, natural resource management, health, education, etc)					
Multi-sectoral role-player involvement	PAR2.5 Interdisciplinary research PAR3.4 Structural measures (building codes and retrofitting) PAR4.1 Land use planning PAR4.2 Environmental protection PAR5.7 Land reform and access to resources		A4.3 Technical measures A4.3.1 Land use applications, urban and regional development schemes A4.3.2 Structural interventions (hazard resistant construction and infrastructure, retrofitting of existing structures, drought, flood and landslide control techniques) A4.3.3 Soil conservation and hazard resistant agriculture practices	B3.6 Rehabilitation and reconstruction planning		D4.1 Private sector participation	SA1.3 Stakeholder participation and the engagement of technical advice in disaster risk management planning and operations.	FG11*"Multi-stakeholder participation"* FG29*"Private sector involvement"* FG32*"All organs of state planning"* FG46*"Agreements and understanding between different organs of state"* FG52*"Joint planning"* FG54*"Integrated development plans"* FG55*"Common understanding"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
Grouping 2:								
Financial instruments	PAR 3.5 Economic development PAR5.1 Local investments PAR5.5 Diversification (income sources and production) PAR5.10 Developing buffers and safety nets PAR6.5 Micro credit and financial instruments PAR7.1 Cost/benefit analysis	CF4.1 Cost/benefit implications	A4.2.2 Financial instruments (involvement of financial sector in disaster reduction: insurance/reinsurance, risk spreading instruments for public infrastructure and private assets such as calamity funds and catastrophe bonds, micro-credit and finance, revolving community funds, social funds)	B4.2 Reserve funding for institutional strengthening B4.3 Budget allocation and mobilisation B4.4 Implementation of social safety nets and funds response B4.5 Insurance cover and loss transfer strategies of public assets B4.6 Housing and private sector insurance and reinsurance coverage	C4.3 Insurance and Finance		SA7: Funding arrangement for disaster risk management (Enabler 3) SA 7.1 Funding arrangements as it pertains to KPA1 and Enabler 1 SA 7.2 Funding arrangements as it pertains to KPA2 SA 7.3 Funding arrangements as it pertains to KPA3 SA 7.4 Funding arrangements as it pertains to KPA4 SA 7.5 Funding arrangements as it pertains to Enabler 2	FG27*"Credit risks"* FG28*"Financial implications"* *FG56"Financial instruments"*
Resources	PAR3.1 Access to resources activities in terms of disaster risk PAR5.7 Land reform and access to resources	CF4.3 Resources	A1.3 Resources A1.3.1 Resource mobilisation and allocation: financial (innovative and alternative funding, taxes, incentives), human, technical, material, Sectoral.	B1.1 Systematic disaster and loss inventory B3.3 Endowment of equipment, tools and infrastructure			SA7: Funding arrangement for disaster risk management (Enabler 3) SA 7.1 Funding arrangements as it pertains to KPA1 and Enabler 1 SA 7.2 Funding arrangements as it pertains to KPA2 SA 7.3 Funding arrangements as it pertains to KPA3 SA 7.4 Funding	FG4*"Application of limited resources"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
							arrangements as it pertains to KPA4 SA 7.5 Funding arrangements as it pertains to Enabler 2	
Grouping 3:								
Risk assessment	PAR2.1 Hazard assessment PAR2.2 Capacity/Vulnerability analysis PAR2.3 Risk assessment	CF2.1 Hazard, vulnerability and capacity assessments	A2.1 Risk assessment and data quality A2.1.1 Hazard analysis: characteristics, impacts, historical and spatial distribution, multi-hazard assessments, hazard monitoring including of emerging hazards A2.1.2 Vulnerability and capacity assessment: social, economic, physical and environmental, political, cultural factors A2.1.3 Risk monitoring capabilities, risk maps, risk scenarios A2.2.2 Risk scenarios A2.2.3 Warning and dissemination	B1. Risk identification B1.2 Hazard monitoring and forecasting B1.3 Hazard evaluation and mapping B1.4 Vulnerability and risk assessment	C3.1 Risk and Vulnerability		SA2: Disaster risk assessment (KPA2) SA2.1 Disaster risk assessment and risk reduction planning. SA2.2 Generating a National Indicative Disaster Risk Profile.	FG14*"Risk assessment and the creation of risk profiles"* FG16*"Loss identification"* FG19*"Hazard identification"* FG33*"Risk identification"* FG34*"Risk planning"* FG35*"Risk transfer"* FG36*"Risk management"*
Education and training	PAR1.1 Training and education	CF2.7 Public awareness and	A3.2 Education and training	B1.5 Public information and	C3. Knowledge C3.2 Education	D3.1 Education and capacity building	SA6: Education, training, public	FG8*"Training and education"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
	PAR1.2 Acquisition of knowledge PAR1.3 Capacity building	education	A3.2.1 Inclusion of disaster reduction from basic to higher education (curricula, material development and institutions) A3.2.2 Vocational training A3.2.3 Dissemination and use of traditional/local knowledge A3.2.4 Community training programmes	community participation B1.6 Training and education in risk management B3.5 Community preparedness and training	C3.6 Skills, Capacity and Motivation	D5. Knowledge production for risk reduction and management D5.1 Production of knowledge D5.3 Institutional development of the knowledge sector	awareness and research (Enabler 2) SA6.1 National education, training and research needs and resources analysis. SA6.2 National disaster risk management education and training framework. SA6.3 Disaster risk management education. SA6.4 Training programmes for disaster risk management.	FG43*"Information sharing"* FG55*"Common understanding"*
Public awareness	PAR1.2 Acquisition of knowledge PAR1.4 Public awareness PAR1.9 Risk perception	CF2.7 Public awareness and education	A2.2.3 Warning and dissemination A2.2.4 Response to warning A3.3 Public awareness A3.3.1 Public awareness policy and programmes and materials A3.3.2 Media involvement in communicating risk and awareness raising	B1.5 Public information and community participation B3.5 Community preparedness and training	C3. Knowledge C3.2 Education C3.6 Skills, Capacity and Motivation	D3.1 Education and capacity building D5. Knowledge production for risk reduction and management D5.1 Production of knowledge	SA5.7 Information dissemination and display module. SA6: Education, training, public awareness and research (Enabler 2) SA6.5 Creating awareness, promoting a culture of risk avoidance and establishing good media relations.	FG6*"Awareness"* FG39*"Culture of risk reduction"* FG43*"Information sharing"* FG54*"Public awareness"*
Research	PAR1.2 Acquisition of knowledge PAR2.5 Interdisciplinary research		A3.4 Research A3.4.1 Research programmes and institutions for risk reduction		C3. Knowledge C3.5 Research	D5. Knowledge production for risk reduction and management D5.1 Production of	SA6: Education, training, public awareness and research (Enabler 2) SA6.6 Research	FG43*"Information sharing"* FG57*"Research"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
			A3.4.2 Evaluations and feedback A3.4.3 National, regional and international cooperation in research, science and technology development			knowledge D5.3 Institutional development of the knowledge sector	programme and information and advisory services.	
Public participation	PAR1.5 Public participation PAR1.8 Self organisation and actions by civil society PAR5.3 Collective action PAR5.4 Community self-protection PAR6.7 Indigenous coping mechanisms PAR7.3 Community involvement and participation	CF3.1 Participation CF3.2 Equity CF3.5 Consideration of traditional and indigenous measures of risk reduction	A1.2.4 Responsibility and accountability A1.4.4 Civil society, NGOs, private sector and community participation A3.1.3 Networks for disaster risk management (scientific, technical and applied information, traditional knowledge)		C2.2 Participation C3.4 Community Networks C3.6 Skills, Capacity and Motivation C4.2 Local Community	D4.2 Community participation	SA1.3 Stakeholder participation and the engagement of technical advice in disaster risk management planning and operations. SA3.4 Inclusion of disaster risk reduction efforts in other structures and processes.	FG5*"Indigenous knowledge use"*
Livelihoods	PAR4.3 Improved service delivery PAR5.2 Gender sensitivity PAR5.6 Review livelihood PAR5.7 Land reform and access to resources PAR5.8 Increase food security PAR5.10 Developing buffers and safety nets	CF3.2 Equity CF4.2 Sustainability	A3.2.4 Community training programmes A4.1.1 Interface between environmental management and risk reduction practices, in particular in coastal zones, wetland and watershed management, integrated water	B1.5 Public information and community participation	C4.2 Local Community C4.4 Poverty Reduction	D5.2 Support infrastructure		

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
	PAR6.3 Sustainable development PAR6.4 Increase resilience and build enhanced capacity PAR6.6 Address vulnerability		resource management; reforestation, agricultural practices, ecosystem conservation A4.2.3 Sustainable livelihoods strategies					
Grouping 4:								
Early warning systems		CF4.5 Warning and assessment systems	A2.2 Early warning systems A2.2.1 Monitoring and forecasting A2.2.2 Risk scenarios A2.2.3 Warning and dissemination	B3.2 Emergency response planning and implementation of warning systems	C2.5 National Disaster Planning		SA4.1 Early warnings.	FG9*"Early warning systems"*
Information management	PAR1.10 Local knowledge and trust PAR2.4 Hazard mapping	CF4.4 Information systems	A3.1 Information management and communication A3.1.1 Information and dissemination programmes and channels A3.1.2 Public and private information systems (including disaster, hazard and risk databases & websites) A3.1.3 Networks for disaster risk management (scientific, technical and applied information,	B1.5 Public information and community participation	C3. Knowledge	D3.2 Information and communications	SA2.3 Monitoring, updating and disseminating risk information. SA5: Information management and communication (Enabler 1) SA5.1 Establishing an information management and communication system. SA5.2 Integrated information management and communication model. SA5.3 Data	FG1*"Data and information management"* FG2*"The application of GIS"* FG43*"Information sharing"* FG48*"Reporting"* FG51*"Information systems"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
			traditional knowledge)				acquisition (data collection and capturing). SA5.4 Information management and communication support for key performance areas and enablers. SA5.5 Specialised system functionalities. SA5.6 Development of an integrated information management and communication system. SA5.7 Information dissemination and display module.	
Communication	PAR1.4 Public awareness PAR1.6 Risk communication	CF3.4 Communication	A2.2.3 Warning and dissemination A3.1 Information management and communication A3.3.2 Media involvement in communicating risk and awareness raising A5.1.3 Effective communication and coordination system	B1.5 Public information and community participation	C3. Knowledge C3.3 Media	D3.2 Information and communications D5. Knowledge production for risk reduction and management D5.1 Production of knowledge	SA2.3 Monitoring, updating and disseminating risk information. SA5: Information management and communication (Enabler 1) SA5.1 Establishing an information management and communication system. SA5.2 Integrated information management and communication model.	FG42*"Communications"* FG43*"Information sharing"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
							SA5.4 Information management and communication support for key performance areas and enablers. SA5.6 Development of an integrated information management and communication system. SA5.7 Information dissemination and display module.	
Environmental management	PAR2.4 Hazard mapping PAR4.1 Land use planning PAR4.2 Environmental protection PAR7.2 Environmental protection	CF2.6 Spatial considerations	A4.1 Environmental and natural resource management A4.1.1 Interface between environmental management and risk reduction practices, in particular in coastal zones, wetland and watershed management, integrated water resource management; reforestation, agricultural practices, ecosystem conservation	B2.1 Risk consideration in land use and urban planning B2.2 Hydrographic basin intervention and environmental protection	C1.4 Emergency powers		SA3.1 Disaster risk management planning. SA 3.3 Scoping and development of disaster risk reduction plans, projects and programmes.	FG13*"Drought management"* FG50*"Environmental planning"*
Social development	PAR1.5 Public participation	CF3.2 Equity CF4.2 Sustainability	A1.1.3 Integration of risk reduction in	B4.4 Implementation of	C2.3 Development Plans	D2.2 Incorporation of prevention		FG3*"Spatial dimensions of risk*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
practices	PAR1.10 Local knowledge and trust PAR6.7 Indigenous coping mechanisms		development planning and sectoral policies (poverty eradication, social protection, sustainable development, climate change adaptation, desertification, energy, natural resource management, health, education, etc) A3.1.3 Networks for disaster risk management (scientific, technical and applied information, traditional knowledge) A3.2.3 Dissemination and use of traditional/local knowledge A4.1.1 Interface between environmental management and risk reduction practices, in particular in coastal zones, wetland and watershed management, integrated water	social safety nets and funds response	C4.4 Poverty Reduction	measures in development plans and control mechanisms		*(and vulnerability)"* FG5*"Indigenous knowledge use"* FG21*"Development interventions"* FG45*"Development integration of disaster risk reduction"* FG54*"Integrated development plans"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
			resource management; reforestation, agricultural practices, ecosystem conservation A4.2 Social and economic development practices A4.2.1 Social protection and safety nets					
Regional linkages	PAR1.11 Regional networks PAR5.9 Facilitating local networks	CF1.4 Linkages of measures and policies within regional and national systems	A3.1.3 Networks for disaster risk management (scientific, technical and applied information, traditional knowledge) A3.4.3 National, regional and international cooperation in research, science and technology development		C1.2 Regional linkages		SA1.4 National, regional and international co-operation for disaster risk management.	
Natural resource management	PAR4.1 Land use planning PAR4.2 Environmental protection	CF2.6 Spatial considerations	A4.1 Environmental and natural resource management A4.1.1 Interface between environmental management and risk reduction practices, in					FG12*"Good farming practices"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
			particular in coastal zones, wetland and watershed management, integrated water resource management; reforestation, agricultural practices, ecosystem conservation					
Rehabilitation and reconstruction	PAR6.1 Linking relief and development	CF2.5 Effective post emergency or disaster review	A1.1.2 Promotion of risk reduction in post-disaster reconstruction	B3.6 Rehabilitation and reconstruction planning	C4.1 Reconstruction/Building Codes		SA4: Response and recovery (KPA4) SA4.3 Integrated response and recovery. SA4.4 Relief measures. SA4.5 Rehabilitation and reconstruction.	
Grouping 5:								
Preparedness	PAR3.3 Mitigation efforts PAR3.6 Conflict prevention PAR5.8 Increase food security PAR7.4 Mitigation		A5.1 Preparedness and contingency planning A5.1.1Contingency plans (logistics, infrastructure) A5.1.2 National and local preparedness plans A5.1.4 Rehearsal and practice of plans	B2.6 Reinforcement and retrofitting of public and private assets	C1.4 Emergency powers		SA4: Response and recovery (KPA4)	
Emergency management	PAR3.3 Mitigation efforts PAR7.4 Mitigation		A5.2 Emergency management A5.2.1 Civil	B3. Disaster management B3.2 Emergency	C1.4 Emergency powers		SA4: Response and recovery (KPA4) SA4.2 Assessment,	FG10*"Incident management in risk reduction manner"*

Elements	The PAR model (code: PAR)	The Conceptual Framework for Disaster Risk Reduction (code: CF)	ISDR Framework (code: A)	Risk Management Index (code: B)	Disaster Risk Reduction Mainstreaming Framework (code: C)	SINT-RISK Index (code: D)	SA NDMF (code: SA)	Focus group interviews (code: FG)
			protection and defence organisations and volunteer networks	response planning and implementation of warning systems B3.4 Simulation, updating and test of inter institutional response			classification, declaration and review of a disaster. SA4.3 Integrated response and recovery.	FG26*"Contingency planning"* FG31*"Disaster planning"*

Table 6.5: Grouping of all elements of all frameworks

The following table containing the identified themes and subsequent variables can be derived from comparative Table 6.5 above. The aim of each variable is to refine the themes into understandable and applicable aspects. These variables are success factors which define each theme in doing so they serve as a checklist for strategic management.

THEMES	VARIABLES
1. Governance and legislation	1.1 Legislation 1.2 Policy 1.3 Guidelines 1.4 Codes and standards 1.5 Planning 1.6 Political commitment 1.7 Institutional capacity 1.8 Multi-sectoral involvement
2. Finance and resources	2.1 Financial instruments 2.2 Cost/benefit analysis 2.3 Economic development 2.4 Resources
3. Risk assessment	3.1 Hazard assessment 3.2 Vulnerability and capacity assessment and analysis 3.3 Indicative risk profile 3.4 Risk monitoring 3.5 Livelihoods
4. Knowledge production and management	4.1 Education and training 4.2 Research 4.3 Public awareness 4.4 Public participation 4.5 Traditional knowledge 4.6 Regional linkages
5. Practice	5.1 Early warning systems 5.2 Information management and communication 5.3 Environmental and natural resource management 5.4 Quality control and review
6. Emergency management	6.1 Preparedness 6.2 Mitigation 6.3 Response 6.4 Rehabilitation and reconstruction

Table 6.6: Themes and variables of the emerging framework

6.4 CONCLUSION

The qualitative research design allowed the researcher to objectively gather data in the most effective manner for this particular study. The data gathered from Chapters 2-5 as well as the outcomes of the focus group interviews provided the impetus to the analysis. It was found that the application of

disaster risk reduction in the South African context is still a new term which creates confusion in practice, especially when also considering other concepts such as disaster risk management and disaster management. The focus group interviews provided an in-depth discussion on the elements identified through the literature review and comparative analysis of the most prominent international frameworks.

The preceding chapter discussed the methodology followed for the empirical aspects of this study. The methods of data collection were discussed and the methods for triangulation were highlighted. Through the data analysis the different identified components were grouped and emerging themes were identified. The findings of the research showed the priority issues which need attention in the South African context. The following chapter will provide a multi-sphere disaster risk reduction framework for the South African environment as the main contribution and recommendation of this study.

CHAPTER 7:
CONCLUSION AND RECOMMENDATIONS: A COMPREHENSIVE FRAMEWORK FOR MULTI-SPHERE DISASTER RISK REDUCTION IN SOUTH AFRICA

7.1. INTRODUCTION

The aim of this thesis was to provide a comprehensive framework for multi-sphere disaster risk reduction in South Africa. Such a framework will serve as a guideline for all spheres of government on a strategic level in order to implement disaster risk management. The framework is comprehensive in covering all aspects of disaster risk reduction, yet flexible enough to be adapted for specific application.

This thesis had six objectives. Firstly, disaster risk reduction was defined within the international as well as South African context through a literature review. Secondly, an in-depth investigation of the international criteria and benchmarks in analysing disaster risk reduction was provided. Thirdly, this thesis investigated and analysed current criteria, benchmarks or frameworks for measuring disaster risk reduction in South Africa. It further defined and explored the requirements for the management of disaster risk reduction on all spheres and tiers of government in South Africa, with a specific focus on the strategic arena. Fifthly, this thesis aimed to adapt and internalise existing disaster risk reduction frameworks to suite multi-sphere South African requirements. Lastly, it aimed to explore and describe the indicators and performance criteria to be incorporated into a comprehensive disaster risk reduction framework for all tiers of government in South Africa. This last objective is also the focus of this chapter. This chapter will also provide a

process map for the application of the framework at all levels of government. In conclusion further areas of research will be discussed.

7.2 A COMPREHENSIVE FRAMEWORK FOR MULTI-SPHERE DISASTER RISK REDUCTION IN SOUTH AFRICA

The following comprehensive framework for multi-sphere disaster risk reduction for South Africa can be derived from the preceding chapters. This framework consists of three components: themes - which define the overarching focus of disaster risk reduction; variables – which describe the themes; and indicators or success factors – which serve as performance gauges in order to give guidance to the implementation of disaster risk reduction measures at a strategic management level.

The following framework must be read in conjunction with Chapters 4-6 as well as the annexures to Chapters 4 and 5. It is critical to understand that the indicators or success factors are not input or output driven performance indicators but serve as qualitative strategic guides to all organs of state with regard to the requirements for striving towards disaster risk reduction. As can be seen from the table below, the success factors which are specific to the requirements of the Disaster Management Act and the NDMF do not differ significantly from the current key performance indicators of the different KPAs and enablers, although they have been refined. The indicators or success factors are unique in that they address disaster risk management in a multi-sectoral environment and not only as a disaster management function of the three spheres of government (see Chapter 3 for the difference between disaster management as a function and as an activity of government).

Another important aspect to take cognisance of, especially in reference to the outcomes of the focus group interviews and the comparative analysis of the different international frameworks, is indicator redundancy.

Indicator redundancy refers to two or more identified indicators which in application measure similar aspects. It therefore becomes a needless exercise to include both (or more) indicators. Therefore a trade-off needs to be made between the indicators, taking into consideration their inherent and underlying logic. From the research certain indicator redundancy also became apparent. In some instances two indicators were grouped to make logical sense (e.g. 'information management' and 'communication' were combined) and in other occasions indicators were completely left out since their inherent logic or meaning was addressed through other indicators (e.g. lessons learned and performance management).

Table 1.1 contains the new comprehensive framework for multi-sphere disaster risk reduction in South Africa.

THEMES	VARIABLES	INDICATOR
1. Governance and legislation	1.3 Legislation	1.1.1 Laws (national and provincial) and by-laws (municipal) and regulations supporting multi-disciplinary disaster risk reduction have been passed in line with the indicative risk profile of the specific sphere of government, the National Disaster Management Framework (NDMF) and the Disaster Management Act (DMA). 1.1.2 Laws and by-laws link disaster risk reduction with development practices. 1.1.3 Mechanisms for compliance, enforcement and accountability in terms of laws and by-laws have been developed and are operational.
	1.4 Policy	1.2.1 National, provincial, metropolitan and district disaster management frameworks (DMFs) have been development and are updated annually. 1.2.2 DMFs are aligned in terms of the spheres of government (e.g. district and metropolitan to provincial; provincial to national). 1.2.3 DMFs ensure linkages of measures and policies within regional and international systems (e.g. international, regional and other neighbouring national disaster risk reduction strategies). 1.2.4 Mechanisms for developing and adopting disaster risk management policies as per the NDMF have been established and put into operation.
	1.3 Guidelines	1.3.1 All guidelines as per the NDMF have been developed. 1.3.2 NDMF guidelines are enforced, implemented and updated annually. 1.3.3 Best practices and lessons learned form an integral part of updating guidelines.
	1.4 Codes and standards	1.4.1 Codes and standards have been developed, implemented and are enforced (e.g. building codes, retrofitting codes, safety standards, disaster risk management quality standards; hazard resistant development techniques; land reform; spatial development planning). 1.4.2 A national risk assessment standard has been developed, implemented and enforced in order to determine the indicative risk profile. 1.4.3 Codes and standards take into consideration indigenous coping mechanisms. 1.4.4 Continuous assessment and adaptation of risk management practices in terms of changing risk profiles take place.
	1.5 Planning	1.5.1 Clear disaster risk management planning guidelines are developed and implemented by all sectors of government (including land use planning; business continuity of municipalities and provinces; hazard management plans; urban and regional development; environmental protection; poverty eradication; social protection; sustainable development; climate change adaptation; desertification; energy, natural resource management; health; education). 1.5.2 Planning guidelines ensure the mutual inclusion of disaster risk reduction and development. 1.5.3 Disaster risk management plans are developed by all organs of state. 1.5.4 Annual update of disaster risk management plans occurs in line with changing disaster risk profile.

THEMES	VARIABLES	INDICATOR
		1.5.5 Annual reports are submitted to NDMC in line with the requirements of the DMA.
	1.6 Political commitment	1.6.1 Disaster risk reduction is a multi-sectoral policy priority and is evident though legislation, policy statements, decisions, practice, and programme and project development. 1.6.2 Incorporation of disaster risk management in the political value system in order to ensure political support for disaster risk reduction occurs. 1.6.3 Mechanisms to enforce policy and legislation and to ensure responsibility and accountability were established and function optimally. 1.6.4 Multi-sectoral budget allocations for disaster risk reduction are made.
	1.7 Institutional capacity	1.7.1 The Intergovernmental Committee on Disaster Management (ICDM) has been established and is operating effectively. 1.7.2 The national, provincial and municipal Disaster Management Centres (DMCs) have been established and are operating effectively. 1.7.3 The suitably qualified incumbent as head of each DMC has been appointed. 1.7.4 Interdepartmental Disaster Management Committees (IDMCs) or similar strategic management forums have been established and are operating effectively at all levels of government. 1.7.5 Disaster risk management focal points have been identified by each national, provincial and municipal organ of state. 1.7.6 Responsibilities for disaster risk management have been assigned to each focal point (e.g. participation in the DMAFs) and have been included in the job description of the focal point. 1.7.7 The national, provincial and municipal Disaster Management Advisory Forums (DMAFs) have been established and are operating effectively. 1.7.8 Community disaster risk management structures have been established and are operating effectively (e.g. Disaster Management Volunteer Unit, community based disaster risk management, interest groups and ward structures). 1.7.9 Community and private sector involvement in disaster risk management structures at all levels of government is evident. 1.7.10 Decision support systems for multi-sectoral disaster risk management have been established and are functioning effectively.
	1.8 Multi-sectoral involvement	1.8.1 Disaster risk management planning is integrated into sectoral plans. 1.8.2 Disaster risk management plans are an integrated part of each integrated development plan (IDP). 1.8.3 Mechanisms have been identified and implemented to ensure the application of the principles of cooperative governance as per Chapter 3 of the Constitution. 1.8.4 Memoranda of agreement (MOAs) and mutual assistance agreements (MAAs) between relevant disaster risk management role-players (e.g. municipalities – district with locals; external aid providers;

THEMES	VARIABLES	INDICATOR
		different organs of state with particular expertise in risk reduction; SADC countries) have been signed and implemented. 1.8.5 The appointed head of the DMC participates and contributes to the integrated development forums (e.g. IDP forum). 1.8.6 Primary and secondary responsibilities have been assigned taking into account the indicative risk profile.
2. Finance and resources	2.1 Financial instruments	2.1.1 Budget allocations for disaster risk management by all organs of state in line with the indicative risk profile and the DMFs are made. 2.1.2 Provision is made for reserve/contingency funding by all organs of state. 2.1.3 Access to appropriate resources through risk reduction development by communities at risk. 2.1.4 The development of financial buffers and social safety nets (e.g. micro-credit schemes, social funds, community saving schemes, disaster bonds, subsidies and alternative funding arrangements) for communities most at risk is present. 2.1.5 Insurance and reinsurance of public and private assets take place. 2.1.6 Application of risk spreading and risk transfer mechanisms occurs. 2.1.7 Each organ of state assesses and reports on their credit risks in terms of the indicative risk profile on an annual basis. 2.1.8 Tax incentives/rebates for disaster risk reduction measures by public as well as private sector are implemented. 2.1.9 Public-private partnerships for disaster risk reduction occur at all levels of government. 2.1.10 Evidence of risk reduction measures as pre-requisite for project funding. 2.1.11 Co-finance of disaster risk reduction projects by multiple sectors in line and integrated with IDPs takes place. 2.1.12 National and provincial support for loans requested by municipality from multilateral loan organisations. 2.1.13 Gender oriented fund application and support occur.
	2.2 Cost/benefit analysis	2.2.1 Loss identification, loss estimation and loss inventories have been development. 2.2.2 Benefit in investing in disaster risk reduction measures has been determined and influences decision-making (e.g. cost of replacing infrastructure vis-à-vis prevention and mitigation measures). 2.2.3 Studies to determine historical costs of disasters and long term benefits in disaster risk reduction investment are undertaken.
	2.3 Economic development	2.3.1 Local investment is in line with disaster risk reduction measures. 2.3.2 Diversification of income sources and production is in line with risk profile. 2.3.3 Local Economic Development (LEDs) focussing on vulnerability and poverty reduction as per the risk

THEMES	VARIABLES	INDICATOR
		profile takes place. 2.3.4 Joint programmes between national government and insurance companies have been implemented in order to generate economic incentives for risk reduction and mass insurance.
	2.4 Resources	2.4.1 A national resource analysis has been conducted as per the NDMF. 2.4.2 Communities most at risk have access to basic resources which contributes to vulnerability reduction. 2.4.3 Spending mechanisms and guidelines for resource mobilisation have been determined and are functioning. 2.4.4 Adequate human, technical, material/tools, sectoral and infrastructure resources have been allocated to ensure disaster risk reduction in line with the indicative risk profile.
3. Risk assessment	3.1 Hazard assessment	3.1.1 Scientific multi-hazard identification has been conducted through multi-sectoral cooperation taking into consideration hazard characteristics, impact, historical and spatial distribution, magnitude and frequency. 3.1.2 Identification of emerging hazards due to development is constantly assessed and addressed in development plans. 3.1.3 Monitoring of all known hazard occur constantly. 3.1.4 All known hazards are mapped, displayed geo-spatially and updated annually. 3.1.5 Hazard assessment influences policy decision-making.
	3.2 Vulnerability and capacity assessment and analysis	3.2.1 Scientific vulnerability and capacity assessment and analysis using livelihoods frameworks have been conducted considering social, economic, physical, environmental, political and cultural aspects (referred to as vulnerability and capacity indicators). 3.2.2 All known vulnerability and capacity indicators are mapped, displayed geo-spatially and updated annually. 3.2.3 Integrated developmental programmes and projects directly address vulnerability indicators and sustain and enhance capacity indicators. 3.2.4 Vulnerability indicators influence strategic decision-making.
	3.3 Indicative risk profile	3.3.1 Scientific risk profiling using probabilistic techniques has been undertaken. 3.3.2 Acceptable levels of risk, as well as unacceptable thresholds have been determined taking the capacity of the organ of state into consideration. 3.3.3 Priority risks have been identified. 3.3.4 All known risks are mapped, displayed geo-spatially and updated annually. 3.3.5 Information on priority risks have been widely made available through public awareness campaigns, education and training. 3.3.6 The indicative risk profile influences strategic decision-making.
	3.4 Risk monitoring	3.4.1 Priority risks are constantly monitored and evaluated. 3.4.2 Risk scenarios have been developed and influence planning and strategic decision-making.

THEMES	VARIABLES	INDICATOR
		3.4.3 Changes to the indicative risk profile are made on an annual basis. 3.4.4 Indicative risk profile is reported on annually.
	3.5 Livelihoods	3.5.1 Sustainable livelihoods strategies are an integral part of the integrated development process. 3.5.2 Service delivery focuses on creating and enhancing sustainable livelihoods. 3.5.3 Disaster risk reduction and development planning are gender and equity sensitive and focus in particular on poverty reduction strategies. 3.5.4 Land reform is taking place and access to resources by the most vulnerability communities is enhanced. 3.5.5 Supportive infrastructure is created to enhance sustainable livelihoods.
4. Knowledge production and management	4.1 Education and training	4.1.1 A scientific national education and training needs analysis (NTNA) has been conducted. 4.1.2 A national training and education framework has been developed and directs the implementation of disaster risk reduction education and training in South Africa. 4.1.3 National unit standards for disaster risk reduction have been developed and are updated and comply with the National Qualifications Framework (NQF). 4.1.4 A national technical advisory body and quality assurer for disaster risk reduction training and education have been established and are functioning effectively. 4.1.5 An accreditation and registration system for disaster risk reduction education and training providers have been established and are functioning effectively (and is linked to the national DMIS). 4.1.6 The development of new, and support of existing training and educational institutions and staff is occurring in line with NTNA . 4.1.7 Disaster risk reduction is an integral part of school and higher education curricula through a multi-disciplinary approach. 4.1.8 Disaster risk reduction training and educational material and courses for multiple audiences have been developed. 4.1.9 Vocational training programmes and learnerships in disaster risk reduction have been developed and are implemented. 4.1.10 Community and volunteer training programmes have been developed and implemented.
	4.2 Research	4.2.1 A strategic disaster risk reduction research agenda has been established. 4.2.2 Inter/multi-disciplinary research (nationally, regionally and internationally) is taking place. 4.2.3 Research institutions engaged in disaster risk reduction research are developed and existing institutions are supported. 4.2.4 A link between scientific research, policy and practice exists (evidence-based policy and practice, policy and practice-oriented research). 4.2.5 Disaster risk reduction research contributes to science and technology development.

THEMES	VARIABLES	INDICATOR
		4.2.6 Scientific and technical networks for disaster risk reduction exist (e.g. multi-disciplinary conferences, workshops, seminars and colloquiums, websites, libraries and resources, information clearing houses and databases). 4.2.7 Research findings are published, exchanged and applied locally, provincially, nationally and internationally.
	4.3 Public awareness	4.3.1 Public awareness programmes and material are developed, disseminated and driven by the indicative risk profile as well as the NTNA. 4.3.2 Public awareness programmes directly address risk perceptions. 4.3.3 Public awareness programmes instil risk avoidance behaviour and create a culture of risk reduction. 4.3.4 Awareness on early warnings systems is taking place on a continuous basis. 4.3.5 Media involvement in and popular coverage of disaster risk occur on a regular basis. 4.3.6 Communities at risk have access to information on hazards and vulnerability (e.g. in libraries, DMCs, community and information centres, municipal offices, websites, brochures, training). 4.3.7 Lessons learned/case studies are documented and form part of public awareness programmes. 4.3.8 World Disaster Reduction Day is visibly communicated and celebrated at all spheres of government.
	4.4 Public participation	4.4.1 Civil society and the private sector are heavily involved with the goals of disaster risk reduction as well as the disaster risk management structures of government. 4.4.2 Disaster Management Volunteer Units are established and are functioning according to guidelines and the DMA. 4.4.3 Self organisation, spontaneous and organised/planned actions by civil society take place (e.g. ward committees, NGOs, CBOs, FBOs, the private sector and communities). 4.4.4 Communities are engaged in scenarios, simulations and disaster risk management planning. 4.4.5 Community structures communicate disaster risk. 4.4.6 Communities influence local strategic policy development.
	4.5 Traditional knowledge	4.5.1 Dissemination and use of traditional knowledge and coping mechanisms occur widely. 4.5.2 Traditional knowledge is included in the disaster risk assessment process and the disaster management plan. 4.5.3 Communities develop their own disaster risk reduction knowledge databases and integrate their traditional knowledge with disaster risk avoidance behaviour.
	4.6 Regional linkages	4.6.1 Professional regional and international networks are encouraged and exist. 4.6.2 Knowledge sharing on a regional and international basis takes place. 4.6.3 The NDMC functions as the ISDR platform. 4.6.4 Bilateral and multilateral agreements for disaster risk reduction have been signed. 4.6.5 A regional forum for SADC has been established and is functioning effectively.

THEMES	VARIABLES	INDICATOR
		4.6.6 South Africa participates in international disaster risk reduction activities.
5. Practice	5.1 Early warning systems	5.1.1 Multi-hazard monitoring and forecasting (according to prioritised hazards and sectoral responsibility) have been developed, implemented and are functioning optimally. 5.1.2 Early warnings are communicated regularly through the use of media and other community structures and means. 5.1.3 Early warnings are linked to contingency plan thresholds. 5.1.4 Appropriate response to warnings occurs.
	5.2 Information management and communication	5.2.1 Disaster Management Information Systems (DMIS) have been development and implemented according to the requirements of the DMA. 5.2.2 Multi-sectoral custodians of disaster risk data have been identified and regular updating of information occurs. 5.2.3 Wide use of modern information and communication systems occurs (e.g. the application of GIS, databases, interactive websites). 5.2.4 Data and information on the disaster risk is digitally available, continually updated and widely disseminated. 5.2.5 Historical hazard occurrences, damage and impact data are captured and used for forward planning. 5.2.6 Community structures feed disaster risk information into DMIS on a regular basis. 5.2.7 Various information dissemination channels exist and are functioning optimally. 5.2.8 Information networks between multi-sectoral role-players are present (e.g. scientific, technical and applied information, traditional knowledge). 5.2.9 Various channels for communicating disaster risk information (especially early warnings) exist amongst multiple role-players and communities.
	5.3 Environmental and natural resource management	5.3.1 Inventory of hydrographic basins, areas of severe environmental deterioration and most fragile ecosystems (e.g. coastal zones and wetlands) has been compiled and is considered in disaster risk assessment and integrated development. 5.3.2 Various forms of environmental protection and management are applied and enforced through a multi-disciplinary and integrated approach (e.g. reforestation, anti-desertification measures, river basin planning, agricultural practices, soil conservation, hazard control techniques). 5.3.3 Environmental impact studies are undertaken for all new developments.
	5.4 Quality control and review	5.4.1 System to measure effectiveness of disaster risk management has been established and is functioning. 5.4.2 Ground-truthing of disaster risk assessment findings takes place. 5.4.3 Methodologies and results of disaster risk assessments are subject to independent technical review. 5.4.4 Effectiveness of disaster risk reduction initiatives is monitored by DMCs and reported on. 5.4.5 Testing of contingency plans, standard operating procedures (SOPs) and field operations guides

THEMES	VARIABLES	INDICATOR
		(FOGs) take place on a regular basis and is linked to community awareness programmes. 5.4.6 Simulations and exercises of contingency plans take place and are subject to independent review. 5.4.7 Lessons learned and case studies are incorporated into disaster risk management planning, training programmes and research. 5.4.8 Disaster risk management measures are based on international best practices. 5.4.9 Uniform templates and checklists for disaster risk assessment and disaster assessment have been developed and implemented. 5.4.10 Disaster risk management plans, SOPs and FOGs are reviewed and updated annually. 5.4.11 Mechanisms for the monitoring and review of post-disaster activities have been established and are functioning effectively (as per the requirements of the DMA).
6. Emergency management	6.1 Preparedness	6.1.1 Preparedness measures take capacities into consideration (as per the capacity indicators). 6.1.2 Contingency/business continuity planning (for logistics as well as infrastructure) takes place in a multi-sectoral environment. 6.1.3 Contingency plans for all priority hazards have been developed. 6.1.4 SOPs and FOGs for all eventualities and all role-players have been developed. 6.1.5 A national standard for incident management has been development and implemented. 6.1.6 Emergency finds and stocks are ensured (either through warehousing or MOAs with product providers).
	6.2 Mitigation	6.2.1 Mitigation measures are included in all development, contingency and disaster risk management plans. 6.2.2 Mitigation measures consider secondary and knock-on effects of hazards. 6.2.3 Mitigation measures are aimed at communities at risk.
	6.3 Response	6.3.1 Disaster risk reduction is part of the incident management system and is considered as part of disaster response. 6.3.2 Inter-agency response and coordination occur in line with tested contingency plans.
	6.4 Rehabilitation and reconstruction	6.4.1 Promotion of disaster risk reduction in post-disaster reconstruction occurs. 6.4.2 Post-disaster project teams for rehabilitation and reconstruction have been established and are functioning effectively. 6.4.3 Design of rehabilitation and reconstruction plans occurs as part of disaster risk management plans. 6.4.4 Rehabilitation and reconstruction plans are based on development challenges and are development oriented. 6.4.5 Rehabilitation and reconstruction plans include both physical damage and social recovery.

Table 7.1: A comprehensive framework for multi-sphere disaster risk reduction in South Africa

7.3 PROCESS-MAP FOR FRAMEWORK IMPLEMENTATION

In order to facilitate the implementation of the above framework, process-maps will be drawn taking into account the priorities of the variables as well as the order in which the different variables should occur on a linear timeline. A process-map indicates the logical sequence and linkages of activities; in other words, the mapping of processes. The process-map is divided into two phases. The first phase aims to address the priorities and order of the different variables of each theme. The second phase of the process-map aims to link the different themes. In each instance the priority application of the success factor is given. The numbering system relating to the framework in Table 7.1 has been retained in brackets for reference purposes.

7.3.1 Theme 1: Governance and legislation

The research has shown that there is a direct link between the political will to engage in disaster risk reduction and the actual application of disaster risk reduction measures (see Chapters 2 and 3). For this reason governance and legislation will receive top priority. Figure 7.1 contains a process-map for the indicators or success factors for this theme.

The figure below indicates that there are certain areas of priority. The need for political commitment towards disaster risk reduction is imperative. Political commitment drives the political process. In order to begin a legislative process (be it at national, provincial or local government level) clear and tangible steps need to be taken. Once political commitment to disaster risk reduction is ensured the legislative process can commence. South Africa is in a favourable situation because the Disaster Management Act 57 of 2002 has already been promulgated. In this instance political will needs to drive the legislative process at provincial as well as local government level. It should be emphasised at this stage that reference here is not only made to specific disaster risk reduction legislation, but also to the incorporation of disaster risk

reduction measures into other laws through multi-sectoral involvement. Legislation also provides the foundation for disaster risk reduction institutional capacity building through a multi-sphere approach.

Any legislation needs to be interpreted and implemented. This is done through the development of appropriate policies, codes and standards. Policy on a strategic level gives impetus to the development of specific guidelines which will (in this instance) drive the disaster risk reduction planning process. Planning for disaster risk reduction needs to be undertaken by multi-sectoral role-players and stakeholders.

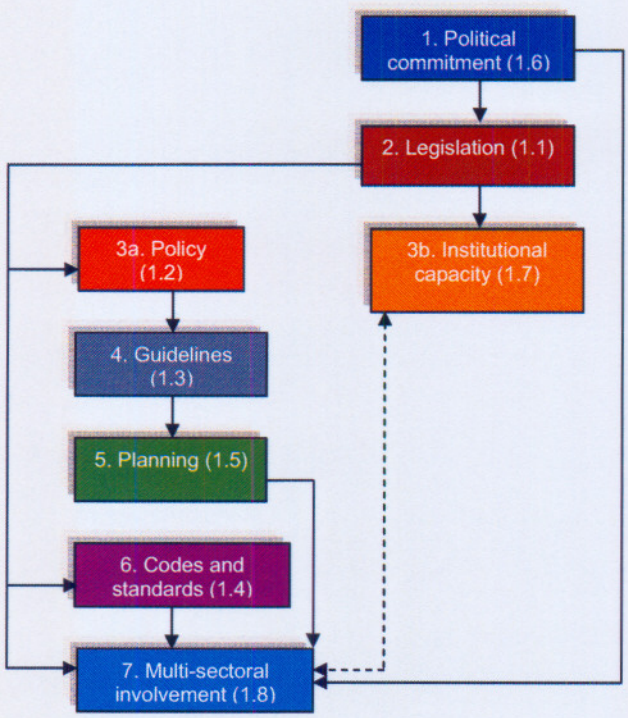

Figure 7.9: Process-map: Governance and politics

7.3.2 Theme 2: Finances and resources

Finances and resources are imperative for any disaster risk reduction activities to succeed. The second theme of the framework aims to give

strategic guidance as to the aspects that should be in place in terms of financial arrangements and resources. Figure 7.2 maps the interaction between the variables.

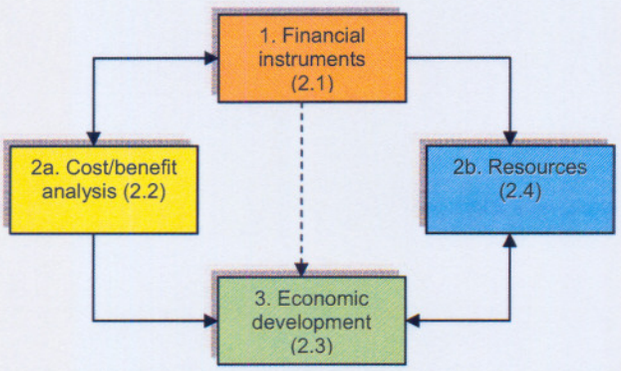

Figure 7.2: Process-map: Finances and resources

Financial instruments make it possible for various role-players to engage in disaster risk reduction activities. This success factor should be regarded as an enabler to the whole disaster risk reduction process. Financial instruments will allow cost/benefit analysis to take place, which will in turn influence financial spending and contribute to economic development. Financial instruments further provide the required resources for disaster risk reduction which will influence economic development. An increase in economic development will provide more resources for distribution and thus contribute to risk reduction.

7.3.3 Theme 3: Risk assessment

The third theme, risk assessment, aims to create an indicative risk profile which will in turn contribute to strengthening sustainable livelihood practices.

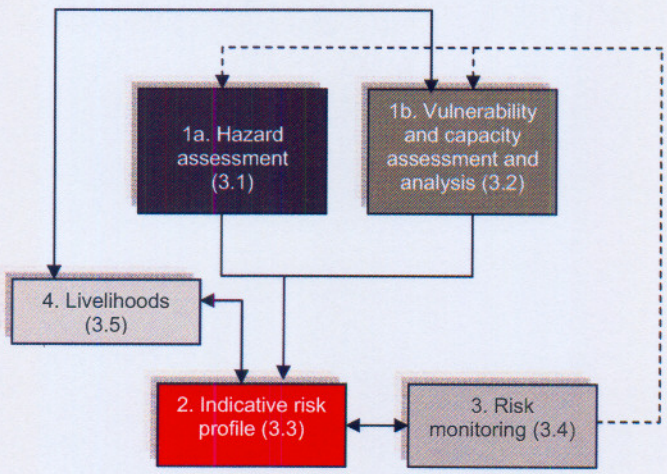

Figure 7.3: Process-map: Risk assessment

Hazard assessment as well as vulnerability and capacity assessment and analysis provides the impetus towards determining the indicative risk profile. Vulnerability and capacity assessment and analysis will further provide information on the livelihood practices of communities and *visa versa*. Once an indicative risk profile is determined, the risk needs to be constantly monitored and reassessed.

7.3.4 Theme 4: Knowledge production and management

Knowledge production and management consist of six success factors and Figure 7.4 maps the interaction between these components.

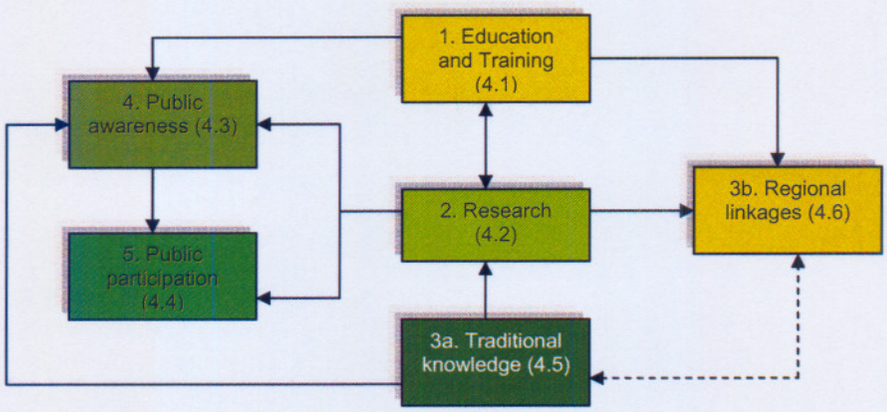

Figure 7.4: Process-map: Knowledge management and production

Education, training and research form the foundation towards knowledge management and production. These two success factors are mutually complementary and also drive the public awareness and public participation process. Once public awareness has been established public participation will follow once their risk perception has been addressed. Traditional knowledge further provides impetus to public awareness and alternative avenues for disaster risk reduction research. Regional linkages can be established through education and training as well as research.

7.3.5 Theme 5: Practice

Practice relates to a variety of different aspects which contribute to the overall reduction of disaster risk. Figure 7.5 should not be viewed in isolation of the myriad of other processes contained in the other themes. Practice should be seen as the inherent elements which must form an integral part of the day to

day focus of all organs of state and disaster risk reduction role-players. Although Figure 7.5 indicates a relationship between the components, there are in reality other aspects which influence these success factors and which are being influenced by them. In this instance it is clear that a successful early warning system will depend on the quality, reliability and trustworthiness of data and information, and so too will the early warnings which are issued by the system. Quality control and review of all other disaster risk reduction processes should therefore be ensured. Early warning will in particular be based on the monitoring of specific environmental aspects, linked to the indicative risk profile.

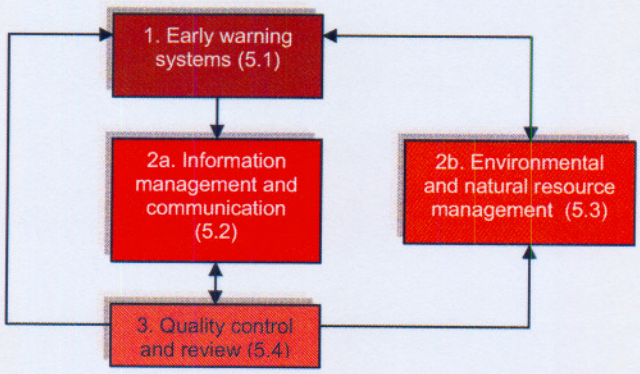

Figure 7.5: Process-map: Practice

7.3.6 Theme 6: Emergency management

The definition of disaster management as per Chapter 1 indicated that emergency preparedness and response form an integral part of the disaster risk management function in the South African context. Theme six contains the success factors: preparedness, mitigation, response and rehabilitation and reconstruction.

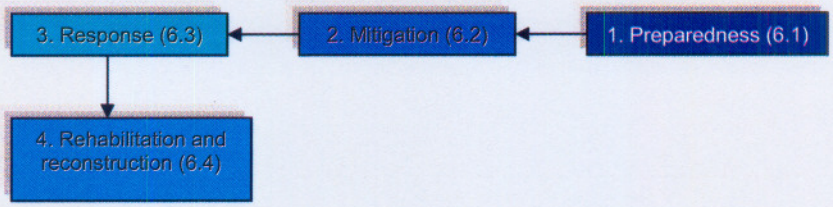

Figure 7.6: Process-map: Emergency management

The success factors to emergency management function on a linear time frame. Each of the components is therefore dependent on the success of the previous. Figure 7.6 makes it clear that preparedness for a given event should receive priority. Certain mitigation actions should be put in place if one can not fully prepare for an eventuality. Response to an event should be well-planned and coordinated followed by rehabilitation and reconstruction (sometimes referred to as 'recovery').

7.3.7 Process-map: a comprehensive framework for multi-sphere disaster risk reduction in South Africa

Figure 7.7 aims to provide a process-map for all six themes. It should be noted that many of the success factors of each of the themes are interrelated and interdependent of each other. Although the preceding process-maps indicated the relationship between the success factors of each theme, Figure 7.7 aims to illustrate the relationship between all success factors.

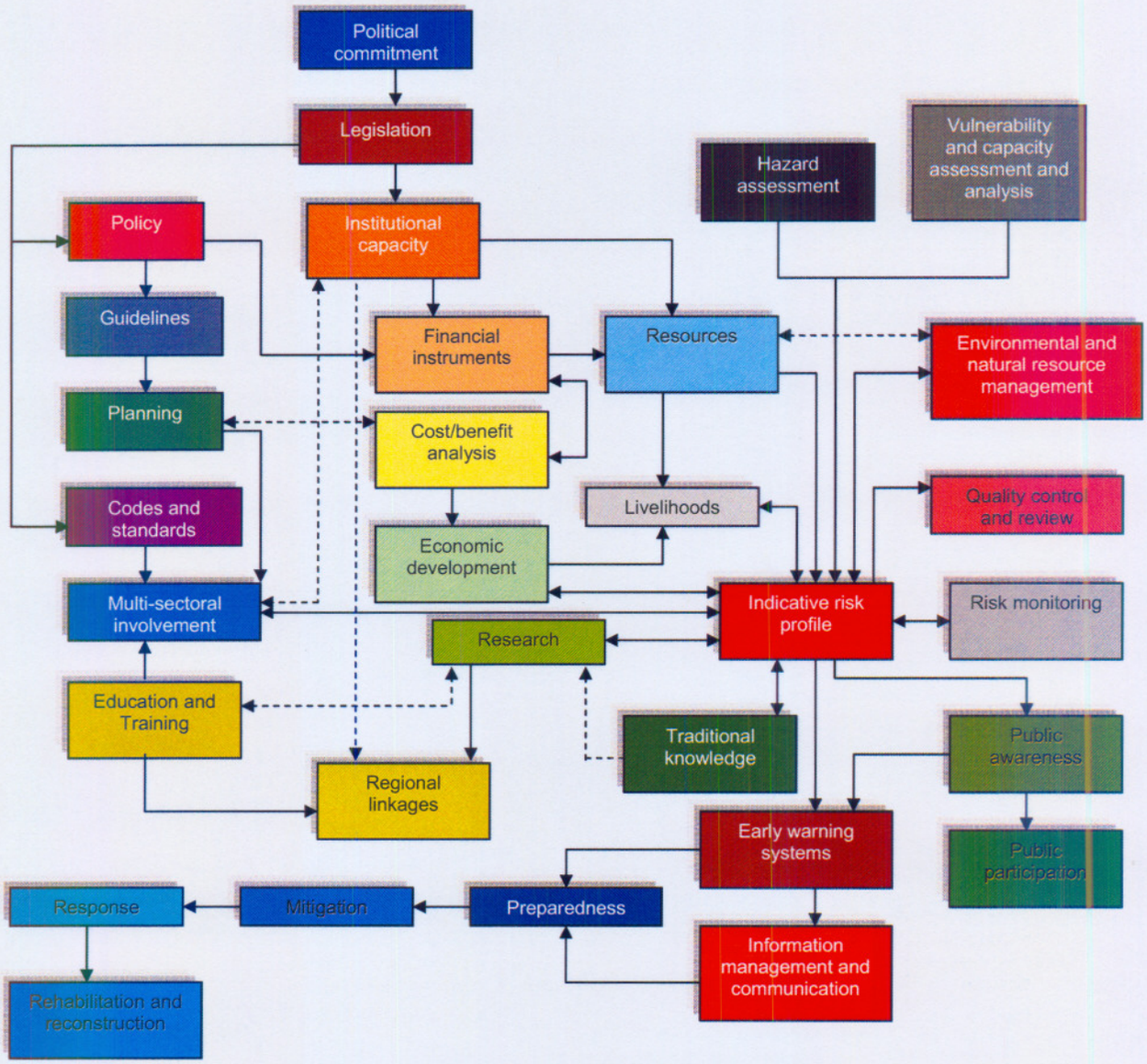

Figure 7.7: Process-map: implementation of the multi-sphere framework

7.4 RECOMMENDATIONS FOR FURTHER RESEARCH

This research identified certain areas for further research:

i. The strategic nature of the research necessitates the refining of the framework for tactical as well as operation application. It is recommended that the framework be refined to suite the particular tactical and operation needs of the different spheres of government.

ii. Imperative to disaster risk reduction is the linkage with development goals. Further research into the link between strategic development goals (e.g. the MDGs) and the strategic objectives of this framework is necessary. In this way the success of the framework in facilitating risk reduction development can be established.
iii. Research into the integration of the framework with development objectives can also be undertaken. Alignment of the success factors and the success factors for sustainable development can be drawn.
iv. It is recommended that once this framework is implemented, further research is conducted to establish the effectiveness of the themes and success factors, as well as determining the interaction between them.

7.5 CONCLUSION

This chapter described the comprehensive framework for disaster risk reduction in South Africa. The findings of Chapter 6 were interpreted and a new framework was compiled. Subsequently, each of the identified themes was expressed as a process-map in order to illustrate their application. In conclusion a process-map of the full framework was drawn, taking into consideration the dependencies, priorities and interaction of all of the success factors. In finalisation, this chapter provided possible areas of future research emanating from this thesis.

ANNEXURE 1 TO CHAPTER 4

ISDR FRAMEWORK - DRAFT FRAMEWORK TO GUIDE AND MONITOR DISASTER RISK REDUCTION

THEMATIC AREAS/ COMPONENTS	CHARACTERISTICS	CRITERIA FOR BENCHMARKS (VERY TENTATIVE)
1. POLITICAL COMMITMENT AND INSTITUTIONAL DEVELOPMENT (GOVERNANCE)		
1.1 Policy and planning	• Risk reduction as a policy priority • Promotion of risk reduction in post-disaster reconstruction • Integration of risk reduction in development planning and sectoral policies (poverty eradication, social protection, sustainable development, climate change adaptation, desertification, energy, natural resource management, health, education, etc)	• ***National risk reduction strategy and plan*** • *Disaster reduction in poverty reduction strategy papers, in national Millennium Development Goals reports* • *Disaster reduction in National Adaptation Plan of Action (for LDCs) on climate change* • *National follow-up on WSSD Plan of Implementation*
1.2 Legal and regulatory framework	• Laws, acts and regulations • Codes, standards • Compliance and enforcement • Responsibility and accountability	• *Requirement of compliance by law* • *Existence and update of codes and standards* • *Existence of systems to ensure compliance and enforcement*
1.3 Resources	• Resource mobilization and allocation: financial (innovative and alternative funding, taxes, incentives), human, technical, material, sectoral	• *Evidence of budgetary allocation* • *Staffing allocation* • *Public-private partnerships*

THEMATIC AREAS/ COMPONENTS	CHARACTERISTICS	CRITERIA FOR BENCHMARKS (VERY TENTATIVE)
1.4 Organisational structures	• Implementing and coordinating bodies • Intra- and Inter-ministerial, multidisciplinary & multisectoral mechanisms • Local institutions for decentralised application • Civil society, NGOs, private sector and community participation	• *Existence of administrative structure responsible for disaster reduction* • *Sectoral programmes of line ministries* • *Consultation with and role of civil society, NGOs, private sector and the communities* • *Existence of "watchdog" groups*
2. RISK IDENTIFICATION AND ASSESSMENT		
2.1 Risk assessment and data quality	• Hazard analysis: characteristics, impacts, historical and spatial distribution, multi-hazard assessments, hazard monitoring including of emerging hazards • Vulnerability and capacity assessment: social, economic, physical and environmental, political, cultural factors • Risk monitoring capabilities, risk maps, risk scenarios	• *Hazard recorded and mapped* • *Vulnerability and capacity indicators development and systematically mapped and recorded* • *Risk scenarios development and used* • *Systematic assessment of disaster risk in development programming*
2.2 Early warning systems	• Monitoring and forecasting • Risk scenarios • Warning and dissemination • Response to warning	*Effective early warning systems that include:* • *Quality of forecasts* • *Dissemination channels and participation at local level* • *Effectiveness of response to warnings*
3. KNOWLEDGE MANAGEMENT		
3.1 Information management and communication	• Information and dissemination programmes and channels • Public and private information systems (including disaster, hazard and risk databases & websites) • Networks for disaster risk management (scientific, technical and applied information, traditional knowledge)	• *Documentation and databases on disasters* • *Professionals and public networks* • *Dissemination and use of traditional knowledge and practice* • *Resource centre and networks, in particular educational facilities*

THEMATIC AREAS/ COMPONENTS	CHARACTERISTICS	CRITERIA FOR BENCHMARKS (VERY TENTATIVE)
3.2 Education and training	• Inclusion of disaster reduction from basic to higher education (curricula, material development and institutions) • Vocational training • Dissemination and use of traditional/local knowledge • Community training programmes	• *Educational material and references on disasters and disaster reduction* • *Specialised courses and institutions* • *Trained staff* • *Evidence of systematic capacity development programmes*
3.3 Public awareness	• Public awareness policy and programmes and materials • Media involvement in communicating risk and awareness raising	• *Coverage of disaster reduction related activities by media* • *Public aware and informed* • *Visibility of disaster reduction day*
3.4 Research	• Research programmes and institutions for risk reduction • Evaluations and feedback • National, regional and international cooperation in research, science and technology development	• *Existence of a link between science and policy (evidence-based policy and policy-oriented research)* • *Indicators, standards and methodologies established for risk identification* • *Regional and international exchange and networking*
4. RISK MANAGEMENT APPLICATIONS AND INSTRUMENTS		
4.1 Environmental and natural resource management	• Interface between environmental management and risk reduction practices, in particular in coastal zones, wetland and watershed management, integrated water resource management; reforestation, agricultural practices, ecosystem conservation	• *Use of wetland or forestry management to reduce flood and landslide risk* • *Trends in deforestation and desertification rate* • *Use of environmental impact assessments in disaster reduction planning*

THEMATIC AREAS/ COMPONENTS	CHARACTERISTICS	CRITERIA FOR BENCHMARKS (VERY TENTATIVE)
4.2 Social and economic development practices	• Social protection and safety nets • Financial instruments (involvement of financial sector in disaster reduction: insurance/reinsurance, risk spreading instruments for public infrastructure and private assets such as calamity funds and catastrophe bonds, micro-credit and finance, revolving community funds, social funds) • Sustainable livelihoods strategies	• *Access to social protection and safety nets as well as micro-finance services for disaster risk reduction* • *Use of safety nets and social protection programmes in recovery process* • *Insurance take up* • *Public-private partnerships for micro-financing and insurance at community level*
4.3 Physical and technical measures	• Land use applications, urban and regional development schemes • Structural interventions (hazard resistant construction and infrastructure, retrofitting of existing structures, drought, flood and landslide control techniques) • Soil conservation and hazard resistant agriculture practices	• *Construction reduced/zoning plans enforced in floodplains and other mapped hazard- prone areas* • *Compliance of public and private buildings with codes and standards* • *Public buildings (heath facilities, schools, lifelines, etc) at high risk retrofitted* • *Regular maintenance of hazard control structures*
5. DISASTER PREPAREDNESS, CONTINGENCY PLANNING AND EMERGENCY MANAGEMENT		
5.1 Preparedness and contingency planning	• Contingency plans (logistics, infrastructure) • National and local preparedness plans • Effective communication and coordination system • Rehearsal and practice of plans	• *Testing and updating of emergency response networks and plans (national/local, private/public)* • *Coverage of community training and community based preparedness* • *Emergency finds and stocks*
5.2 Emergency management	• Civil protection and defence organisations and volunteer networks	• *Effective response to disasters and mobilisation of volunteers, including NGOs, in particular Red Cross/Red Crescent Societies*

ANNEXURE 2 TO CHAPTER 4

THE *INSTITUTO DE ESTUDIOS AMBIENTALES* (IDEA) / INTER-AMERICAN DEVELOPMENT BANK (IADB) INDICATORS FOR DISASTER RISK MANAGEMENT MODEL/INDICES

This model/framework for disaster risk reduction consists of four different indices namely:

1. Disaster Deficit Index (DDI)
2. Local Disaster Index (LDI)
3. Prevalent Vulnerability Index (PVI)
4. Risk Management Index (RMI)

For the purpose of this study only the last index, Risk Management Index (RMI) is summarised here. See Cardona (2004) for the full explanation of the full model/framework.

INDEX 4: RISK MANAGEMENT INDEX (RMI)

CATEGORY	INDICATOR	PERFORMANCE LEVELS
1. Risk identification	1. Systematic disaster and loss inventory	1. Some basic and superficial data on the history of events. 2. Continual registration of current events, incomplete catalogues on the occurrence of some phenomena and limited information on losses and effects. 3. Some complete catalogues at thee national and regional, systematisation of actual events and their

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		economic, social and environmental effects. 4. Complete inventory and multiple catalogues of events, registry and detailed systematisation of effects and losses at national level. 5. Detailed inventory of events and their effects for all types of existing hazards and data bases at the sub-national and local levels.
	2. Hazard monitoring and forecasting	1. Minimum and deficient instrumentation of some important phenomena, 2. Basic instrumentation networks with problems of updated technology and continuous maintenance. 3. Some networks with advanced technology at the national level or in particular areas; improved prognostic and information protocols established for principal hazards. 4. Good and progressive instrumentation cover at the national level, advanced research in the matter on the majority of hazards, and some automatic warning systems working. 5. Wide coverage of sensor and station networks for all types of hazards in all parts of the territory; permanent and opportune analysis of information and automatic early warning systems working continuously at the local, regional and national levels.
	3. Hazard evaluation and mapping	1. Superficial evaluation and basic maps covering the influence and susceptibility of some phenomena. 2. Some descriptive and qualitative studies of susceptibility and hazard for principle phenomena at the national scale and for some specific areas. 3. Some hazard maps based in probabilistic techniques for the national level and for some regions. Generalised use of GIS for mapping the principle hazards. 4. Evaluation is based in advanced and adequate

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		resolution methodologies for the majority of hazards. Microzonification of some cities based on probabilistic techniques. 5. Detailed studies for the vast majority of potential phenomena through the territory. Micro zoning of the majority of cities and hazard maps at the sub-national and municipal levels.
	4. Vulnerability and risk assessment	1. Identification and mapping of the principle elements exposed in prone zones in principle cities and river basins. 2. General studies of physical vulnerability when faced with the most recognised hazards, using GIS in some cities and basins. 3. Evaluation of potential damage and loss scenarios for some physical phenomena in the principal cities. Analysis of the physical vulnerability in some essential buildings. 4. Detailed studies of risk using probabilistic techniques taking into account the economic and social impact of the majority of hazards in some cities. Vulnerability analysis of the majority of essential buildings and life lines. 5. Generalised evaluation of risk, considering physical, social, cultural and environmental factors. Vulnerability analysis also for private buildings and the majority of life lines.
	5. Public information and community participation	1. Sporadic information on risk management in normal conditions and more frequently when disasters occur. 2. Press, radio and television coverage oriented towards preparedness in case of emergency. Production of illustrative materials on dangerous phenomena. 3. Frequent opinion programmes on risk management issues at the national and local levels. Guidelines for vulnerability reduction. Work with communities and

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		NGOs. 4. Generalised diffusion and progressive consciousness; conformation of some social networks for civil protection and NGOs that explicitly promote risk management issues and practice. 5. Wide scale participation and support from private sector for diffusion activities. Consolidation of social networks and notable participation of professionals and NGOs at all levels.
	6. Training and education in risk management	1. Incipient incorporation of hazard and disaster topics in formal education and programmes for community participation. 2. Some curricular adjustments at the primary and secondary levels. Production of teaching guides for teachers and community leaders in some places. 3. Progressive incorporation of risk management in curricula. Considerable production of teaching material and undertaking of frequent courses for community training. 4. Widening of curricular reform to higher education programmes. Specialisation courses offered at various universities. Wide ranging community training at local level. 5. Generalised curricular reform throughout the territory and in all stages of education. Wide ranging production of teaching materials. Permanent schemes for community training.
2. Risk reduction	1. Risk consideration in land use and urban planning	1. Consideration of some means for identifying risk, and environmental protection in physical planning. 2. Promulgation of national legislation and some local regulations that consider some hazards as a factor in territorial organisation and development planning. 3. Progressive formulation of land use regulations in various cities that take into account hazards and risks;

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		obligatory design and construction norms based on microzonations. 4. Wide ranging formulation and updating of territorial organisation plans with a preventative approach in the majority of municipalities. Use of microzonations with security ends. 5. Generalised approval and control of implementation of territorial organisation plans that include risk as a major factor, and the respective urban security regulations.
	2. Hydrographic basin intervention and environmental protection	1. Inventory of basins and areas of severe environmental deterioration or those consider to be most fragile. 2. Promulgation of national level legal dispositions and some local ones that establish the obligatory nature of reforestation, environmental protection and river basin planning. 3. Formulation of some plans for organisation and invention in strategic river basins and sensitive zone taking into account risk and vulnerability aspects. 4. Appreciable number of regions and water basins with environmental protection plans, impact studies and ordering of agricultural areas and that consider risk a factor in determining investment decisions. 5. Intervention in a considerable number of deteriorated basins, sensitive zones and strategic ecosystems. Majority of municipalities have environmental intervention and protection plans.
	3. Implementation of hazard-event control and protection techniques	1. Some structural control and stabilisation measures in some more dangerous places. 2. Channelling works, water treatment in major cities all constructed following security norms. 3. Establishment of measures and regulations for the design and construction of hazard control and protection works in harmony with territorial

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		organisation dictates. 4. Wide scale intervention in mitigable risk zones using protection and control measures in the principle cities as requires. 5. Adequate design and construction of cushioning, stabilizing, dissipation and control works in the majority of cities in order to protect human settlements and social investment.
	4. Housing improvement and human settlement relocation form prone areas	1. Identification and inventory of marginal human settlements located in hazard prone areas. 2. Promulgation of legislation establishing the priority of dealing with deteriorated urban areas at risk in the large cities. 3. Programmes for upgrading the surroundings, existing housing, and relocation from risk areas in principal cities. 4. Progressive intervention of human settlements at risk in the majority of cities and adequate treatment of cleared areas. 5. Notable control of risk areas in all cities and relocation of the majority of housing constructed in non-mitigable risk zones.
	5. Updating and enforcing of safety standards and construction codes	1. Voluntary use of norms and codes from other countries without major adjustments. 2. Adaptation of some requirements and specifications according to some national and local criteria and particularities. 3. Promulgation and updating of obligatory national norms based on international norms that have been adjusted according to the hazard evaluations made in the country. 4. Technological updating of the majority of security and construction code norms for new and existing buildings with special requirements for special building and life

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		lines. 5. Permanent updating of codes and security norms: establishment of local regulations for construction in the majority of cities based on microzonations, and their strict control and implementation.
	6. Reinforcement and retrofitting of public and private assets	1. Retrofitting and sporadic adjustments to buildings and life lines; remodelling, changes of use or modifications. 2. Promulgation of intervention norms as regards the vulnerability of existing buildings. Strengthening of essential buildings such as hospitals or those considered indispensable. 3. Some mass programmes for evaluating vulnerability, rehabilitation and retrofitting of hospitals, schools and the central offices of life line facilities. Obligatory nature of retrofitting. 4. Progressive number of buildings retrofitted, life lines intervened, some buildings of the private sector retrofitted autonomously or due to fiscal incentives given by government. 5. Massive retrofitting of principal public and private buildings. Permanent programmes of incentives for housing rehabilitation lead to lower socio-economic sectors.
3. Disaster management	1. Organisation and coordinating of emergency operation	1. Different organisations attended emergencies but lack resources and various operate only with voluntary personnel. 2. Specific legislation defines an institutional structure, role for operational entities and coordination of emergency commissions throughout the country. 3. Considerable coordination exists in some cities, between organisations in preparedness, communications, search and rescue, emergency networks, and management of temporary shelters. 4. Permanent coordination for response between

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		operational organisations, public service, local authorities and civil society organisations in the majority of cities. 5. Advanced levels of inter-institutional organisation between public, private and community based bodies. Adequate protocols exists for horizontal and vertical coordination at all territorial levels.
	2. Emergency response planning and implementation of warning systems	1. Basic emergency and contingency plans exist with check lists and information on available personnel. 2. Legal regulations exist that establish the obligatory nature of emergency plans. Some cities have operational plans and articulation exists with technical information providers at the national level. 3. Protocols and operational procedures are well defined at the national and sub-national levels and in the main cities. Various prognosis and warning centres operate continuously. 4. Emergency and contingency plans are complete and associated with information and warning systems in the majority of cities. 5. Response preparedness based on analysis.
	3. Endowment of equipment, tools and infrastructure	1. Basic supply and inventory of resources only in the operational organisations and emergency commissions. 2. Centre with reserves and specialised equipment for emergencies at national level and in some cities. Inventory of resources in other public and private organisations. 3. Emergency Operations Centre which is well stocked with communication equipment and adequate registry systems. Specialised equipment and reserve centres exists in various cities. 4. EOCs are well equipped and systematised in the majority of cities. Progressive complimentary stocking

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		of operational organisations. 5. Inter-institutional support networks between reserve centres and EOCs are working permanently. Wide ranging communications, transport and supply facilities exist in case of emergency.
	4. Simulation, updating and test of inter institutional response	1. Some internal and joint institutional simulations between operational organisations exist in some cities. 2. Sporadic simulation exercises for emergency situations and institutional response exist with all operational organisations. 3. Desk and operational simulations with the additional participation of public service entities and local administrations in various cities. 4. Coordination of simulations with community, private sector and media at the national level, and in some cities. 5. Testing of emergency and contingency plans and updating of operational procedures based on frequent simulation exercises in the majority of cities.
	5. Community preparedness and training	1. Informative meetings with community in order to illustrate emergency procedures during disasters. 2. Sporadic training courses with civil society organisations dealing with disaster related themes. 3. Community training activities are regularly programmed on emergency response in coordination with community development organisations and NGOs. 4. Courses are run frequently with communities in the majority of cities and municipalities in preparedness, prevention and reduction of risk. 5. Permanent prevention and disaster response courses in all municipalities within the framework of a training programme in community development and in coordination with other organisations and NGOs.

CATEGORY	INDICATOR	PERFORMANCE LEVELS
	6. Rehabilitation and reconstruction planning	1. Design and implementation of rehabilitation and reconstruction plans only after important disasters. 2. Planning of some provisional recovery measures by public service institutions and those responsible for damage evaluation in some cities. 3. Diagnostic procedures, reestablishment and repairing of infrastructure and production projects for community recovery are available at the national level and in various cities. 4. Ex ante undertaking of recovery plans and programmes to support social recovery, sources if employment and productive means for communities in the majority of cities. 5. Generalised development of detailed reconstruction plans dealing with physical damage and social recovery based on risk scenarios. Specific legislation exists and anticipated measures for reactivation.
4. Financial protection and governance	1. Inter-institutional, multisectoral and decentralising organisation	1. Basic organisations at the national level arranged in commissions, principally with an emergency response approach. 2. Legislation that establishes decentralised, inter-institutional and multisectoral organisation for the integral management of risk and the formulation of a general risk management plan. 3. Inter-institutional risk management systems active at the local level in various cities. Inter-ministerial work at the national level in the design of public policies for vulnerability reduction. 4. Continuous implementation of risk management projects associated with programmes if adaptation to climate change, environmental protection, energy, sanitation and poverty reduction. 5. Expert personnel with wide experience incorporating risk management in sustainable human development

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		planning in major cities. High technology information systems available.
	2. Reserve funding for institutional strengthening	1. Existence of a national disaster fund and some local funds in some cities. 2. Regulating of existing reserve fund or creation of new sources to co-finance local level risk management projects. 3. National economic support and search for international funds for institutional development and strengthening of risk management in the whole country. 4. Progressive creation of reserve funds at municipal level to co–finance projects, institutional strengthening and recovery in times of disaster. 5. Financial engineering for the design of retention and risk transfer instruments at the national level. Reserve funds operating in the majority of cities.
	3. Budget allocation and mobilisation	1. Limited allocation of national budget to competent institutions for emergency response. 2. Legal norms establishing budgetary allocations to national level organisations with risk management objectives. 3. Legally specified specific allocations for risk management at the local level and the frequent undertaking of inter-administrative agreements or the execution of prevention projects. 4. Progressive allocation of discretionary expenses at the national and municipal level for vulnerability reduction, the creation of incentives and rated of environmental protection and security. 5. National orientation and support for loans requested by municipalities and sub-national and local organisations from multilateral loan organisations.
	4. Implementation of social safety nets and funds response	1. Sporadic subsidies to communities affected by disasters or in critical risk situations.

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		2. Permanent social investment funds created to support vulnerable communities focussing on the poorest socio-economic groups. 3. Social networks for the self protection of means of subsistence of communities at risk and undertaking of post-disaster rehabilitation and reconstruction production projects. 4. Regular micro-credit programmes and gender oriented activities oriented to the reduction of human vulnerability. 5. Generalised development of social protection and poverty reduction programmes integrated with prevention and mitigation activities throughout the territory.
	5. Insurance cover and loss transfer strategies of public assets	1. Very few public buildings are insured at the national level and exceptionally at the local level. 2. Obligatory insurance of public goods. Deficient insurance of infrastructure. 3. Progressive insurance of public goods and infrastructure at the national level and in some cities. 4. Design of programmes for the collective insurance of buildings and publically rented infrastructure in the majority of cities. 5. Analysis and generalised implementation if retention and transfer strategies for losses to public goods, considering reinsurance groups, risk titles, bonds etc.
	6. Housing and private sector insurance and reinsurance coverage	1. Low percentage of private goods insured. Incipient, economically weak and little regulated insurance industry. 2. Regulation of insurance industry controls over solvency and legislation for insurance of house loan and housing sector. 3. Development of some careful insurance studies based on advanced probabilistic estimated of risk, using

CATEGORY	INDICATOR	PERFORMANCE LEVELS
		microzoning, auditing and optimum building inspection. 4. Design of collective housing insurance programmes and for small business by the majority of local governments and insurance companies with automatic coverage of the poorest. 5. Strong support for joint programmes between government and insurance companies in order to generate economic incentives for risk reduction and mass insurance.

ANNEXURE 3 TO CHAPTER 4

THE DISASTER RISK REDUCTION MAINSTREAMING FRAMEWORK

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
1. POLITICS AND LEGISLATION			
1.1 Political commitment *To what extent has a national strategy for mainstreaming 'disaster risk reduction' (DRR) been implemented?*	A lead agency has driven a process of DRR, which has been adopted by all key institutions. Clear evidence of this is identifiable in policy, practice and institutional mentality.	**A.** A national strategy for DRR exists with successful implementation in some areas. However, adoption disjointed in others because of lack of ownership, capacity or political will. **B.** Key figures supportive of DRR and a national strategy in planning phase. Institutions moving towards proactive disaster planning. **C.** No national strategy for DRR, institutions reactive in disaster planning, little political will to change policies.	• Legislation • Policy documents • Government press releases • Newspaper articles • Interviews with key actors
1.2 Regional linkages *What is the nature of the relationship with regional disaster institutions?* *Have regional and international disaster reduction initiatives been successfully adopted at national and local levels?*	Full involvement in all regional and international disaster reduction initiatives with good relations with the relevant institutions. Clear evidence of progress as a result e.g. policy, practice, capacity improvements.	**A.** Generally helpful relations with regional/international disaster institutions, with some evidence of policy, practice, capacity improvements as a result of inclusion in many disaster reduction initiatives. **B.** Sporadic engagement with regional/international disaster	• Policy documents • Project reports • Interviews with key actors at local, regional and international level • Analysis of practice • Observation of results in the field

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		reduction programs, with mixed results when adopted. Turbulent or disjointed relations with regional/international disaster institutions. **C.** The state has poor links with regional and international disaster management institutions. Projects have bypassed the country.	
1.3 Legislation *Has legislation been passed (with necessary compliance and accountability process) that requires risk reduction/vulnerability assessments, disaster impact and scenario planning for all development projects?*	Legislation passed, compliance and accountability measures effective and operational with policy and practice strictly following law.	**A.** Legislation pending, with voluntary compliance encouraged and successful. Policy and practice already reflecting pending legislation. **B.** Legislation passed, but compliance and accountability ineffective with insufficient application within policy and practice. **C.** No legislation supporting risk reduction measures for development projects has been passed.	• Legislation (e.g. Development Planning Acts) • Development Plan • Environmental Impact Assessments • Interviews with key actors • Risk assessments
1.4 Emergency powers	None mentioned		
1.5 National Disaster Mitigation Committee (or equivalent) *Does an inter-ministerial, multi-sectoral coordinating committee (or equivalent) for disaster reduction exist, that has access to the highest political office?* *Does the committee (or equivalent) have review mechanisms and has it been successful in implementing changes?*	Disaster reduction committee (or equivalent) consisting of stakeholders established, meets regularly and has access to highest political office. Key successes achieved. Periodic review of activities.	**A.** Disaster reduction committee (or equivalent) exists, meets infrequently, though not attached to highest political office. Successes limited, review of activities irregular. Or Disaster reduction activities handled under alternative administrative set-up, with successful projects and established review mechanism. **B.** Disaster reduction committee (or equivalent) planned but yet to meet.	• Committee minutes and review documents • Parliamentary proceedings • Interviews with key actors • Observations in the field

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		Political will to create effective institution, with signs that proactive planning supported. **C.** Disaster reduction committee (or equivalent) does not exist, with no moves to create one at the present time	
2. POLICY			
2.1 Policy Statements *Do the policy statements of key institutions refer to the importance of disasters/vulnerability and their commitment to the mitigation of risks and has this commitment been translated into practice?*	Policy statements clearly address the mitigation of disasters/vulnerability and risk reduction, with a conspicuous shift in emphasis from reactive to proactive planning. Practices strictly adhere to the policy statements.	**A.** Policy statements do address the threat of disasters and articulate a need for better preparedness, but shift from reactive to proactive planning is indistinct. Progress to improve practices being made. **B.** Some policy statements allude to the problem of disasters, but no mention of preparedness, vulnerability, mitigation or risk reduction. Disaster planning weakly identifiable in practice. **C.** There are no references to disasters, risks or vulnerability in policy statements and practices do not appear to reflect proactive disaster planning.	• Mission statements • Policy documents • Budgets • Speeches • Interviews with key/actors field operatives (asking: To what degree do you believe the policy statements are being successfully implemented?) • Observation of results.
2.2 Participation *To what degree does the government engage with public participation for policy development? To what extent have disaster/development plans been authored in partnership with*	History of extensive collaboration with 'publics' for development of policy. The authoring of disaster and development plans achieved through thorough engagement with wide range of stakeholders, especially community interests.	**A.** History of limited collaboration with 'publics' for development of policy. The authoring of disaster and development plans achieved through limited consultation with wide range of stakeholders, especially community interests.	• Interviews with key actors • Previous policy development processes • Experience of local community groups

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
community representatives?		**B.** Very piecemeal collaboration with 'publics' for development of policy. The authoring of disaster and development plans achieved through very minimal engagement with narrow range of stakeholders, largely excluding community interests. **C.** No history of collaboration with 'publics' for development of policy. The authoring of disaster and development plans completed in isolation with no engagement with stakeholders, or community interests.	
2.3 Development Plans *Do the following development plans and sectoral policies integrate risk reduction programmes: e.g. poverty eradication, social protection, sustainable development, climate change adaptation, natural resource management, transportation, housing and energy?*	All of the listed policies incorporate thorough risk reduction measures significantly improving the mitigation of natural disasters.	**A.** The majority of the listed policies incorporate thorough risk reduction measures improving the mitigation of natural disasters. **B.** Some of the listed policies incorporate risk reduction measures, though they are rather piecemeal. There have been limited benefits for the mitigation of natural disasters. **C.** Policies do not include risk reduction measures, and there has been no improvement to the mitigation of natural disasters.	• Sector policies and plans • Interviews with key actors
2.4 National Disaster Administration *Is there a well funded national disaster management organisation attached to the highest political office (e.g. in the office of the prime*	Well-funded national disaster management organisation attached to office of governor or prime minister, headed by experienced disaster co-ordinator, well staffed by experienced, highly trained	**A.** Well-funded national disaster management organisation in process of maturing into effective institution. Housed in prime minister / governors office and headed by experienced disaster coordinator. At present	• Policy documents • Interviews with key actors • Budget speech • Audit of staff and skills • Observation of disaster

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
minister), lead by a national disaster co-ordinator, with an adequate number of trained and experienced staff, located in/or adjacent to an emergency operations centre? **Sub-indicators**: Community Resilience: Number of people trained in first aid, number of people involved in Community Response Teams, number of people killed in previous disasters, number of people who have stockpiled food, water, batteries and radios for a week. Public relations expert full-time at office/EOC.	personnel, housed in a well-equipped facility (maybe EOC), with associated purpose-built EOC.	under staffed by inexperienced personnel but looking to improve, with facilities under development (e.g. office and EOC). **B.** Under-funded national disaster management organisation attached to government department other than highest office, headed by inexperienced disaster co-ordinator, under-staffed and housed in inadequate facilities. EOC makeshift. **C.** No full-time national disaster management organisation, with a disaster co-ordinator appointed ad-hoc in pre-disaster situation. No formal EOC with no trained/experience staff.	management organisation/emergency operations centre
2.5 National Disaster Planning *How comprehensive are the national disaster mitigation and response plans?* *Have there been both desktop and community-based exercises to test to their effectiveness?* *How successful are forecast and early warning systems in predicting danger and disseminating warnings?*	Very comprehensive response and mitigation plans, addressing all phases of disasters. Number of desktop and community trials of plans successfully completed and feedback used to modify policies. Early warning and forecast systems successfully tested with clear and well-practiced warning dissemination plan.	**A.** Comprehensive response and mitigation plans addressing all phases of disasters, though untested either by desktop or community trial. Early warning and forecast systems in place but unproven with dissemination plan untried. **B.** Either mitigation or response plan missing, with the sole existing plan untested either by desktop or community trial. Early warning and forecast systems conceived but yet in place. Warning dissemination plan still to be developed. **C.** No national disaster or mitigation plan, with no exercises conducted to	• National Disaster Plan • National Mitigation Plan • Interviews with key actors • Observations of and • reports on testing of plans • Technical reports on early warning

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		test disaster preparedness and response. No formal scientific forecast and early warning system with no formal dissemination plan.	
3. KNOWLEDGE			
3.1 Risk and Vulnerability *To what extent have all natural hazards, their previous impacts and people's vulnerability to the hazards (with full vulnerability analysis) been mapped and has the data been used to guide policy decisions?* *Is there an ongoing commitment to periodically review and update the information?*	Completed full and comprehensive study and mapping of all natural hazards, their previous impacts and people's vulnerability to them (full vulnerability analysis). This data is used by all interested parties to develop policy and is reviewed and updated at least every 3 years.	**A.** Completed full and comprehensive study and mapping of all natural hazards, their previous impacts and people.s vulnerability to them (full vulnerability analysis). This data is often used to inform policy, but is not always readily available to all interest parties. There is either no plan to review and update the figures or period >3 years. **B.** Study and mapping of all natural hazards, their previous impacts and people's vulnerability to them planned/under way. As yet no use of data for policy development, and no plans to review/update the studies at this stage. Or Mapping is not comprehensive. Use of data for policy development hampered by incomplete data. **C.** No study of natural hazards, their impacts or people's vulnerability. Policy decisions are made without knowledge of the potential threats of hazards.	Data files • Use of maps and figures in policy documents • Vulnerability reports • Minutes of policy development meetings • Number of times figures updated • Number of review exercises • Policy documents • Interviews with key actors
3.2 Education *Is 'disaster mitigation' taught as a*	Comprehensive education in disaster mitigation part of compulsory	**A.** Disaster mitigation part of the syllabus in certain stages of	• Curriculum

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
compulsory component of the curriculum at all stages of the national education hierarchy (pre-school, primary, secondary and higher-education) and are there vocational courses for disaster managers? *Is there a co-ordinating body for disaster education?* **Sub-Indicators**: Number of students educated/people trained in disaster management. Is disaster management treated as a professional qualification? To what extent is a framework for disaster reduction introduced into an educational forum? Establishment of a regional centre of excellence for disaster risk reduction?	syllabus at all levels of schooling. Well-established vocational/higher education qualification in disaster management open to all members of society. Independent body that ensures all aspects of disasters examined within the education system with educators continually re-trained and provided with updated material.	education hierarchy. Disaster management qualification being developed by higher education institution and will be online within 18 months. Co-ordination of disaster mitigation education handled by national disaster organisation which plays an active role in promoting and diversifying interest in the subject. **B.** Disaster mitigation not formally part of the syllabus but taught in certain classes throughout educational hierarchy because of particular relevance at a local level. No opportunities for professional disaster management qualifications. National disaster organisation promotes disaster reduction education through leaflets and radio programmes. **C.** Disaster mitigation is not part of the syllabus and not addressed at any level of education. No opportunities to qualify as a disaster manager. No body campaigning for disaster reduction to be included in curriculum.	• Interviews with educators and ministry of education • Interviews with outreach officers • at scientific and disaster management organisations. **N.B.** Examine what material being taught, with associated judgments on the quality of such material.
3.3 Media *Do the media play an active role (in partnership with disaster management organisations) in promoting disaster reduction,*	Print and broadcast media fully supportive of all efforts to reduce impact of disasters. Very regular (daily to monthly) articles on disaster reduction initiatives, with strong	**A.** Print and broadcast media somewhat supportive of efforts to reduce impact of disasters. Regular (monthly-3 monthly) articles on disaster reduction initiatives, with	• Interviews with key actors in disaster management and media organisations • Archive research of media output

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
encouraging public awareness and filtering risk communications? *How well-publicised and how successful is the disaster reduction day/week?*	educational components. Regular efforts to translate difficult scientific/technical aspects of risk and hazard into easy to understand programmes or articles for population. Media personnel available to translate disaster warnings into layman's language. Media free to criticize aspects of disaster management. Disaster reduction days/weeks very well supported by media in past, running many events to highlight concerns/educate.	some educational components. Some rare efforts to translate difficult scientific/technical aspects of risk and hazard into easy to understand programmes or articles for the lay population. Media personnel not involved in translating disaster warnings into layman's language. Media free to criticize aspects of disaster management. Disaster reduction day/weeks well supported by media in past, who have run some events to highlight concerns/educate. **B.** Print and broadcast generally ambivalent of efforts to reduce impact of disasters. Irregular (3 monthly . once yearly) articles on disaster reduction initiatives, with little attempt to educate. No efforts to translate difficult scientific/technical aspects of risk and hazard into easy to understand programmes or articles for the lay population. Media personnel not involved in translating disaster warnings into layman's language. Disaster reduction day/weeks have not often involved the media in past beyond basic advertising. **C.** Print and broadcast ambivalent of efforts to reduce impact of disasters. Articles on disaster reduction initiatives almost never appear. No	

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		efforts to translate difficult scientific/technical aspects of risk and hazard into easy to understand programmes or articles for the lay population. Media personnel not involved in translating disaster warnings into layman's language. Disaster reduction day/weeks have never involved the media in past beyond basic advertising. (also Media constrained by influences from state and cannot play balanced role in process).	
3.4 Community Networks *To what degree are there effective community (informal learning pathways, websites, dissemination trees, databases) and professional (applied technical, scientific and traditional knowledge) disaster reduction programmes, systems and networks?* *To what extent are civil society institutions, NGOs and the private sector involved with the goal of disaster risk reduction?*	Good (quality information, lay language) disaster information websites and libraries for education/reference with free access for community. Disaster societies/clubs established. Extensive work with communities to establish disaster management knowledge, understand community-based preparedness, risk assessment, scientific knowledge. Technical, scientific (e.g. GIS) databases on natural hazards support all government agencies, NGOs and all others. Policy to encourage all decision-makers/scientists to understand traditional knowledge. Civil society institutions, NGOs and the private sector heavily involved with the goal	**A.** Good disaster info. media/libraries, but poor access for community. No Disaster societies. Some limited educational outreach with adequate coverage, but incomplete educational scope. Technical databases incomplete but can be access by the majority of stakeholders. Some effort to cross-fertilize information on traditional knowledges. Civil society institutions, NGOs and the private sector somewhat involved with the goal of disaster risk reduction **B.** Some disaster info. on website/in library but poor access for community. No disaster societies. Some limited educational outreach in a few selected localities. No technical information database, and minimal	• GIS accessibility • Web resources • Other databases • Quality and number of community outreach programmes • Attend public meetings • Examine disseminated literature • Visit community organisations, non-governmental organisations • Interviews with specialists, planning officers, contractors etc.

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
	of disaster risk reduction.	attempt to improve awareness of traditional knowledge among policymakers/scientific elite. Civil society institutions, NGOs and the private sector sporadically involved with the goal of disaster risk reduction **C.** No disaster information website with very limited material in library. No Disaster societies. No educational outreach programme except for irregular reminder on the radio or leaflet. No technical or scientific databases on natural hazards and no attempt to disseminate information on traditional knowledges. Civil society institutions, NGOs and the private sector not involved with the goal of disaster risk reduction.	
3.5 Research *To what extent is there a comprehensive agenda for scientific, policy, planning and participatory research into risk reduction?* *To what degree is there useful co-operation and exchange with regional and international research institutions?*	Very regular (every 0-3 months) attendance of regional and international conferences. Can demonstrate learning from outside of national institutions (e.g. research into Oil Spill dynamics, disposal of industrial waste etc.) been helpfully used to inform the majority of policy at the local level. Formalised network to exchange ideas with academic community locally, regionally and internationally. Extensive, well-funded disaster reduction research	**A.** Regular (every 3-6 months) attendance of regional and international conferences. Can demonstrate learning from outside of national institutions (e.g. research into Oil Spill dynamics, disposal of industrial waste etc) been used to inform some policy at the local level. Informal network to exchange ideas with academic community both locally, regionally and internationally. Some good-quality disaster reduction research occurring locally in all	• Research groups • Documents • Papers • Interviews with key actors • Attend research meetings • Obtain records of conferences attended • Examine policy documents for linkages

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
	occurring locally in all sectors, e.g. scientific research on hazards, social science research on policy and participation, health-care, psychology etc. with results informing decision-making.	sectors e.g. scientific research on hazards, social science research on policy and participation, healthcare, psychology etc. with some of the results informing decision-making. **B.** Irregular (every 6 months . 1 year) attendance of regional and international conferences. Learning from outside of national institutions (e.g. research into Oil Spill dynamics, disposal of industrial waste etc) has not been used to inform policy at the local level. Informal network to exchange ideas with academic community both locally, regionally and internationally. Some disaster reduction research occurring locally into specific topics but not across all sectors with some of the results informing decision-making. **C.** Key actors never attend regional and international conferences. Learning from outside of national institutions ignored (e.g. research into Oil Spill dynamics, disposal of industrial waste etc) and not used to inform policy at the local level. No network to exchange ideas with academic community. No research into disaster reduction occurring locally.	
3.6 Skills, Capacity and Motivation *What do the key actors in*	Language used by all key actors indicates a desire to move from	**A.** Language used by the majority of key actors indicates desire to move	• Interviews with key actors

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
development/disaster planning see as the priorities for planning policy? *To what extent do they believe a culture of safety is infused within society and is there a week/days dedicated to safety issues?* *With whom do they share ideas, sympathies, both locally and regionally?*	reactive to proactive disaster planning solutions. Words such or phrases such as mainstreaming disaster reduction, vulnerability, livelihood, sustainability, mitigation etc. basis of all policy discussions and professional conversations. Safety issues pervade society, from health to traffic management to disaster planning to resource management.	from reactive to proactive disaster planning solutions. Words such or phrases such as mainstreaming disaster reduction, vulnerability, livelihood, sustainability, mitigation etc. basis for majority of policy discussions and professional conversations. Safety issues are regularly highlighted in society, but more could be done to encourage an all-pervasive 'safety culture'. **B.** Language used by some key actors indicates a desire to move from reactive to proactive disaster planning solutions. Words such or phrases such as .mainstreaming disaster reduction, vulnerability, livelihood, sustainability, mitigation etc. rarely appear in policy discussions and professional conversations. Safety issues are sometimes highlighted in society, but much more needs to be done to encourage an all-pervasive 'safety culture'. **C.** Language used by key actors exclusively supports prevalence of reactive disaster planning solutions. Words such or phrases such as mainstreaming disaster reduction, vulnerability, livelihood, sustainability, mitigation etc. never appear in policy discussions and professional	

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		conversations. Safety issues are never highlighted in society.	
4. PRACTICE			
4.1 Reconstruction/Building Codes *Has reconstruction from previous disasters been used as an opportunity to promote disaster reduction?* *Are there codes and standards, supported by law, to ensure disaster resilient construction?*	Disaster reduction was successfully promoted during the reconstruction phase through strict building codes and standards supported by law. As a result the infrastructure and housing stock is significantly more robust.	**A.** Disaster reduction was promoted during the reconstruction phase, though not supported by legislation on building codes. As a result compliance was voluntary, but nonetheless relatively successful. The infrastructure and housing stock is somewhat more robust. **B.** Disaster reduction was promoted during the reconstruction phase, though not supported by legislation on building codes. As a result compliance was voluntary and predominantly ignored. The infrastructure and housing stock is fractionally more robust. **C.** Disaster reduction was not promoted during the reconstruction phase, not mandatory through legislation and there has been little change to the quality of the infrastructure and housing stock.	• Legislation (building codes acts) • Interviews with key actors • Newspaper articles • Observation in the field
4.2 Local Community *To what degree is there a successful, well-funded, well-supported network of local disaster management committees that focus on reducing vulnerability, community preparedness and mitigating natural hazards?*	An established, well-funded, well-trained network of local disaster committees, organised around sensible boundaries (e.g. physical, social, cultural, municipal divisions) and who meet at least monthly. Committees have strong relationship with government and non-	**A.** An established network of local disaster committees, organised around sensible boundaries (e.g. physical, social, cultural, municipal divisions) who meet every 2-3 months. Committees have good relationship with government and non-government disaster	• Interviews • Policy documents • Existence of community plans • Data from NGOs • Observation of equipment, warehousing etc.

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
To what extent can these committees act independently of the central disaster authority, and do they have their own local mitigation and response plans? **Sub-Indicators:** Number trained in first aid, number quality warehouses. Well-stocked local warehousing. Community Response Teams exist. Other equipment. Community Disaster response and mitigation plans.	government disaster organisations. Ongoing training programme of members. Tried and tested community disaster response and mitigation plans (including identification of vulnerable groups and structures). Well-stocked local warehousing facilities, with high percentage of population trained in first aid with well-trained CRTs.	organisations, however training could be improved. Community disaster response plan written but untested. Mitigation plan (including identification of vulnerable groups and structures) in development. Local-warehousing facilities limited with poor stock. Some of the local population trained in first aid, but community response teams not yet developed. **B.** Local disaster committees exist in some communities, organised around key personnel. Regularity of meetings very variable, with some only meeting once a year. Committees have a rather ad hoc relationship with government and non-government disaster organisations, and training rare and coverage rather sporadic. No formal community disaster plans, but response plans are in development. No local stockpiling of supplies, with reliance on aid from central authority. Some local people trained in first aid, but no community response teams. **C.** No local disaster committees. No formal community disaster plans. No local stockpiling of supplies, with total reliance on aid from central authority. Very limited number of local people trained in first aid, but no community	

INDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		response teams.	
4.3 Insurance and Finance *To what extent does the governmental and non-governmental finance sector support disaster reduction? (E.g. low insurance premiums for better constructed homes, micro-credit and finance, community and social funding schemes for mitigation or recovery)*	Insurance companies offer sizeable discounts to those who have taken mitigation measures. Companies give extensive guidance, technical support on how to achieve premium reductions. Government lending institutions, businesses and micro-credit schemes to support homeowners and small businesses to take mitigation measures. Government, businesses etc. waive or reduce costs of disaster rebuild materials etc. NGOs, credit-unions, churches etc. support funds designed to help vulnerable people in post-disaster situation.	**A.** Insurance companies offer limited discount to those who have taken mitigation measures. They give some formal guidance on how to obtain discount (e.g. technical leaflet). No extra financial support to take mitigation measures, either for individuals or businesses. Some reduction of prices, reduced loans etc. in post-disaster rebuild phase. Support funds for vulnerable people post-disaster planned, but not yet operational. **B.** Insurance companies are preparing to phase in reduced premiums for better protected buildings within next 18 months. They are preparing documents detailing what measures are needed to obtain the reductions. No extra financial support to take mitigation measures, either for individuals or businesses. No preferential pricing in post-disaster phase. No support funds for vulnerable people post-disaster. **C.** No reduction on premiums for those with stronger homes. No technical help from companies encouraging mitigation measures. No extra financial support to take mitigation measures, either for	• Interview members of finance sector, church groups, NGOs • Obtain guidelines of mitigation/premium reductions • Interview business owners and those who rebuilt following previous disasters

IDICATOR	SUPER GOAL	CRITERIA	EVIDENCE FOR DISCUSSION
		individuals or businesses. No preferential pricing in post-disaster phase. No support funds for vulnerable people post-disaster.	
4.4 Povertyeduction *To what :tent has a poverty reduction stegy been developed, and how scessful has it been at addressing ıe vulnerability of the most expos section of society?* *To what legree have poverty reduction, olence and terrorism concerns bn addressed as part of a sustainabdevelopment strategy?*	Poverty reduction strategy well established and been highly successful at reducing vulnerability of poorest sectors of society. Addressing poverty reduction, violence and terrorism concerns key elements of sustainable development strategy, with clear progress made on tackling these issues.	**A.** Poverty reduction strategy operational but has not yet had major impact on reducing vulnerability of poorest sectors of society. Addressing poverty reduction, violence and terrorism concerns included in sustainable development strategy, with some progress made on tackling these issues. **B.** Poverty reduction strategy being developed, but no impact on reducing vulnerability of poorest sectors of society. Addressing poverty reduction, violence and terrorism concerns only briefly mentioned in sustainable development strategy, with little progress made on tackling these issues. **C.** No Poverty reduction strategy and no impact on reducing vulnerability of poorest sectors of society. Addressing poverty reduction, violence and terrorism concerns not included in any development strategy, with no progress made on tackling these issues.	• Review of policy documents • Evidence from internal and external statistical surveys • Census • Discussion with members of community

ANNEXURE 4 TO CHAPTER 4

THE SINT-RISK INDEX

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
Institutional Framework	**Political will** (Incorporation of disaster prevention in the political values system)	**Official Statements**	None	Statements at the time events occur	Some references to prevention in public statements at some levels of government	Frequent references to prevention, promoting concrete actions at some levels of government	Permanent internalisation of prevention in public statements at all levels of government
		Formal decisions on prevention	None	Formal decision to structure a policy at some levels of government but without leading to any practical applications	Formal decision to launch prevention processes as state policy at the national level	Formal decision at several territorial or sectoral levels to adopt a prevention policy as part of development efforts	Effective efforts at all formal decision-making levels to internalise prevention as a public policy.
		High-level programmes for promoting prevention	None	Attempts at carrying out prevention programmes in relevant territories or fields of activity but without concrete results	Some kind of concrete programme for incorporating prevention in development efforts, but with little coverage or effectiveness	Programmes supported at various political levels, several of them showing some degree of development	Many programmes supported at various political levels, with significant actions at the national, territorial or sectoral level

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
	Impact on institutional development (for risk management)	**I. Organisation Degree of organisational development**	No organisation dedicated to prevention and risk management issues	Traditional organisation for emergency management, with little emphasis on preparedness and no effective disaster prevention actions. No linkage with permanent development activities	Traditional organisation with good preparedness and response capacity. Incorporation of risk management as basis for more focused actions. Little or no participation by development bodies in permanent prevention measures	National organisation primarily established for risk management, but with its own institutional structure that links its efforts with those of development bodies through indirect channels. National organisation in which risk management is directly handled by development institutions, but with little institutional development at all territorial levels and across all or most sectors	Well developed institutional framework that sees prevention as part of sustainable development and incorporates it into the daily activities of all development bodies. Organisational development in all territorial and sectoral spheres

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		II. Legal and juridical support - Risk Reduction Law or similar	None	Scattered references in the Constitution or the legislation (such as an environmental protection act)	Some juridical foundations for establishing a legal framework for disaster prevention, but still too generic.	Clear legal framework but with some gaps that prevent the widespread promotion of disaster prevention activities across all territorial and sectoral boundaries	Well developed legal framework that links risk reduction with all aspects of development activities
		- Other regulations	None	Scattered references in specific laws or regulations involving different jurisdictions or sectors	Some legal foundations complementary to the basic framework, but not very specific	Other legal frameworks that are well developed at the sectoral or territorial level, but still with gaps	Other legal and regulatory frameworks with specific reference to risk reduction
		III. Budget for institutional strengthening and other disaster prevention actions	No budget for disaster prevention	Scattered initiatives for funding prevention promotion efforts, generally related to international assistance	Some budgetary channels for institutional strengthening and specific projects, but no permanent. Promotion of international cooperation for this purposes	Several stable funding lines available for institutional strengthening and preventive actions, but disaster prevention still not fully internalized in operational plans and everyday management	Many lines of funding available for disaster prevention activities as part of sustainable development plans. Annual budgets incorporate disaster prevention

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
Impact on the planning process	**Prevention plans**	**Existence and development of prevention plans**	There are no prevention plans	There are some initiatives but with poor technical quality	There are plans at some levels, but they are general and are only meant for guidance. They have not been evaluated or updated	There are prevention plans in different spheres (national, territorial, sectoral), but they are not maintained or updated	There are plans at all levels, of good technical quality, involving the participation of development bodies
	Incorporation of prevention measures in development plans and control mechanisms	**Incorporation of prevention in development plans**	No reference to disaster prevention in existing development plans	There are attempts to consider the issue, but in scattered fashion and without an overall vision	Some sectors or territorial levels have projects for vulnerability reduction, but these lack detailed information on linkages to existing development plans.	Several development plans include risk management considerations as part of their vision of sustainable development, but these systems have yet to be institutionalized permanently	Development plans contain a preventive vision of disaster management, at all the levels and involving all sectors, with extensive coverage throughout the national territory, particularly at the local level

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Incorporation of prevention in land-use management plans	The issue has not been incorporated in the planning mechanisms that regulate land use. There are no land-use management plans or urban development plans in the country	Attempts have been made to incorporate prevention in general land-use management plans, or in local plans, but not enough information has been collected to produce appropriate risk maps. Incorporating disaster prevention in land-use management plans is still not legally compulsory	Land-use management plans officially contain regulatory disaster prevention measures, whether at the national, state, or local level, but they are weak or lack control mechanisms to ensure compliance	The country has land-use management plans at different levels, with weak but functioning control mechanisms, or in the process of being strengthened. However, geographical coverage is still limited	A geographically extended regulatory land-use management system is in place, with periodically updated plans that incorporate risk management, and with control mechanisms that ensure compliance
		Consideration of the need for risk assessments in projects (directly or in conjunction with environmental impact assessments)	No consideration is given to the need for of risk assessments in the projects carried out by the various institutions	Some consideration is given to the need for risk assessment in projects, although as part of the environmental assessment, not explicitly	Decision to incorporate risk management in projects, but lack of implementation and control mechanisms	Projects incorporate risk analysis in the case of some institutions that are aware of the need for disaster prevention	Project design practices routinely incorporate risk assessment, whether independently or as part of the EIA

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Coordination mechanisms for plan design	Very rudimentary coordination mechanisms in the development planning field, which limits the consideration of emergent issues such as disaster prevention	No mechanisms for developing prevention plans, or for incorporating disaster prevention in development plans. Isolated efforts lacking coordination within the institutions themselves, and more likely to be environmental in nature	Some bodies have coordination mechanisms in place to consider isolated projects within existing plans	Coordination mechanisms in place for the design of plans at the various levels, but with gaps in some of them or in specific areas, particularly at the local level	Habitual use of coordination mechanisms that make it possible to consider jointly (interinstitutionally) development proposals and the opportunities or limitations posed by hazards or the risks of disasters, as well as to implement measures for risk reduction

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Establishment of critical capabilities for protecting lives and assets and implementing alternatives in disaster situations (Projects for control of floods and other natural hazards and for protection against their impact, vulnerability reduction for health facilities, evacuation routes, alternative life-lines, communication centers, airports, information management, etc.)	No measures have been consciously implemented for vulnerability reduction in the event of a disaster. There are no capabilities in place to respond to the immediate impact of the disaster.	Some measures have been taken regarding emergency preparedness, but not in a sustained manner. These measures are often abandoned after the disaster or prove insufficient when one occurs	Some capabilities are in place for protecting lives, but without assigning priorities to the needs that will have to be met or a sustainable vision of the process	There is broad awareness of the need to establish critical capabilities for the protection of lives and assets, the quality of life and sustainability. Projects are implemented based on this vision, but there is still a lack of information and actions at some levels and in some areas to support these activities	Critical capabilities for protection are available with ample coverage. Precise knowledge is available of existing and potential needs, helping to prevent the problems that might arise as a result of a disaster

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
	Support systems for decision-making	**Information systems on risks and disasters**	There are no disaster information systems	There are some manual information systems, with data that have not been systematized and are only aimed at recording events and the number of people affected. Difficult access to the little information that is available.	In progress, computerized information systems regarding the general behaviour of hazards, including records of the areas and population affected. However, these systems have not yet become generalized	Computerized information systems in place involving significant developments in some areas, including general frameworks for users (maps, vulnerability information, etc), but with gaps in relevant areas and with updating problems	Wide use of modern information systems (GIS, various maps of risks, hazards and vulnerabilities, etc.); historical records; record of damage suffered, etc. The information is constantly updated, and users have easy access to it
		Impact measuring systems (indicators and methodologies)	No records are available of the damage suffered, or if there are, they are scattered and have not been systematized. There is no institutional capacity for such evaluations	Some manual records Are available of the damage suffered, including specific estimations carried out sporadically, without employing formal methodologies for these purposes. There are no indicators for assessing the socioeconomic impact	Some measurements of the damage have been carried out with external support, following clear guidelines. Institutional attempts have begun to be made to establish this type of measuring in disaster records, but they are still limited	There is a certain institutional capacity for measuring socioeconomic impacts and their effect on development. Some application methodologies are available, but efforts are required to provide training for these purposes and expand coverage	There is a culture of measuring damage as a basis for decision- and policy-making. The measuring systems include appropriate methodologies and indicators, which are permanently assessed at the relevant level

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Management assessment systems (management indicators)	No management assessment systems are available to evaluate actions in this field. No evaluations of this type are carried out	Very limited and irregular experiences have taken place to assess management efforts to incorporate prevention in development actions. No formal system has been established for these purposes	There are no management assessment systems, but analyses of previous experiences facilitate decision-making. Keeping a record of previous errors and limitations has made some progress possible	Systems for measuring disaster management effectiveness have been established, but they are not yet in wide use. Keeping a record of previous errors and limitations helps to improve disaster prevention actions	There is clear knowledge of the advances made and the weaknesses that remain regarding prevention in the country. Progress indicators are available on disaster management and are used permanently in the decision-making process. Significant achievements have been made thanks to the application of the results of this management assessment
Impact on the creation of a culture of prevention at the level of the entire society	**Education and capacity building**	**Incorporation in the basic curriculum**	No progress in this direction	There is awareness of the need to incorporate prevention in the curriculum, but efforts have not yet borne fruit. Other efforts have been carried out in an improvised, ad hoc manner	The incorporation of prevention in the curriculum is In progress, but at a very early stage	Significant advances have taken place in the incorporation of the issue at some educational levels, but still without having an impact on the culture as a whole	Disaster prevention has been fully incorporated, in cross-cutting fashion, throughout basic and secondary education. Society as a whole receives the benefits of this cultural change

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Incorporation in higher education	No progress in this direction	Some initiatives for eventually providing technical training	Stable training centers exist, but they are very limited	The academic community has committed itself to carrying out research in this field. A more diversified base for training technicians and professionals is available, but its coverage is limited	Higher education has a permanent base of professional and technical education in risk management that supports the transfer of up-to-date technical knowledge throughout the institutions themselves and in the private sector
		Higher education in prevention and risk management (architects, planners, MDs, agriculture experts, engineers, social workers, etc)	No progress in this direction	There is awareness of the need to incorporate prevention in the curriculum, but efforts have not borne fruit to date	The incorporation of prevention in higher education is In progress	Significant advances have taken place in the incorporation of the issue in some disciplines	Higher education has incorporated the issue of risk management in cross-cutting fashion

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Risk management training programmes for public bodies or stakeholders	There are no training programmes for building institutional capacity in risk management.	There are some staff training initiatives but basically in disaster response alone	Timid processes are underway to hire staff with experience in these issues, and some support is available for training to strengthen institutional capacity	There are training programmes for professionals and technicians, which are promoted by the institutions at some levels or in some areas	Staff working on prevention and development are qualified on these issues. There is a permanent policy of upgrading staff knowledge in this field
		Training programmes for the community	There are no programmes of this type	There are some programmes, but they focus entirely on emergencies	There are some community training initiatives or programmes, but they are not very effective or long-lasting	There are permanent community training programmes through different channels (schools, community associations, etc), but with limited coverage	Communities are well organized and encourage participation in disaster prevention. Many training channels are available on disaster prevention and emergency response
	Information and communications	**Formal prevention information and dissemination programmes**	There are no programmes of this type				

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Channels of access to information	There are no channels for gaining access to the information	There are some institutional channels, but they offer little access to users	Widespread links with the media as a way of disseminating information. Limited institutional information networks	Establishment of institutional networks for disseminating information and maintaining links with the media	Existence of well developed and publicized channels of access to information, employing new technologies to facilitate access. Strong links between the users (institutional, community, private) and the information networks. Diversity of information media
		Communication programmes aimed at the general population.	Very limited, without any improvements in the foreseeable future	Very limited, but improvements likely in the foreseeable future	Evidence of some communications activity that is granted a certain value by the users	Good development of a network that is socially recognized as valid	Extensive communications activity by means of a reputable, reinforced social network

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Role of the media (Permanent presentation of this type of information in weather forecast broadcasts; links between the media and specialized information production centres)	Little or no awareness by the media regarding their role in this field	Some participation by the media in weather forecasts and early warning, but without stable links to the specialized information production centres	Commitment by the media to participate in prevention activities, but in limited fields. A stable connection with some information production centres and actors (institutional, researchers, etc).	In progress: a comprehensive commitment by the media to the creation of a culture of prevention	Ample participation by the media in the development of a culture of prevention at all levels and employing a variety of channels
		Specialized information networks for risk reduction (public and private)	None	Some initiatives, but largely unknown	Significant development of networks in some specialized areas, particularly the knowledge sector		Specialized institutions or groups have developed or been connected to information and cooperation networks for the development of their everyday actions

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
Impact of the participation by the national community in prevention efforts	**Private sector participation**	**The insurance sector**	There is no system in the country for insurance against the risk of disasters, or it is not applied	Insurance policies incorporate some conditions of prevention related to certain assets or persons, but in a limited manner and without a technical assessment of the risk situation	Pressure for the establishment of such mechanisms by the inhabitants of areas at risk. Participation by the private sector in these efforts	Establishment of disaster risk insurance based on greater technical knowledge of the risks. Little knowledge or awareness on the part of some potential beneficiaries	Strong participation by insurance agencies in risk assessment, with systems developed for applied such mechanisms in different geographical areas and economic sectors
		Finance (criteria for approval of project financing)	Disaster prevention not among the criteria for approval of projects in areas at risk	Some financial firms incorporate elements of risk assessment in their criteria for approval, but not in an organized fashion. Instead, they may be acting out of environmental considerations that have been previously established	There is awareness among financial institutions of the need to incorporate risk assessment among their criteria for approval; however, there has been little concrete progress	Risk management becomes generalized in the case of development projects located in areas at risk. However, problems of implementation remain	Many financial institutions in the country have developed risk assessment methodologies and regularly apply obligatory risk assessment criteria before approving the funding of projects

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
	Community participation	**Specialized NGOs that can play a role in disaster prevention**	There are no NGOs that are specialized in disaster prevention	There are NGOs, but they are weak. Their participation is largely limited to emergency response	There are NGOs specialized in disaster prevention and promoting those themes with Other ONGs specialized in development; municipalities; communities, with positive results.	National and international NGOs specialized in development, consider prevention in projects. They also consider some criteria in emergency plans preparation.	High level of NGOs in reduction prevention. Development of methodologies and significant results. Permanent NGOs Emergency Plans. Permanent NGOs prevention promotion with municipalities, private sector and goverment. Civil society is actively involved in all phases of disaster prevention
		Community organisations	There are no community organisations, or if there are they have not participated in disaster prevention	There are community organisations in risk zones, interest in prevention and mitigation.	Community organisations participate in prevention and mitigation tasks (Educational, campaign, project,etc.)	Communities have develop permanent mechanisms for prevention, mitigation and emergency, but they need to improve its.	Communities have develop permanent mechanisms for prevention, mitigation and emergency, afford in plans with positive results. They are formally recognized by the authorities.

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Mechanisms for community participation	There are no mechanisms for community participation in prevention and mitigation .	Some community organisations recognize their vulnerability and they claim authorities to joint effort to modify those conditions.	Some community organisations located in risk zones, have elaborated prevention and mitigation plans as well that emergency plans. They have also proposes and projects defined both, communities and municipalities. Some of them participate in prevention or mitigation activities promoted by NGOs or municipalities.	Community organisations in risk zones have prevention, mitigation and emergency plans. Some of them have implemented some mitigation and preparedness actions. Some Organisations have participated in local plans considering risk management.	Community organisations have: prevention agenda, prevention and mitigation plans, good results, and so. They also participate in activities related to prevention like: monitoring and controlling rational urban development; participating in develop prevention framework, local plan agreement and commitment.
		Agreements between the State and civil society (NGOs, organized communities)	There are no agreement with another development agents.	Some community organisations reach agreement with NGOs or municipalities about specific mitigation or prevention tasks.	Some community organisations reach agreement with NGOs, municipalities or private sector to reduce major vulnerability.	A lot of community organisations develop permanent prevention activities with municipalities, NGOs or private sector. They are formally recognized by the authorities.	Community organisations have permanent prevention agreements with development agents, mainly with municipalities. They show important advances in the implementation of mitigation plans.
Knowledge Production for risk reduction	**Production of knowledge**	**Research on existing hazards** (risk	No research or only fragmentary and incomplete research	Efforts underway to build the first comprehensive	A database exists, but it is still incomplete; updating	Extensive database of areas at risk with adequate information	Comprehensive geographical information system

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
and management		maps) -Earthquakes -Floods -Drought -Volcanic eruptions -Landslides -El Niño -Hurricanes. -Typhoons -Fires	based on historical records alone	database on areas at risk (risk maps); updating of the information has not yet been considered; problems regarding the quality and resolution of the information	is irregular; significant problems persist regarding the quality and resolution of the information	incorporating some advances in man-made hazard assessment; no geographical information system in place yet, but the database is regularly updated by assessing new hazards or changes in patterns, the quality and resolution of the information may still be improved	on areas at risk; regularly updated; with high quality and high resolution. Consideration both of man-made and natural hazards
		Vulnerability assessments (social, economic, physical and environmental vulnerability)	There is no vulnerability information	Efforts underway to build the first vulnerability database, but limited to physical aspects; updating of the information has not yet been considered; problems regarding the quality and resolution of the information	A database exists, but it is still incomplete, although displaying greater territorial and sectoral coverage; updating is irregular; significant problems persist regarding the quality and resolution of the information	Extensive vulnerability database with adequate information, incorporating criteria other than purely physical ones; no geographical information system in place yet, but the database is regularly updated by assessing changes in vulnerability patterns; the quality and resolution can still be improved	Comprehensive geographical information system on vulnerabilities; regularly updated; with high quality and high resolution. Consideration of all types of vulnerabilities (social, economic, physical and environmental)

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Risk assessments (risk maps)	No risk maps available	Efforts underway to build the first risk map database, but limited to physical urban aspects; updating of the information has not yet been considered; problems regarding the quality and resolution of the information	A database of risk maps exists, but it is still incomplete, although displaying greater territorial and sectoral coverage; updating is irregular; significant problems persist regarding the quality and resolution of the information; some GIS developments, but limited	Extensive risk database with adequate information, incorporating criteria other than purely physical ones; limited or no geographical information systems in place yet, but the database is regularly updated by assessing changes in vulnerability patterns; the quality and resolution can still be improved	Comprehensive geographical information system on risks; regularly updated; with high quality and high resolution. Consideration of all types of risk (social, economic, physical and environmental)
		Socioeconomic impact studies (methodologies, estimations, lessons learned)					

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Development of planning methodologies	No planning methodologies are available	There is awareness of the need for planning methodologies, but none have been developed so far	Some methodological developments, but only partially implemented in certain sectors or areas	Widespread development of prevention planning methodologies and incorporation into development plans, but still some gaps	Widespread development of prevention planning methodologies and thorough incorporation into development plans.
	Support infrastructure	**Monitoring network and capacity**	None	Only partially developed. Monitoring not completely developed nor able to produce adequate reports	Greater development, but products are not necessarily published. Evidence of evolution in the products and the reports.	Continuing and extensive monitoring and reports; products highly publicized	Reports are published periodically according to well-known schedules. High monitoring and reporting capacity
		Communications network	No network, or only informal	Communication through traditional channels	Initial modernization of the communications system	Widespread development of the communications system but still not fully integrated with the media	Communications network with widespread coverage and fully linked to the media

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Early warning systems (application of technology, extension of the warning network)	No systems available. Only the application of indirect methods for informing the public (through the media) after a disaster has struck.	Mostly emergency warning methods structured haphazardly for handling slowly developing events. Some sectoral strengths in areas of high national impact (e.g., the electric grid)	Early warning systems linked to some hazards are partially available; interinstitutional obstacles to their implementation	Widespread development of early warning systems for the main hazards that generate risks. Links with the media	A well developed early warning system is available that operates by stages and employs a variety of communications processes, with a structure of hierarchical relations through which communication flows, as well as pre-established procedures for advising the public. Acts in cascade fashion to disseminate information. Is complemented by the role of the media

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
	Institutional development of the knowledge sector	**Channels of coordination between researchers and/or monitors**	None	Some informal coordination mechanisms but not permanently available. Monitoring bodies act in isolation, without exploiting complementarities	Start of formal agreements for complementing and sharing knowledge on hazards and risks. Some agreement among monitoring bodies to complement their information.	Strong links between complementary institutions both in research and in analysis to achieve coherence and relevance in the exchange of information among monitoring bodies	Highly coherent, cohesive scientific community; evidence of complementary activities and strong cooperation in analysis. Monitoring bodies that are highly complementary and have systems that make it possible to integrate the information and share results
		Role of academic institutions in research	No participation	Development of very limited lines of research as a result of individual initiatives, without setting priorities	Development of some lines of research based on priorities assigned by the participating institutions or based on previous studies	Widespread participation of academic institutions in the development of knowledge on disasters. Commitment by academic institutions to developing a comprehensive system of knowledge on disaster risk management	Significant contribution to knowledge development programmes to respond permanently to weaknesses as they are gradually uncovered.. Development of research and teaching from an interdisciplinary stance

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Links between knowledge institutions and information producers	No links between the research community and the bodies that produce information. Competition and rivalry between them	Collaboration at some levels and on certain aspects, but only through specific agreements. Isolated, limited links with international sources	Collaboration prevails; rivalries and competition have been eliminated. Interinstitutional working networks are encouraged in the various areas of knowledge. Limited use of information from international centres	Collaboration as the rule. Explicit measures for reinforcing collaboration and integrated work (organisational coordination mechanisms). Promotion of research networks at the national level. Links with international networks	Complementary, integrated work. Explicit measures for reinforcing collaboration. Knowledge institutions contribute to the development of new and emergent technologies. Permanent exchange of information through national and international networks
		Channels of sectoral information					
		Channels for the dissemination of scientific and applied information to communities	The affected population has no channels for being informed or motivated on its role in prevention				

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Type of information generated (degree to which it meets the demand; product supply and level of detail)	No information is available to guide users	Information is produced, but the products are not linked to the requirements of the users. Limited use the information	Some information is generated that is aimed at meeting the requirements of certain sectors or levels, but not extensively	There is a general framework of risk, vulnerability and hazard information to guide actions at all levels. Growing adaptation of the products of the knowledge sector to the demands of users. Some problems of resolution remain	A comprehensive framework guides prevention policies at the various levels. scientific and applied information meets the needs of the different users at the required level of resolution
Knowledge application	**Best practices**	**Use of technical knowledge in engineering and other applications for vulnerability reduction**	Knowledge is not applied	Cost reduction criteria predominate in the final determination of which actions and projects to implement. The need for adequate infrastructure is generally underestimated, and prevention programs are eliminated or reduced to a minimum	In certain areas or sectors, the identification and application of projects is based on best practices (e.g., flood control) that are implemented with a specific prevention objective, but a vision of prevention does not permeate the conceptualization of every development project. Many projects are developed without incorporating good practices	Given the development of knowledge on vulnerabilities and risks, development projects and everyday actions are conceived to take into account existing risk conditions as well as the best practices available. However, this vision is only partially applied in certain sectors, levels or areas	The public and private sectors have internalized prevention within their vision of development. Best practices are routinely applied in the various aspects of risk management, based on an awareness that "prevention pays"

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Existence and application of technical construction standards	There are no technical construction standards	There is awareness of the need for technical standards, but none have been developed or they are at an early stage	Some technical standards are available but only in the case of a few hazards. Technical deficiencies in their formulation. Not updated	Technical standards are available for several types of risks, some of them updated, but gaps and technical weaknesses remain	Widespread development of technical standards for the most significant risk situations. Periodically updated. Good technical quality
		Control mechanisms of the application of technical standards	There are no control mechanisms	There are indirect mechanisms that are not very effective	New mechanisms have been implemented, but control remains a complex task	Direct mechanisms are available, but they remain hard to implement or are still very recent	Effective control mechanisms that ensure the application of technical standards
		Development and application of urban planning standards	There are no urban planning standards for furthering prevention	Some consideration of this issue in urban plans, but chiefly from an environmental perspective. Regulations are scattered	Some initiatives for the development of prevention standards in urban plans, but not yet implemented	Standards for prevention have been widely incorporated into the urban plans of many cities, but gaps remain	Widespread development of urban planning standards in urban regulations
		Control mechanisms for urban planning regulations	There are no mechanisms	There are mechanisms but they are not effective (control of urban permits)	New mechanisms have been implemented, but control is still too complex	Improved mechanisms for urban management are in place	Effective control mechanisms ensure control of planning regulations

INDICATOR	VARIABLE	CRITERIA	STAGE OF PROGRESS				
			1st stage	2nd stage	3rd stage	4th stage	5th stage
		Control mechanisms for land-use management plans	There are no mechanisms	There are mechanisms but they are not very effective	New mechanisms have been implemented, but control is still too complex	Improved mechanisms for land-use management are in place	Widespread development of control mechanisms ensure that national and regional permits reflect appropriate land-use management
		Programmes for improving the application of prevention techniques	There are no such programmes	There is awareness of the need for such programmes, but none are available in practice	Some programmes are available, but their impact is limited	High-impact programmes are in place for promoting the application of prevention techniques, but they are still in the execution phase	Permanent programmes have been established for generating and applying new prevention techniques. The use of advanced and up-to-date techniques in this field is widespread throughout the society

ANNEXURE 1 TO CHAPTER 5

SOUTH AFRICAN NATIONAL DISASTER MANAGEMENT FRAMEWORK

(as of April 2005)

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
1. Integrated institutional capacity for disaster risk management (KPA1)	1.1 Development and adoption of integrated disaster risk management policy.	1.1.1 The Intergovernmental Committee on Disaster Management (ICDM) has been established and is operating effectively. 1.1.2 Mechanisms for developing and adopting disaster risk management policy have been established and put into operation.
	1.2 Integrated direction and implementation of disaster risk management policy.	1.2.1 The job description and key performance indicators for the position of the Head of the National Disaster Management Centre (NDMC) have been developed. 1.2.2 The Head of the NDMC has been appointed. 1.2.3 The NDMC has been established and is fully operational. 1.2.4 Disaster risk management focal/nodal points have been identified by each national organ of state and responsibilities for disaster risk management have been assigned. 1.2.5 Roles and responsibilities of national organs of state involved in disaster risk management have been identified, assigned and included in the job descriptions of key personnel and are being applied effectively. 1.2.6 Provincial and municipal disaster risk management centres have been established and are operating optimally.

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
	1.3 Stakeholder participation and the engagement of technical advice in disaster risk management planning and operations.	1.3.1 The National Disaster Management Advisory Forum (NDMAF) has been formally constituted and operates effectively. 1.3.2 Provincial and municipal disaster management forums or similar representative consultative forums have been established and are operating effectively. 1.3.3 Mechanisms for stakeholder participation in disaster risk management planning and operations have been established and are operating effectively. 1.3.4 Primary responsibility for the facilitation and co-ordination of disaster risk management planning and implementation has been assigned. 1.3.5 Entities playing a supportive role in facilitating and co-ordinating disaster risk management planning and implementation have been identified and assigned secondary responsibilities 1.3.6 Heads of disaster management centres have full participation in integrated development planning processes and structures. 1.3.7 Ward structures have been identified and tasked with responsibility for disaster risk management. 1.3.8 A current register of disaster risk management stakeholders and volunteers has been established and is maintained.
	1.4 National, regional and international co-operation for disaster risk management.	1.4.1 Mechanisms have been identified and implemented to ensure the application of the principle of co-operative governance. 1.4.2 Guidelines have been developed and disseminated for entering into partnerships and concluding mutual assistance agreements and memoranda of understanding. 1.4.3 A disaster risk management forum established for the purposes of co-operation with countries in the SADC region is operating effectively. 1.4.4 Mechanisms have been identified and established to enable South Africa to participate internationally in disaster risk management activities.
2. Disaster risk assessment (KPA2)	2.1 Disaster risk assessment and risk reduction planning.	2.1.1 A national standard for conducting comprehensive disaster risk assessments has been generated by the NDMC. 2.1.2 National guidelines for the application of a uniform disaster risk assessment methodology have been developed by

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		the NDMC.
	2.2 Generating a National Indicative Disaster Risk Profile.	2.2.1 Mechanisms to consolidate, document, map and make accessible information on South Africa's priority disaster risks have been established by the NDMC. 2.2.2 Priority disaster risks of national significance have been identified and mapped by the NDMC. 2.2.3 Procedures to consolidate, map, update and make accessible information on South Africa's priority disaster risks have been established and documented by the NDMC.
	2.3 Monitoring, updating and disseminating risk information.	2.3.1 National and provincial departments with responsibilities for reducing and managing disaster risks specific to their functional areas have established clear and documented mechanisms for rapid accessing and updating of relevant hazard and vulnerability information and for rapidly making this information available to the NDMC. 2.3.2 National, provincial and municipal disaster management centres as well as all organs of state in all spheres of government have established and documented clear mechanisms for accessing, consolidating and updating relevant information on hazards, vulnerability and disaster occurrence from partners responsible for monitoring specific risks. 2.3.3 National, provincial and municipal disaster management centres as well as all organs of state in all spheres of government have established and documented clear mechanisms for disseminating disaster risk assessment and monitoring information for ongoing planning, as well as for managing conditions of heightened risk. 2.3.4 National, provincial and municipal disaster management centres have established and documented clear procedures for accessing, interpreting and disseminating early warnings of both rapid- and slow-onset hazards.
	2.4 Conducting quality control	2.4.1 Disaster risk assessments undertaken show documented evidence of: • capacity building and skills transfer. • ground-truthing (that is, based on the actual situation 'on the ground' or verified by those being assessed), through field consultations in the areas and with communities most at risk from the threat(s) being assessed.

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		• consultation with appropriate governmental and other stakeholders about the design and/or implementation of the disaster risk assessment and the interpretation of the findings. 2.4.2 The methodology and results of the disaster risk assessment have been subjected to an independent technical review process and external validation prior to: • the publication or dissemination of hazard, vulnerability or risk maps and/or reports for planning purposes. • the implementation of disaster risk reduction or other initiatives based on the disaster risk assessment results. 2.4.3 Disaster risk assessments undertaken show documented evidence of technical consultation with the appropriate disaster management centre(s) prior to implementation.
3. Disaster risk reduction (KPA3)	3.1 Disaster risk management planning.	3.1.1 A national disaster management framework has been developed and provincial and municipal disaster management frameworks that are consistent with the national disaster management framework have been submitted to the NDMC. 3.1.2 Disaster risk management planning guidelines have been developed and disseminated by the NDMC. 3.1.3 Disaster risk management plans have been submitted to the NDMC by all relevant national, provincial and municipal organs of state and municipal entities. 3.1.4 National, provincial and municipal disaster management frameworks and plans are revised at least two-yearly, as evidenced by annual reports submitted to the NDMC.
	3.2 Setting priorities for disaster risk management planning.	3.2.1 National priority risks have been identified and mapped by the NDMC. 3.2.2 Specific provincial priority risks have been identified and mapped by provincial disaster management centres, as evidenced in annual reports to the NDMC. 3.2.3 Specific municipal priority risks have been identified and mapped by Municipal Disaster Management Centres (MDMCs), as evidenced in annual reports to the NDMC. 3.2.4 Specific priority areas, communities and households within provincial and municipal spheres have been identified and mapped, as evidenced in annual reports submitted by provincial and municipal disaster management centres to the

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		NDMC. 3.2.5 Focused initiatives to reduce priority risks have been identified by national and provincial organs of state, as evidenced in annual reports submitted to the NDMC and consolidated by the NDMC in its annual report to the Minister.
	3.3 Scoping and development of disaster risk reduction plans, projects and programmes.	3.3.1 Case studies/lessons learned in incorporating disaster risk reduction measures and initiatives within national, provincial and municipal spheres have been documented and disseminated by the NDMC. 3.3.2 Documentation, which is accessible to key stakeholders, demonstrates the effectiveness of disaster risk reduction measures for different risk scenarios. 3.3.3 The effectiveness of disaster risk reduction initiatives is monitored by the NDMC.
	3.4 Inclusion of disaster risk reduction efforts in other structures and processes.	3.4.1 Mechanisms to disseminate experience from pilot and research projects that explore the vulnerability reduction potential, appropriateness, cost-effectiveness and sustainability of specific disaster risk reduction initiatives have been established. 3.4.2 Risk-related information has been incorporated into spatial development frameworks. 3.4.3 Projects and initiatives that include a focus on disaster risk reduction have been included in Integrated Development Plans (IDPs). 3.4.4 Guidelines for incorporating disaster risk management programmes and initiatives into the activities of other national organs of state and key institutional role players have been consultatively developed and implemented. 3.4.5 Regulations, standards, by-laws and other legal instruments that encourage risk-avoidance behaviour have been enforced by national, provincial and municipal organs of state and documented in annual reports to the NDMC.
	3.5 Implementation and monitoring of disaster risk reduction programmes and initiatives.	3.5.1 Disaster risk reduction programmes, projects and initiatives have been implemented by national, provincial and municipal organs of state and other key role players. 3.5.2 Measurable reductions in small-, medium- and large-scale disaster losses have been recorded. 3.5.3 A measurable reduction in social relief in disaster-prone economically vulnerable communities has been recorded. 3.5.4 Case studies and best-practice guides in disaster risk

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		reduction, facilitated by the NDMC, have been generated and disseminated. 3.5.5 There is evidence of the progressive application of disaster risk reduction techniques and measures by national, provincial and municipal organs of state, as reported in annual reports submitted to the NDMC.
4. Response and recovery (KPA4)	4.1 Early warnings.	4.1.1 Effective and appropriate early warning strategies have been developed and implemented and the information communicated to stakeholders to enable appropriate responses.
	4.2 Assessment, classification, declaration and review of a disaster.	4.2.1 Guidelines and uniform methods, including templates, for the assessment and costing of significant events or disasters have been developed. 4.2.2 Mechanisms for the rapid and effective classification of a disaster and the declaration of a state of disaster have been established. 4.2.3 Mechanisms for conducting and updating disaster reviews and reporting, including mechanisms to enable assessments that will comply with and give effect to the provisions of sections 56 and 57 of the Act, have been developed and implemented. 4.2.4 Review and research reports on significant events and trends are routinely submitted to the NDMC and disseminated to stakeholders. 4.2.5 Review reports on actual disasters are routinely submitted.
	4.3 Integrated response and recovery.	4.3.1 The organs of state that must bear primary responsibility for contingency planning and the co-ordination of known hazards have been identified and allocated such responsibility. 4.3.2 Stakeholders that must bear secondary responsibility for contingency planning and the co-ordination of known hazards have been identified and allocated such responsibility. 4.3.3 Contingency plans for known hazards by national organs of state have been developed. 4.3.4 Response and recovery plans are reviewed and updated annually. 4.3.4 Field operations guides (FOGs) for the various activities associated with disaster response and recovery have been developed and are reviewed and updated annually. 4.3.5 A national standard response management system has been developed and is reviewed and updated annually.

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		4.3.6 Standard Operating Procedures (SOPs) and checklists have been developed and are understood by all stakeholders in their respective areas of responsibilities. 4.3.7 Regulations and directives for the management of disaster response and recovery operations have been developed and gazetted or published.
	4.4 Relief measures.	4.4.1 Regulations for the management of relief operations have been developed and gazetted. 4.4.2 Progressive monitoring and annual reviews of regulations for the management of relief operations, based on lessons learnt, are conducted.
	4.5 Rehabilitation and reconstruction.	4.5.1 Post-disaster project teams for rehabilitation and reconstruction have been established and operate effectively. 4.5.2 Mechanisms for the monitoring of rehabilitation and reconstruction projects have been established and regular progress reports are submitted to the NDMC.
5. Information management and communication (Enabler 1)	5.1 Establishing an information management and communication system.	*None mentioned*
	5.2 Integrated information management and communication model.	*None mentioned*
	5.3 Data acquisition (data collection and capturing).	5.3.1 Data needs have been defined by the NDMC. 5.3.2 Data sources have been identified by the NDMC. 5.3.3 Data collection and capturing methodologies have been developed and implemented. 5.3.4 The responsibilities of the respective data custodians have been defined and assigned. 5.3.5 Agreements with identified data custodians have been negotiated to ensure availability, quality and reliability of data.
	5.4 Information management and communication support for key performance areas and enablers.	5.4.1 An integrated information management and communication system has been developed and implemented to support: • integrated institutional capacity • disaster risk assessment • disaster risk reduction programmes and plans • response and recovery operations • education, training, public awareness and research • funding mechanisms and financial controls.
	5.5 Specialised system functionalities.	5.5.1 A uniform document management system has been developed and implemented and is used by all role players.

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		5.5.2 A comprehensive, uniform and easily updateable resource and capacity database has been developed and implemented and is used by all role players. 5.5.3 A modelling and simulation application has been developed and is used by all role players. 5.5.4 An integrated monitoring and evaluation system has been developed and implemented and is used by all role players. 5.5.5 A uniform programme and project management tool has been developed and is used by all role players involved in disaster risk management programmes and projects. 5.5.6 A Quality Management System (QMS) has been developed and implemented, and designated individuals in relevant national, provincial and municipal organs of state have been assigned responsibility to administer the system.
	5.6 Development of an integrated information management and communication system.	5.6.1 The disaster risk management information and communication system has been established and implemented to cover all spheres of government. 5.6.2 The disaster risk management information and communication system supports the key performance areas and enablers in all spheres of government. 5.6.3 Provincial and municipal information management and communication systems are fully compatible with the national system and are part of a single integrated network.
	5.7 Information dissemination and display module.	5.7.1 Information dissemination programmes and channels of communication between all spheres of government, organs of state, communities and the media have been established. 5.7.2 Disaster risk management information is easily accessible for all at no additional charge.
6. Education, training, public awareness and research (Enabler 2)	6.1 National education, training and research needs and resources analysis.	6.1.1 A scientific national education, training and research needs and resources analysis (NETaRNRA) has been completed within two years of the implementation of the national disaster management framework. 6.1.2 The NETaRNRA serves as the foundation for the development of a national disaster risk management education and training framework. 6.1.3 The NETaRNRA informs the development of appropriate education and training programmes that not only build on existing strengths but are responsive to southern Africa's changing disaster risk management needs.
	6.2 National disaster risk management education	6.2.1 A national disaster risk management education and

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
	and training framework.	training framework has been developed and directs the implementation of all disaster risk management education and training in South Africa. 6.2.2 All disaster risk management education and training standards and qualifications comply with the requirements of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995) and the guidelines prescribed in the National Qualifications Framework (NQF). 6.2.3 A technical advisory body has been established. 6.2.4 An accreditation and registration system has been established to ensure that all education and training providers and facilitators are registered and accredited.
	6.3 Disaster risk management education.	6.3.1 Curricula for various NQF levels within different disciplines have been developed and applied in line with the NETaRNRA. 6.3.2 Aspects of disaster risk management are incorporated into the curricula of all relevant tertiary disciplines as well as relevant primary and secondary school programmes. 6.3.3 Various quality professional courses, workshops, seminars and conferences, focusing on issues of disaster risk through a multidisciplinary approach, are held. 6.3.4 Approved service providers have been registered and are offering education and training services and products. 6.3.5 There is widespread use of education and training materials. 6.3.6 Qualified facilitators, instructors and presenters have been accredited. 6.3.7 An Education and Training Quality Assurer (ETQA) has been appointed.
	6.4 Training programmes for disaster risk management.	6.4.1 Ongoing training interventions, including short courses, workshops, seminars and conferences, are available to stakeholders. 6.4.2 Training programmes have been developed and implemented. 6.4.3 Facilitators, instructors and presenters have become qualified and have been accredited. 6.4.4 Approved service providers have been registered and are offering training services and products. 6.4.5 Widespread community-based disaster risk management training (in line with national training standards) is taking place. 6.4.6 Disaster risk management learnerships have been

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		developed and are operational. 6.4.7 An ETQA has been appointed.
	6.5 Creating awareness, promoting a culture of risk avoidance and establishing good media relations.	6.5.1 An integrated national public awareness strategy based on the National Indicative Disaster Risk Profile and the NETaRNRA has been developed and implemented. 6.5.2 Disaster risk reduction is the focus of all disaster risk management awareness programmes. 6.5.3 Awareness of disaster risk management is promoted at schools and in communities known to be at risk. 6.5.4 Awareness of disaster risk management is widespread, and risk-avoidance behaviour is integrated into the day-to-day activities of all stakeholders. 6.5.4 There is widespread evidence of balanced media reports and coverage on hazards, disasters and disaster risk management issues. 6.5.5 Regular articles on disaster risk management appear in the media. 6.5.6 Good relationships with media representatives have been established and are maintained. 6.5.7 Disaster risk reduction is included as a standard agenda item for consideration at executive meetings of all role players and stakeholders.
	6.6 Research programme and information and advisory services.	6.6.1 A strategic disaster risk research agenda has been established. 6.6.2 Research institutions participate in the national research programme on an organised basis. 6.6.3 A link between scientific research and policy exists (evidence-based policy and policy- oriented research). 6.6.4 Regional and international exchange, co-operation and networking occur on a regular basis. 6.6.5 Disaster risk management research contributes to technology development. 6.6.6 All stakeholders have access to a comprehensive research database. 6.6.7 All stakeholders have access to a comprehensive advisory service.
7. Funding arrangement for disaster risk management (Enabler 3)	7.1 Funding arrangements as it pertains to KPA1 and Enabler 1	7.1.1 The minimum requirements for provincial and disaster management centres have been costed. 7.1.2 Conditional grants to fund the start-up costs of disaster management centres in provinces and municipalities have been

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		established and allocated. 7.1.3 Conditions for access to grant funding are based on guidelines issued by the NDMC on minimum infrastructural requirements for disaster management centres. 7.1.4 The responsibilities of the NDMC as set out in the Act have been costed and these cost estimates inform the budget for disaster risk management in the DPLG vote. 7.1.5 The NDMC budget makes provision for national priority risk reduction projects. 7.1.6 The NDMC has rapid access to emergency funds for assistance in regional disasters. 7.1.7 Monitoring processes are integrated with routine reporting cycles of organs of state.
	7.2 Funding arrangements as it pertains to KPA2	7.2.1 The costs of disaster risk assessments are included in the budgets of national and provincial organs of state. 7.2.2 The costs of the initial disaster risk assessments are included in the local government conditional grant. 7.2.3 The costs of disaster risk assessments have been estimated and have been included in the budgets of MDMCs.
	7.3 Funding arrangements as it pertains to KPA3	7.3.1 Budgets in all spheres of government include the costs of routine disaster risk reduction measures and activities. 7.3.2 Preparedness actions are funded through the recurrent budgets of all relevant organs of state. 7.3.3 Feasibility studies for capital projects include information drawn from risk assessments and appropriate risk reduction measures. 7.3.4 Capital budgets clearly reflect the costs of disaster risk reduction.
	7.4 Funding arrangements as it pertains to KPA4	7.4.1 The development, implementation and dissemination of early warnings are funded through the recurrent budgets of the relevant organs of state. 7.4.2 The percentage of the budget of a provincial or municipal organ of state as a threshold for accessing additional funding from national government for response and recovery efforts has been established and implemented. 7.4.3 Response and recovery efforts are funded through budgeted threshold allocations. 7.4.4 A mechanism has been developed to ensure rapid access to national funds for disaster response. 7.4.5 Organs of state across all spheres of government have

KPAS AND ENABLERS	VARIABLES	KEY PERFORMANCE INDICATORS
		budgeted for threshold allocations. 7.4.6 People, households and communities affected by a disaster have immediate access to relief measures. 7.4.7 Financial thresholds for rehabilitation and reconstruction funding in the different spheres of government have been set. 7.4.8 Rehabilitation and reconstruction efforts are funded through a combination of own budgets, reprioritisation, budgeted threshold allocations and conditional grants.
	7.5 Funding arrangements as it pertains to Enabler 2	7.5.1 There is documented evidence of an increase in expenditure on accredited education and training programmes. 7.5.2 Organs of state recover their expenditure on accredited education and training from the relevant SETAs. 7.5.3 The conditions of the MSIG have been extended to cater for disaster risk management education and training programmes. 7.5.4 All organs of state involved in public awareness budget for integrated public awareness programmes. 7.5.5 Partnerships between municipal organs of state and the private sector, NGOs and CBOs exist for the purpose of funding public awareness programmes and projects. 7.5.6 Funds are available from government departments, international donor organisations, private companies, research foundations and NGOs for research programmes.

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