

https://dspace.org/

Sustainable development, disaster-risk reduction and governance : assessing climate change adaptation challenges facing South Africa

Mgquba, Smangele K

2012-03-06
http://hdl.handle.net/10539/11393

Downloaded from a DSpace repository. https://dspace.org/

SUSTAINABLE DEVELOPMENT, DISASTER-RISK REDUCTION AND GOVERNANACE: ASSESSING CLIMATE CHANGE ADAPTATION CHALLENGES FACING SOUTH AFRICA

Smangele K. Mgquba

Submitted in fulfillment of the requirements

for the Doctor of Philosophy in Science,

in the School of Geography, Archaeology and Environmental Studies,

University of the Witwatersrand,

Johannesburg, 2011

DECLARATION

This research is entirely my own work and has not been previously submitted as research, dissertation or thesis, to any other university.

…….

University of the Witwatersrand.

In Loving Memory of my Best Friend

Khamarunga Grace Banda

08.12.2009

Who did so much to pioneer community-based adaptation in resource-poor communities.

ABSTRACT

In this study, the linkages between sustainable development, disaster-risk reduction and governance are explored, with reference to climate change adaptation. The purpose of the assessment is to ascertain the effectiveness, or lack thereof, of these inter-linkages with regard to climate change adaptation in South Africa. First, a brief review of theoretical debates on sustainable development, disaster-risk reduction, governance and climate change adaptation is given. Currently, it seems, sustainable development, disaster-risk reduction and governance are viewed exclusively from each other and from climate change adaptation. Some theoretical debates suggest that successful, long-term climate change adaptation can only be accomplished if linkages between these concepts, and practices, where relevant, are recognized in development policies. There is thus, a need to understand the relationships between climate change adaptation and development policy AND their linkages and tradeoffs. Coupled to this understanding, there is also a need to assess the role of institutions as well as institutional barriers that may retard or pose a threat to long-term sustainable adaptation.

For this case study, the focus is on the 2004/05 drought that occurred in the Eastern Cape. The drought of 2004/05 was particularly severe. Some parts of the Eastern Cape were declared disaster areas. This declaration prompted responses from the various spheres of government, e.g. national, provincial and local. The intention therefore is, firstly, to gain clarity on the linkages between development/sustainable development policies, disaster-risk reduction and governance in the Province that operated during this period and in the periods following this drought. Secondly, the intention is to understand how the spheres of governance work together in responding to climate-related disasters. Responses from the community reveal that coupled to poor development planning; there is also limited and poor institutional capacity to respond to the direct and indirect impacts of climate variability and change. This poor institutional capacity is further complicated by a lack of coordination between the three spheres of government, i.e. national, provincial and local, as well as across national government departments.

It is suggested that first, a good structure of cooperative governance and disaster-risk reduction is needed in South Africa. This structure should allow for multi-faceted and holistic development planning that focuses on saving lives, protecting livelihoods and assets. A good structure of governance should provide an environment that is sustainable and conducive to long-term climate change adaptation. What this case study also reveals is that monetary relief and assistance alone is not an effective response to climate variability and change. What is thus also needed is more vigilant monitoring of development projects and relief-funds as well as coordinated governance of development activities between national, provincial and local governments. Such an organized structure of governance could aid the country in gearing up for climate change adaptation.

PREFACE

In the past decades, distinct and independent research and policy areas and communities related to climate change adaptation have emerged internationally. Most notable in these research areas are the concepts of development and/or sustainable development and disaster-risk reduction. In South Africa, while there is a very strong disaster-risk reduction policy and acknowledgement of the need for effective sustainable development there is a paucity of any effective climate change adaptation. One area where this problematique can be seen is when one examines the institutional governance structures designed to reduce risks to climate risks (in this case severe drought). In this thesis the implementation of policies related to climate change adaptation, sustainable development and disaster-risk reduction is shown to be largely dependent on responsible governance and effective coordination of governance structures. The potential for increased disaster-risk associated with climate change, has spurred efforts to understand appropriate and effective adaptive climate change measures as a matter of urgency. Reducing impacts associated with climate change and climate variability has become a priority due to the threats the impacts pose to sustainable development. As such, there is a need to shift the focus on understanding climate variability and change from a hazard's science perspective to understanding the alignment and integration of response to disaster-risk reduction and development. With this brief introduction the various sections of this thesis are as follows:

Chapter 1 presents a rationale for this study. Aims and objectives of the study are also outlined. The rationale for the study area is given. The area is sensitive to climate-risk and experiences several variations in climate including droughts. A framework adopted from Schipper and Pelling (2006), for effective disaster-risk reduction is presented.

Chapter 2 gives the research methodology and how the study was carried out. Firstly, a brief background on the Eastern Cape Province is given. This is followed by a more detailed account on how the different phases of research were carried out.

Chapter 3 presents a discussion of relevant literature on key concepts such as disaster-risk reduction, sustainable development and governance, which are crucial to the successful implementation of effective adaptation. Using droughts as an example of climate stress, case studies internationally and in Africa are then examined, foregrounding the urgency of adaptation and the need to better manage such disasters.

This is followed in **Chapter 4** by an examination of similar concepts raised in Chapter 2, with specific reference to the South African landscape, including the structure of governance as per the Constitution of the Republic of South Africa.

Chapter 5 presents a discussion of research findings and is an attempt to assess the success of plans for reducing risks to future climate stress. Attention is specifically given to an analysis of development initiatives and the national and local coping mechanisms to the drought of 2004-2005.

Chapter 6 presents additional research results, but focuses more on the examination of disaster-risk reduction responses and costs related to the 2004/05 drought. The role played by institutions, including relevant policies, are also explained. An illustration, in terms of a framework, for the existing structure of governance is presented.

Finally, in **Chapter 7**, the important findings of this work are summarized. Lessons emerging and challenges that are/will be faced in implementing adaptation to climate change and climate variability are provided for South Africa.

Outcomes of this study:

This study has been presented in the following forums:

1. *24 May 2006, Students Climate Change Symposium, University of Pretoria.*
2. *24 May 2007, Presentation given to visiting students of the University of Virginia, Gold Reef City Museum, Johannesburg.*
3. *15 July 2008, Draft Thesis presented to the National Climate Change Committee of South Africa at a meeting held at SANBI Biodiversity Centre Auditorium, Pretoria.*
4. *4 March 2009, Draft Thesis presented at the National Climate Change Summit, held at the Gallagher Estate, Midrand, Johannesburg.*

…….

ACRONYMS

ASGISA	- Accelerated and Shared Growth Initiative for South Africa
DEAT*	- Department of Environmental Affairs and Tourism
DEA	- Department of Environmental Affairs
DFID	- Department for International Development
DMA	- Disaster Management Act
DMF	-Disaster Management Framework
DM	- District Municipality
DMC	- Drought Monitoring Centre
DoA*	- Department of Agriculture (Department of Agriculture, Forestry and Fisheries)
DoT	- Department of Transport
DFID	- Department of International Development
DPLG*	- Department of Provincial and Local Government (Department of Cooperative Governance and Traditional Affairs)
DPW	- Department of Public Works
DSocDev	- Department of Social Development
DWAF*	- Department of Water Affairs and Forestry (Department of Water Affairs)
ENSO	- El Nino Southern Oscillation
EPWP	- Expanded Public Works Programme
FAO	- Food and Agriculture Organisation
GEAR	- Growth Employment and Redistribution
HSRC	- Human Sciences Research Council
ICDM	-Intergovernmental Committee on Disaster Management
IDPs	- Integrated Development Plans
IPCC	- Intergovernmental Panel on Climate Change
ISDR	- International Strategy for Disaster Reduction
JPOI	- Johannesburg Plan of Implementation
LDCs	- Least Developed Countries
LED	- Local Economic Development
MDGs	- Millennium Development Goals
NCCC	- National Committee on Climate Change
NDMC	- National Disaster Management Centre
NT	- The National Treasury of South Africa
MFSD	- National Framework on Sustainable Development
NGOs	- Non-Governmental Organizations
PFMA	- Public Finance and Management Act
PGDP	- Provincial Growth and Development Plan
PRA	- Participatory Rural Appraisal
RDP	- Reconstruction and Development Programme
SIDS	- Small Island Developing States
START	- Global SysTem for Analysis, Research and Training
STATSSA	- Statistics South Africa
UNDP	- United Nations Development Programme
UNEP	- United Nations Environmental Programme
UNFCCC	- United Nations Convention on Climate Change
WSSD	- World Summit on Sustainable Development
WSTF	- Water Supply Task Force
SAWS	- South African Weather Service

*Please note that these Departments were restructured and given new names (shown in brackets) in September 2009. In this thesis however their old names are used as used during interviews.

TABLE OF CONTENTS

DECLARATION ..... **II**

ABSTRACT ..... **IV**

PREFACE ..... **V**

ACRONYMS ..... **VIII**

TABLE OF CONTENTS ..... **IX**

LIST OF FIGURES ..... **XIII**

LIST OT TABLES ..... **XIV**

LIST OF BOXES ..... **XV**

CHAPTER 1 ..... **1**

INTRODUCTION **1**

1.1 Background 1

1.2 Research Rationale 3

1.3 Hypothesis, Key Questions and Objectives 10

1.4 Thesis Roadmap 14

1.5 Summary 17

CHAPTER 2 ..... **18**

RESEARCH METHODOLOGY **18**

2.1 Introduction 18

2.2 Brief Background of the Eastern Cape Province 18

2.2.1 Demographics and Development Background 18

2.2.2 Climate 22

2.2.3 Industry 22

2.2.4 Economic overview 23

2.3 Areas of Study: Site Selection and Characterization 25

2.4 Research Methodology 27

2.4.1 Phase 1: Pre-survey visit and collection of baseline data…….... 27
2.4.2 Phase 2: Research themes and methods……..……..……..29
2.5 Challenges faced during research 42
2.6 Summary……43

CHAPTER 3……44

ESTABLISHING LINKAGES BETWEEN, DISASTER-RISK REDUCTION, CLIMATE CHANGE ADAPTATION, SUSTAINABLE DEVELOPMENT AND COOPERATIVE GOVERNANCE……..... 44
3.1 Introduction..... 44
3.2 Some Theoretical Concepts Underpinning This Research 44
3.3 Climate Change and Variability..... 47
3.4 Africa's Exposure and Vulnerability to Climate Change 51
3.5 Biophysical and Social Vulnerability 58
3.6 Climate Change Adaptation and Disaster-Risk Reduction..... 64
3.7 The Complexity of Sustainable Development and Policy Integration in Climate Change Adaptation..... 70
3.8 The Challenge of Policy Integration and the Role of Cooperative Governance in Climate Policy Implementation 76
3.9 Summary..... 81

CHAPTER 4……83

CLIMATE CHANGE AND VARIABILITY, DISASTER–RISK REDUCTION, SUSTAINABLE DEVELOPMENT AND COOPERATIVE GOVERNANACE IN SOUTH AFRICA……..83
4.1 Introduction..... 83
4.2 South Africa's Weather and Climate 84
4.3 Future Climate Scenarios for South Africa..... 86
4.4 Droughts in South Africa 89
4.5 Development Policies in South Africa..... 92
4.5.1 Local development policy: Integrated Development Plans for Municipalities…….. .. 98
4.6 Natural Disaster Reduction in South Africa: The Disaster Management Act of 2002..... 99
4.6.1 Disaster management at national and local levels…… 101
4.7 The Structure of Governance in South Africa as Detailed in the Constitution..... 103
4.8 Summary..... 105

CHAPTER 5……...106

INTERACTIONS BETWEEN VULNERABILITY, DISASTER-RISK REDUCTION AND DEVELOPMENT IN O.R.TAMBO AND AMATOLE DISTRICT MUNICIPALITIES……..106

5.1 Introduction 106
5.2 THEME 1: Links between Development and Climate Change: Integrated Development Plans 108
5.2.1 Amathole District Municipality Integrated Development Plan: 2002 – 2007……108
5.2.2 O.R. Tambo District Municipality Integrated Development Plan: 2002-2007……111
5.2.3 Analysis of IDPs……114
5.3 THEME 2: Climate Hazard and Coping Mechanisms 116
5.3.1 Vulnerability and Exposure Drought at Community Level……116
5.3.2 Coping Mechanisms and Adaptation to Drought at Community Level……124
5.4 THEME 3(i): Disaster-risk reduction and governance 129
5.3.1 An analysis of Disaster-Risk Responses from Key Stakeholders…….. 129
5.5 Summary 133

CHAPTER 6……...134

DISASTER-RISK REDUCTION AND COOPERATIVE GOVERNANCE: AN ANALYSIS OF COSTS…….. . 134

6.1 Introduction 134
6.2 THEME 3(ii): Disaster-risk reduction and governance 136
6.2.1 Some Indicative Costing of Climate-Related Events in South Africa, 2002-2007……..136
6.2.2 Costs related to the 2004/05 drought……...138
6.3 Allocations for Development from the Integrated Development Plans (2002-7) 149
6.4 THEME 4: Developing an Illustrative Framework of Governanance 154
6.5 Summary 160

CHAPTER 7…….....161

CONCLUSION…….. ... 161

7.1 THEME 1: Links between Development and Climate Change: Integrated Development Plans 165
7.2 THEME 2: Climate Hazard and Coping Mechanisms 166
7.3 THEME 3: Disaster-risk Reduction, Disaster-response and Governance 168
7.4 THEME 4: Institutional Mapping of Drought Response 170
7.5 Monitoring and Evaluation: A Very Critical but Noticeable Missing Link! 171
7.6 Final Reflections and Recommendations 172

REFERENCES:…….177

REFERENCES: PERSONAL COMMUNICATION ……..……198

APPENDIX 1:…….…….....199

DROUGHTS IN SOUTH AFRICA PER PROVINCE……..…… 199

APPENDIX 2:…….....206

QUESTIONNAIRE……...206

LIST OF FIGURES

Figure 1. 1: Climate change, disaster-risk management and national development policy 9

Figure 2. 1: Map of the Eastern Cape Province 20
Figure 2. 2: District municipal boundaries in the Eastern Cape Province 25
Figure 2. 3: Population and number of households per District Municipality in the Eastern Cape Province – 2001 25
Figure 2. 4: Different areas of research 30
Figure 2. 5: Sustainable rural livelihoods: A framework for analysis 34
Figure 2. 6: Examining interactions between national, provincial and local spheres of government 38

Figure 3. 1: Integrated climate change–sustainable development strategy 50
Figure 3. 2: The expand-contract model 67
Figure 3. 3: Key elements of sustainable development and their interactions 72
Figure 3. 4: A singular effect of climate change and its cascading impacts 74
Figure 3. 5: The regime theory and the 'cascade model' of global environmental governance 78
Figure 3. 6: Incorporating environmental concerns into decision-making 80

Figure 4. 1:Natural hazards in South Africa from 1960-2004 85
Figure 4. 2: An example of a 2050 projected change in total annual rainfall (mm month^{-1}) for July and December from a new generation GCM used in the IPCC AR4 87
Figure 4. 3: Droughts in the Eastern Cape 1960-2005 90
Figure 4. 4: Integrated institutional capacity for disaster-risk management 102

Figure 5. 1: A framework illustrating the different areas of research 107

Figure 6. 1: A framework illustrating the different areas of research 135
Figure 6. 2: The existing structure of managing drought related events in South Africa 157

Figure 7. 1: A illustrating the different areas of research 164

LIST OT TABLES

Table 2. 1: A comparative analysis of change in demographics in the Eastern Cape 19
Table 2. 2: A comparison of gross added-broad economic sectors (in 000)..... 24

Table 3. 1: Explanation of key terms as used in this thesis 45
Table 3. 2: Some of the worst recorded droughts in Africa, 1972 - 2000 54
Table 3. 3: Example of actual and further possible potential impacts of drought in Africa..... 57

Table 4. 1: A Comparative analysis of change from 1996-2007 94

Table 5. 1: Strategic clusters for the district IDP..... 108
Table 5. 2: Objectives of the Amatole DM IDP 109
Table 5. 3: Key issues and objectives of the O. R. Tambo IDP..... 112
Table 5. 4: Types of families identified and livelihood activities per family in both Municipalities..... 118

Table 6. 1: An example of flood damage costs in the Western Cape 136
Table 6. 2: Estimated magnitude of costs of damages due to natural hazards..... 137
Table 6. 3: Total allocation of funds for the first (2003), second (2004), third (2004), fourth and fifth (2007) allocations: An indication of national expenditure on drought relief per Province . 141
Table 6. 4: Total drought-relief funds in the Eastern Cape per District 143
Table 6. 5: Drought-relief funds: Amatole DM (2004/05) 143
Table 6. 6: Drought-relief funds: O. R. Tambo DM (2004/05) 143
Table 6. 7: Results of a household survey on the drought-relief grants given by the..... 147
Table 6. 8: Amatole DM 5 year plan 151
Table 6. 9: O.R. Tambo DM 5-year capital investment program for the 2002-2007 IDP..... 152
Table 6. 10: List of departments and their ratings by communities..... 155

LIST OF BOXES

Box 5. 1: Some initiatives extracted from IDPs that should have been able to increase 117
Box 5. 2: Reasons given by communities on drought recovery was difficult 121
Box 5. 3: Reported impacts of other disasters in the area 122
Box 5. 4: Interventions needed by communities from government 123

Box 6. 1: An indication of drought-relief funds announced by the Minister of Finance for 2004 and 2005 139
Box 6. 2: Thousands to get drought-relief in the Eastern Cape 145