LIVING WITH MULTIPLE, COMPLEX RISKS OF COMMERCIAL SUGARCANE FARMING IN KWAZULU-NATAL: THE ROLE OF CLIMATE CHANGE?

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DECLARATION

I declare that this dissertation is my own, unaided work. It is being submitted for the degree of Master of Science in the University of the Witwatersrand, Johannesburg. It has not been submitted for any degree or examination in any other University.

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ABSTRACT

The aim of this research is to examine the contextual environment in which farmers operate so as to improve our understanding of the factors shaping vulnerability to climate risk. A key focus is on the livelihoods of sugarcane farmers, using a case study of small-, medium-scale (emerging) and large-scale sugarcane farmers in the KwaZulu-Natal Midlands area of Eston and its surrounds. A social vulnerability assessment was undertaken under the Sustainable Livelihoods Framework (SLF) to test the hypothesis that climate risk is considered a major contributing factor to the vulnerability of commercial farmers in KwaZulu-Natal and needs to be effectively managed. This involved an investigation into the multiple stresses (both external and internal, on-farm and off-farm, climatic and non-climatic) acting on the system. It is clear that climate change risk and variability is a major, but not the sole contributing factor to the vulnerability of commercial farmers in this part of KwaZulu-Natal. Climate change does need to be effectively managed but it will be best done in conjunction with the management of the other multiple and interacting threats and stresses identified in this study. Climate change and vulnerability, as well as the other multiple stresses, are acting on an already vulnerable system, exacerbating and compounding present risks.

This research also explored a number of coping and response strategies that commercial farmers have adopted in response to the threats and stresses and investigated particularly, what elements enhance or restrict these strategies (both on-farm and off-farm). These strategies possess potential as possible future adaptation options. It was found that the issues of access to livelihood assets (social, financial, natural/environmental, physical, human, knowledge assets and capital under the SLF) are key to the adaptive capacity and the adaptation strategies that farmers employ. Institutions (both formal and informal) play a pivotal role in this access to livelihood assets both enabling and restricting access.

In conclusion, this work determined that a focus on only one element, such as climate change, will not significantly reduce the vulnerability of commercial farmers. There is an interactive, dynamic and multifaceted network present with a number of factors acting within and from outside the system. Political, biophysical, social and economic factors interact and combine to compound vulnerability, requiring more integrative and multiple response strategies.
DEDICATION
This work is dedicated to the memory of my Grandfather Ken Fish. A true Geographer and enthusiastic teacher in the Natal midlands.

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PREFACE


The research has already generated a number of products. The research was presented in poster form at the 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community at Bonn University in Germany during October 2005. Poster title: The Vulnerability of Sugarcane Farmers in KwaZulu-Natal, South Africa, to Climate Change, Climate Variability and Non-Climate Related Stresses.

Preliminary findings of this work were also presented in 2004 as a paper at the Annual Geography Students Conference. Presentation Title: Climate Risk and its Impact on Commercial Farming in KwaZulu-Natal and at The 9th International Meeting On Statistical Climatology in Cape Town in 2004, presentation title: Coping with Climate Change, Related Risks and Non-climate Related Stresses: Perceptions and Responses of Subsistence and Commercial Farmers in KwaZulu-Natal (South Africa). Preliminary findings were also presented at the International Human Dimension Programme (IHDP) Regional Workshop on Human Dimensions of Global Environmental Change Research - Southern Africa in 2004 at Richards Bay. Presentation title: Climate Risk and its Impact on Commercial Farming in KwaZulu-Natal. Contributions on climate change and adaptation derived from this work have been published in the Wildlife and Environment Society’s (WESSA) National Magazine: African Wildlife (2006) and the Department of Environmental Affairs and Development Planning (Provincial Government of the Western Cape) EnD Newsletters (2005). Contributions from this work were also made to the Energy and Climate Change section of the City of Cape Town’s Environmental Resource Management Department.
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ACRONYMS

A – All farmers
AGM – Annual General Meeting
AIACC – Assessment of Impact and Adaptation to Climate Change
AOGCM – Atmosphere – ocean coupled general circulation model
CSAG – Climate Systems Analysis Group
DFID – Department for International Development
DoA – Department of Agriculture (National)
FANR – Food, Agriculture and Natural Resources Directorate
FAO – Food and Agriculture Organisation
FEWSNET – The Famine Early Systems Network
GCM – Global Circulation Model
GDP – Gross Domestic Product
GEF – Global Environment Fund
GIEWS – Global Information and Early Warning System
HIV/AIDS – Human Immune Deficiency Virus
IDS – Institute for Development Studies
IHDP – International Human Dimensions Programme
IPCC – The International Panel on Climate Change
IUCN - International Conservation Union
L – Large-scale farmers
M – Medium-scale (emerging) farmers
MAP – Mean Annual Precipitation
MRU – Migration Research Unit
ODI – Overseas Development Institute
PAETA – The Primary Agricultural Education Training Authority
PRA – Participatory Rural Appraisal
RRA – Rapid Rural Appraisal
RV – Recoverable Value
S – Small-scale farmers
SA – South Africa (Republic of)
SADC – Southern African Development Community
SACU – South African Customs Union
SASA – The South African Sugar Association
SASRI – The South African Sugar Research Institute
SAVI - Social Assets and Vulnerabilities Indicators
SEI – Stockholm Environmental Institute
SLF – The Sustainable Livelihoods Framework
SRES - Special Report on Emissions Scenarios
SWOT - Strengths, weaknesses, opportunities and threats
UK – United Kingdom
UNDP – United Nations Development Programme
UNEP - United Nation Environmental Programme
UNFCCC – The United National Framework Convention on Climate Change
US – United States (The United States of America)
VA – Vulnerability Assessment
VAM – Vulnerability Analysis and Mapping
WFP – World Food Programme
WRC – Water Research Commission
WTO – The World Trade Organization