vulnerability of livestock farmers in southern kalahari; the case of mier in Rietfontein, south africa

timothy zviripi munjoma

Norwegian University of Life Sciences

Department of Noragric

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VULNERABILITY OF LIVESTOCK FARMERS IN SOUTHERN KALAHARI; THE CASE OF MIER IN RIETFONTEIN, SOUTH AFRICA

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NORWEGIAN UNIVERSITY OF LIFE SCIENCES (UMB)

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tmunjoma@hotmail.com

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Noragric
Department of International Environment and Development Studies
P. O. Box 5003
N-1432 Ås
Norway
Tel.: +47 64 96 52 00
Fax: +47 64 96 52 01
Internet: http://www.umb.no/noragric

DECLARATION

I, Timothy Zviripi Munjoma, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature: ……..

Timothy Zviripi Munjoma

Date: ……

DEDICATION

I dedicate this thesis to my son Timothy Munjoma (Jnr), my mother Elizabeth Munjoma and my late father Benjamin Tendai Zviripi Munjoma. You are the anchor of my life and my love for you will never die. I love you.

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ABSTRACT

Vulnerability is now highlighted globally. Poverty has been identified as a key contributor to vulnerability but asset building increases resilience and adaptive capacity. This study examines the root causes of vulnerability and adaptive capacity of Mier pastoralists by utilizing the 'sustainable livelihood framework' and 'pressure and release' model. The Mier community fled British rule in 1865 and migrated from Cape Town to Northern Cape Province in Rietfontein, south of Kalahari Desert. A mixed methods approach was adopted by utilizing survey, interview and observation to assess the social system. Household heads were investigated to understand the distribution and access to resources that contributed to livelihood. This study revealed that vulnerability of the Mier pastoralist was a result of political and economic factors that reinforced inequalities. Poor households were more vulnerable, especially women-headed households. The main cause of vulnerability was unequal distribution of resources. Despite the effect of climate change and variability in this community, vulnerability was a human-induced phenomenon.

Key terms: vulnerability, adaptive capacity, livelihood, resilience, household

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Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ANC	African National Congress
DfID	Department for International Development
DLA	Department of Land Affairs
DRDLR	Department of Rural Development and Land Reform
ENSO	El Nino- Southern Oscillation
FAO	Food and Agriculture Organization
GEAR	Growth, Employment and Redistribution
IPCC	Intergovernmental Panel for Climate Change
JMB	Joint Management Board
KTP	Kalahari Transfrontier Park
HIV	Human Immunodeficiency Virus
IPCC	Intergovernmental Panel on Climate Change
MDGs	Millennium Development Goals
NGOs	Non-Governmental Organizations
PAR	Pressure and Release model
PLAAS	Institute for Poverty, Land and Agrarian Studies
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
SANParks	South African National Parks
SAP	Structural Adjustment Programme
SLA	Sustainable Livelihood Approach
SSA	Sub-Saharan Africa
UDI	Utlendingsdirektoratet (Norwegian Directorate of Immigration)
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Funds
WBWS	Willing Buyer-Willing Seller

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

Introduction

Globally, the issue of vulnerability is now widely highlighted. The role that institutions can play in reducing vulnerability should not be underestimated. The major challenge is to form institutions that contribute towards increasing resilience and adaptive capacity in the face of many other challenges that include climate change, globalisation, social inequalities and epidemics (Wisner et al., 2004). Poverty has been identified as one key contributor to vulnerability. The global agenda of reducing the number of people in poverty has yielded promising results in some parts of the world, for example China. It has managed to dramatically reduce people living in poverty from 60% in 1990 to 13% by 2008 (UNDP, 2012). Despite the reduction in the poverty figures in some regions, it is unlikely that the 2015 target will be achievable in some parts of the world. Projections show in unequivocal terms that there has been a steady reduction of poverty in Sub-Saharan Africa (SSA) from 56.5% to 47.5% between 1990 to 2008 (UNDP, 2012). Despite this progress, inequalities that contribute to poverty and vulnerability are masked by these ratesin some societies. What are needed thereforeare vulnerability studies and the construction of poverty profiles in order to identify who the poor and vulnerable are, and the determinants of vulnerability in these communities. By so doing, this would allow the formulation of relevant and applicable strategies and policies that will assist in vulnerability reduction.

Land and other natural resources contribute substantially to the livelihoods of poor people in rural Southern Africa (e.g. Cavendish, 2000; Shackleton et al., 2000). Livestock production, as one among sources of livelihood, has been identified as the backbone for many poor rural communities (Kepe et al., 2005), especially in the drylands such as the southern Kalahari region, where crop production is virtually non-existent (Thondhlana, 2011; Thondhlana et al, 2011). The ownership of livestock forms the backbone for communities in the Kalahari area due to its multipurpose function and high yields of economic return, vital for sustenance of these communities living in ecologically harsh environments (Cousins, 1996).

It is predicted that global warming will result in a temperature rise of more than 2 degrees Celsius. Sub-Saharan Africa (SSA) is anticipated to be mostly affected by drought and water shortages, thereby impacting on the land-based livelihoods of millions of people (IPCC, 2007). However, the vulnerability of a particular society to the effects of climate change and extreme weather events such as droughts, floods and cyclones depends on the internal state of the system prior to the occurrence of a hazardous event (Adger et al., 2004). Indeed, vulnerability can exist within a system independent of external hazards (Adger et al., 2004). Therefore, discriminants such as unequal distribution of income, marginalisation and poverty among different social groups and various forms of social exclusion can in turn cause stresses especially to vulnerable societies (Blaikie et al., 1994; Adger and Kelly, 1999; Adger et al., 2004).

Climate change and climate variability is a global phenomenon that is affecting different environments and different areas differently because its effects are not evenly distributed (Salick and Byg, 2007). Most poor people living in remote parts of the world will most likely suffer from the harsh effects of climate change and variability because their livelihood sources depend on natural resources that are directly affected by climate change and climate variability. While there is no evidence linking specific recent droughts to global climate change, the resilience of livestock-dependent people in dry areas of South Africa has provided something of a 'testing ground' for responses to drought and related threats/stressors to rural livelihoods. Apart from providing livelihood needs, livestock production provides a buffer for poor rural communities during times of adversity and constraints such as climate change because they can act as savings. Livestock production if properly managed has the potential to reduce poverty in SSA. Approximately 248 million people in SSA live in rural areas and most of them are resource-poor; hence the need to make appropriate intervention efforts that can ameliorate conditions for numbers of people living in poverty (Owen et al., 2005).

Consequently, the study of rural livelihoods gives us a better understanding of the vulnerability and adaptive capacity of these societies to perturbations such as climate change or climate variability and other stressors such as HIV/AIDS epidemics and globalisation. These factors have been cited as a big threat to sustainable livelihoods, due to their negative socio-economic effects, namely: deepening poverty, eroding the ability of governments to maintain essential services, worsening gender inequality, reducing labor productivity and supply, reversing human

development achievements and putting a brake on economic growth (UNDP, 2001:4). Therefore, rather than focusing on natural causes of disasters, the 'root causes' of vulnerability can be traced back to social factors in instances where economic and political processes cause vulnerability. Vulnerability in some societies has been due to natural causes such as harsh climatic conditions that triggered disasters, while in other societies it is socially constructed. More studies in the past concentrated on natural causes of disasters such as earthquakes, hurricanes or droughts, and influenced intervention strategies in terms of policies. There is a vast literature indicating that natural components dominate in causing vulnerability to anyone within reach of the trigger (Adger et al., 2004; Parry et al. 1999; Wilkie et al. 1999; Schiller et al 2001).

However, there are some disasters that are caused by social factors such as political and economic processes (Wisner et al., 2004). For example, the famine of 1984-1985 in Sudan was a politically engineered famine because the government of Nimeiri consciously denied that there was famine in its country to avoid embarrassment and distraction (de Wall, 1999). The outcome was a disaster because lots of lives were lost due to the famine that could have been prevented by food aid from other countries. In most cases, it is the poor who are affected while the rich are protected by their access to resources. Even though vulnerability and poverty are intertwined, there is no direct inference that vulnerability is a result of poverty (Wisner et al., 2004).

Understanding the root causes that threaten these communities could make a significant contribution in facilitating informed reactions to uncertainties and changes, thereby improving the adaptation of poor rural communities in the face of adversity. Most people who live in rural areas in many parts of the world depend heavily on agriculture as the main source of livelihood. Past experiences of natural disasters help these people to devise coping mechanisms that will enable them to buffer against other shocks such as droughts and floods. A past event often sets up ways of coping with a similar event if it occurs again (Douglas, 1995). Some scholars refer to 'capacity' as the opposite of vulnerability - the ability of a household, society or community to resist a hazard's harmful effect and recover easily (Eade, 1998). The different adaptive measures differ in space and time: individuals and households devise preventive strategies while the government may intervene with mitigation measures through policy reformulations such as land reform.

What determines access to resources such as land to practice agriculture, proper health care, decent accommodation and clean water availability are economic and political factors. Land is the major asset for supporting rural livelihoods, and failure to secure it has a negative influence on poverty reduction. Land tenure is an important aspect of a society because it shapes political, economic and social structures and relationships that influence access to land by vulnerable households. Therefore, it is vital to understand the nature of social structures and processes because that knowledge is essential for policy formulation. Securing land by vulnerable households whether through formal, informal, customary or other means is part of sustainable development because it enables rural households to enjoy sustainable livelihoods (Cox, 2002). Sustainable development offers a people-oriented development that promotes resource mobilization by governments to poor people in rural areas to empower them with coping strategies, even in physically harsh environments such as the Mier communities living in the Kalahari Desert. Adaptation interventions that are in line with sustainable development initiatives are called for, especially in poor and vulnerable societies (Collier et al., 2008).

A pre- and post-colonial context of South Africa and the study area

A brief history of South Africa

The situation of current South Africa has been shaped predominantly by its history of colonization that has left scars in many lives and left many people vulnerable. The arrival of the first Europeans from Holland to settle in the second half of the seventeenth century was followed by a large European population settlement from the nineteenth century onwards (Feinstein, 2005). The Dutch wanted to grow wheat and other grains, rear sheep and cattle to resupply Dutch East India Company ships during their voyages (Feinstein, 2005). The Dutch rule ended in 1806 when the British took over the colony from Cape and moved further into the interior land because of favorable climatic conditions and the absence of tropical diseases (Feinstein, 2005). Colonization of the country was characterized by confiscation of land and natural resources such as minerals and water, while the black majority supplied manual labor as in many other African countries such as Malawi, Zambia and Zimbabwe which were also colonized by the British (Mapedza, 2007). Resource management was based on the settlers' interests that were centered on capitalism and ineffectual legislations that promoted the exploitation of the black majority (Scoones, 2008). This had a significant influence on people's livelihoods, since most people were displaced and forced to supply manual labor in the mining and agricultural sectors,

rendering them more vulnerable to disasters due to loss of livelihood. The process of land apportionment was the settlers' strategy to dispossess land from its owners, thereby creating a pool of cheap labor.

History of land reform in South Africa

South Africa attained independence in 1994 and its independence marked the end of apartheid. Nelson Mandela's government initiated policies that aimed at redressing social inequalities brought about by apartheid in an endeavor to improve the quality of life for millions who were marginalised and living in poverty (Kepe et al., 2003). One of the major policy-driven programmes was the land reform programme that was aimed at addressing land inequalities which were central to the struggle against apartheid. This initiative was necessary for addressing severe and incipient tensions, especially in over-crowded communal areas that resulted from apartheid (Adams et al., 1999). Land reform in South Africa was characterized by land redistribution and restitution that entailed giving back land to people who had been dispossessed to further colonial regime interests, while promoting secure land tenure for all and promoting economic development (Kepe et al., 2003). Just after the elections in 1994, the 'Restitution of Land Rights Act' was introduced and led to 35000 households gaining rural land by early 1999 in former white-owned land (Adams et al., 1999).

The Department of Land Affairs (DLA) identified three components of land reform, namely restitution, redistribution and tenure reform (DLA, 1997). According to Kepe et al., (2005), the restitution policy (under which the Mier land claims fall) aims at providing alternative forms of redress either in the form of financial compensation, alternative land or giving the recipients access to government- or state-development projects. This policy targeted those people who lost their land after 1913 due to racially discriminatory legislation such as the Native Land Act and the Native Trust and Land Act of 1936 (Bradstock, 2006; DLA, 1997). The Mier lost part of their land in 1931 when Kalahari Gemsbok National Park (KGNP) was established (Pringle, 1982). The procedure for the reallocation of land or compensation is based on Section 25 of the SA's Constitution (Act 108 of 1996) and the Restitution of Land Rights Act (Act 22 of 1994) and its amendments (Kepe et al., 2003).

Poor people who were landless were to gain land for both residential and productive purposes through the land redistribution programme. The government aimed at obtaining land for the poor through purchase from willing sellers and to redistribute it to needy individuals or groups (Kepe et al., 2003). However, since mid-1999 there has been a slight shift in policy where emerging commercial farmers gained priority at the expense of the intended beneficiaries, who are landless and poor people (Cliffe, 2000). The government's target since 1994 was to redistribute 30% of agricultural land within a period of five years; but by 2002, only a small percentage (1.2%) had been redistributed under the programme (Kepe and Cousins, 2002). This is an indication that there are many landless people who are still affected by land inequalities, rendering them vulnerable.

Land tenure reform is the third aspect of land reform that aimed at giving security, especially in the former Bantustans, where land was controlled by apartheid laws (Kepe et al., 2003). A number of laws that aimed at protecting people with insecure tenure were introduced such as the Communal Property Association Act (Act 28 of 1996) and the Interim Protection of Informal Land Rights Act (Act 31 of 1996), which aimed at giving groups a right to acquire, hold and manage a piece of land through legal entity while protecting insecure tenure until the next period for reform (Kepe at al., 2003). Even though land tenure reform had good intentions of targeting poor and marginalised people, it is the most neglected aspect of the land reform programme in South Africa (Lahiff, 2001; Turner and Ibsen, 2001). Areas of confusion and inefficiencies of the land reform were addressed by DLA by introducing the Land Rights Bill (1997) that encompassed issues of ownership. However, this bill has been blamed for failing to resolve land tenure issues in Bantustans (Seria, 2003). The fact that the Bill has failed to resolve land tenure issues in some areas shows that there are people who cannot fully participate in economic activities on such land due to tenure insecurity. Cousins (2012) summarized the land issue in South Africa as follows:

The big picture: some history

- Large scale land dispossession from 1652 into the late 20th century
- 1913 and 1936 Land Acts: African majority confined to 13% of the country
- Forced removals in apartheid years: 2.5 million people (1955 to 1990)
- By 1994, 82 million hectares of commercial farmland owned by 60 000 white farmers

- 13 million black people were crowded into former 'homelands'
- On private farms, 3 million workers and dependents -- poorly paid, lacked basic facilities, no security of tenure
- Commercial farming sector heavily subsidized by state until the 1980s
- Vibrant African peasant farming sector existed in the early twentieth century, but was systematically destroyed

According to Adams et al., (1999), economic development in former homelands of South Africa has suffered greatly due to tenure insecurity. Most of the land is registered as state land. However, there are areas where traditional leaders and particular groups have rights through purchase or long time occupation. Traditional leaders therefore blame the government for undermining pre-existing land rights, while on the other hand the local government authorities complain about tribal leaders who block development in order to retain their authority (Adams et al., 1999). Consequently, this has resulted in a conflict of interests between the occupiers and the government where the government pays no attention to the interests of the poor people living in congested areas. About 32% of the entire population of SA (approximately 12.7 million rural people) is concentrated on 13% of the whole country (Adams et al., 1999). While the economic growth of the country has been increasing, inequalities are still a common phenomenon as shown by the results of a Poverty and Inequality Study (Box 1) which was conducted in 1998.

Box 3: Poverty and Inequality Study

The PIR shows that:

• 50% of the population are defined as poor using a South African poverty line equivalent to about US$240 (R1500) per person per day;

• poverty is mainly rural – 72% of the poor live in rural areas, 71% of the rural population are poor (cf. 28% in urban areas);

• 60% of female-headed households are poor;

• poverty is severest in those provinces containing the former homelands and is almost exactly proportional to the number of magisterial districts occupied by this category of land in each of the provinces.

Source: Poverty and Inequality in South Africa, Office of the Deputy President (1998)

Development initiatives mostly focus on the natural resource base as the prime source of livelihoods that can be sustained through ensuring access. Land reform in South Africa partially provided the much needed land back to the Mier community to stabilize them in the agricultural environment with the intention of providing sustainable livelihoods. Provision of land does not necessarily translate to sustainable livelihoods. There are other factors that need to be taken into consideration in order to ensure sustainable rural livelihoods. As argued by Goebel (2005), it is becoming increasingly difficult to argue that land reform results in sustainable rural livelihoods. The poverty alleviation agenda of South Africa through land redistribution and restitution was aimed at supporting small-scale farmers as a means of creating and enhancing livelihoods in rural areas. However, prospects for sustainable livelihoods through this have yielded negative results, as witnessed in other developing countries where creation of non-farm employment was created in rural areas but did not resolve rural unemployment (Machethe et al., 1997).

The Mier community

The Mier region forms part of the southern Kalahari Desert and lies in the Northern Cape Province of South Africa (Figure 1). The area is semi-arid and drought is a common phenomenon (Thornton et al., 2004), which can act as a trigger to disasters. To the north of the Mier region lies Kalahari Gemsbok National Park (now Kgalagadi Transfrontier Park (KTP)), while on the eastern and western sides it borders Botswana and Namibia, respectively (Botha et al., 1995). Originally, the Mier fled British rule in the Cape Colony in 1865 and migrated and settled in Kalahari under Captain Vilander (SANParks, 2006; van Rooyen, 1998). The Mier area, a formerly proclaimed 'coloured' (mixed race) area under the Gordonia Land Settlement Act (Danced, 2000a), had a history of its own that included forcible eviction from 90000hectares of land which they had occupied permanently from 1890 (Grossman and Holden, 2002) (see Box 2**)**. In addition, the "fortress, fence and fines" conservation approach led to the creation of KTP, which led to a further loss of 200000 hectares of the land that they utilized for hunting and traditional uses such as collecting fodder for livestock (Danced, 2000a). They were resettled in unproductive hardveld parts of the desert and Kalahari dunes where they experienced water shortage for watering livestock and domestic consumption (Thondhlana et al., 2011).

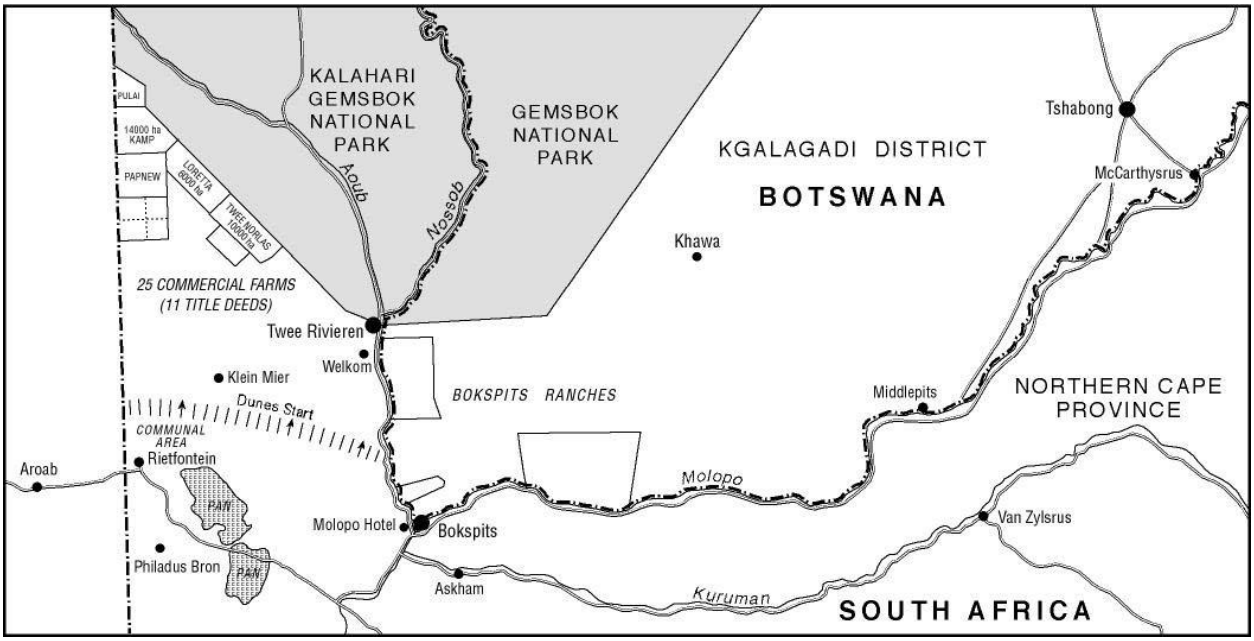

Figure 15: Map for Mier communities Source: Google maps

However, the Mier community was reallocated 40 000hectares of land by the government through land restitution as a strategy to correct colonial injustices and to alleviate poverty in the rural areas (Kepe et al., 2005). These were some of the benefits of the Reconstruction and Development Programme that aimed at providing basic benefits to South Africans.

Table 7: Chronology and summary of key historic events in the southern Kalahari region

Date	**Key events**
1865	The Mier community flees British rule in the Cape Colony, comes to live in the Northern Cape, and displaces many of the San in the process.
1891	Park area, part of which the Mier had occupied annexed to Botswana formerly Bechuanaland.
1913	Natives Land Act of 1913 forcibly displaced the local indigenous communities across the country.
1914	Union of South African Government drills boreholes along the Auob river to provide their troops with water as a strategic move to invade South West Africa, now Namibia (outbreak of World War1).
1920's	Farmers and biltong farmers start to kill game as food supplement due to the harsh environment but to unsustainable levels.

1930	The Coloured Persons Settlement Areas (Cape) Act was implemented.
1931	Kalahari Gemsbok National Park proclaimed by the then Minister of Lands, Piet Grobler, to prevent the further depletion of game by farmers and biltong hunters through the National Parks Act.
1931	Land purchased south of the park to resettle the land-dispossessed "coloured" community now known as the Mier.
1938	Game fences erected along the Park's western and southern boundaries, eastern boundary remains unfenced for animals to migrate from east to west.
1948	An informal verbal agreement of a Transfrontier Park between conservation authorities of the then Bechuanaland (now Botswana) and Union of South Africa (now South Africa).
June 1992	Representatives from the South African National Parks Board and the Department of Wildlife and National Parks of Botswana set up a joint management committee to manage the area as a single ecological unit.
1994	New democratic government elected in South Africa.
1995	The Mier launch a land claim for return of their ancestral land rights to the Park.
Early 1997	A management plan drafted, reviewed and approved by the two conservation agencies of Botswana and South Africa.
March 1999	First phase of the land claim completed as the government returned 42000hectares of farmland outside the park to the Mier.
May 2000	Former Presidents Festus Mogae of Botswana and Thabo Mbeki of South Africa formally launch Southern Africa's first peace park, the Kgalagadi Transfrontier Park.
May 2002	30 000hectares of land given to the Mier (Mier Heritage Land) forming together Kalahari Heritage Park.

Source: Thondhlana et al. 2011

Currently, the Mier people live in six settlements, namely Rietfontein (case study area), Welkom, Groot Mier, Klein Mier, Philandersbron and Loubos, and number approximately 7000 people with an estimated literacy rate of 10% (Grossman and Holden, 2002). Livestock production is argued to be the main source of income within the Mier community and job opportunities are limited due to low literacy levels (Chennells, 1999; Thondhlana et al., 2011). Since this area is

semi-desert and its productive capacity has been reduced due to land degradation, agricultural production is very low. Therefore, large areas are required to produce viable stock farming with an estimated size of between 5 000 to 8 000 hectares as the ideal farm size to support a household, depending on the condition of the resource base (Koster, 2000). Furthermore, temperatures in this area fluctuate though the area lies in one of the hottest parts of South Africa where rainfall varies from 150mm-350mm, mainly from summer thunderstorms (Grossman and Holden, 2002). Production levels have also been greatly affected by land degradation caused by overgrazing, even if livestock farming is still regarded as the main livelihood source (Koster, 2000).

Livestock production, their main agricultural activity, has the potential to suffer great loss in periods of drought due to lack of water for drinking and pastures. Additionally, social factors such as political and economic policies can either exacerbate natural disasters or assist in mitigating the effects of natural disasters. It is against this background that this research aims to understand how natural causes and social factors can increase vulnerability in the Rietfontein area in South Africa. Indicators of vulnerability and adaptive capacity are vital in determining the robustness of response strategies over time and understanding the underlying process (Wisner et al., 2004).

Statement of the problem

The Mier community was perceived as a pastoralist community by policy makers and development agents because they had a history of livestock production (Koster 2000; Thondhlana et al., 2011). Over the years, this pastoralist inclination has shifted due to different livelihood strategies adopted. Government's land restitution was perceived to be the best development intervention for sustainable livelihoods of the Mier. Household asset building and selling of assets and diversification of income sources are considered the dominant coping strategies by rural households in times of adversity (Ellis, 2006). Knowledge of how vulnerable rural communities understand and cope with adversity is still limited and therefore unrecognized. The understanding of this knowledge is vital for interventions aimed at reducing and enhancing coping strategies.

Significance of the study

Most developing countries are still in the process of consolidating, strengthening and expanding research in response to climate change impacts (and other stressors) in different areas such as arid environments. Deserts are expected to continue expanding, thereby disrupting sources of livelihood and making inhabitants vulnerable. In times of climate variability and disasters, people depend on diversity as a coping mechanism (Salick and Byg, 2007). However, the impact of climate change can be reduced to nothing in cases where economic and political factors boost the coping capacity of vulnerable systems. It follows from this that social factors can either exacerbate the vulnerability of a system or increase its resilience through the provision of essential services that are vital to buffer shocks.

Livelihood diversification has been identified as a coping strategy, particularly within the rural poor when access to resources is supported by institutions (Ellis 2006). The adaptive capacity of any community to shocks depends on its resilience. Resilience is a significant characteristic that can prevent further vulnerability and improve rural livelihoods if properly managed. Therefore, the overarching goal of the study is to contribute to understanding root causes of vulnerability in Rietfontein (South Africa), with a special focus on understanding the coping strategies currently employed by the Mier community.

Objectives of the study

The broad objective of the research is to assess livelihood vulnerability of the Mier people in Rietfontein (of southern Kalahari, South Africa). In order to achieve this main objective, the research will answer the following research questions:

What are the main sources of livelihood for the Mier community?

Livestock farming has been regarded as the main agricultural activity in this area since the environmental conditions cannot sustain crop production. What are the other sources of livelihood?

What makes the Mier community and individuals either resilient or vulnerable?

Despite the natural causes of vulnerability such as drought, the research intends to investigate other root causes of vulnerability.

How do stressors interact and affect differently more resilient versus more vulnerable households?

The third question seeks to investigate how different stressors in this community interact and affect vulnerable households.

What lessons can be learnt?

The last objective of this research is to draw lessons learnt from the Rietfontein area based on its findings.

Thesis outline

This thesis is presented in six chapters. This chapter presents the introduction and background of the study by presenting a brief history of South Africa, its land reform and the history of the Mier community. The conceptual framework and methods are presented in Chapter 2,which defines the concepts used for conceptualizing the livelihood outcome in the study area. Chapter 3 presents a literature review for rural livelihoods in sub-Saharan Africa by giving the results of other studies on the topic, ongoing dialogue in literature, and finally presents the knowledge gap. The findings of this research are presented in Chapter 4. Chapter 5 discusses the findings by analysing the ability of households to cope with shocks and stressors. The last chapter, Chapter 6, concludes the research and presents lessons learnt.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND METHODS

Introduction

This research utilized vulnerability and adaptive capacity concepts in order to examine and understand the vulnerability of rural households given multiple stressors for the case study area and what coping strategies people used in the face of perturbations.

Vulnerability

'Vulnerability is not a straightforward concept, and there is no consensus as to its precise meaning' (Adger et al., 2004: 28). The concept of 'vulnerability' has been defined differently by many scholars from different communities (Fussel, 2009). Blaikie et al., (1994) defines vulnerability as 'the capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard.' However, the biophysical component of it is formally outside their definition of the concept, even though they clearly separate biophysical and social dimensions. According to the Intergovernmental Panel on Climate Change (IPCC), vulnerability is defined as the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change. Vulnerability is viewed as a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, the sensitivity and adaptive capacity of that system (IPCC, 2001: 995).

Wisner et al. (2004) defines vulnerability as proneness or susceptibility to hazards, further elaborating it as an individual or group's characteristic and the "situation that influences their capacity to anticipate, cope with, resist and recover from the impacts of natural hazards" (p.11). This definition differs from the predominant views which concentrate on the physical dimensions (Adger and Kelly, 1999), in the sense that it regards vulnerability as an *a priori* condition of a household or a community determined by socio-economic and political factors (see Blaikie et al., 1994; Adger and Kelly, 1999). Smit and Wandel (2006) define vulnerability at any scale as reflective of the exposure and sensitivity of a system to hazardous conditions and the ability of the system to adapt, cope or recover from the effects of those conditions. Sensitivity is defined as

'the degree to which a system will respond to a change in climatic change' (Kelly and Adger, 2000).

Vulnerability has become a central concept in various research contexts even though it is conceptualized differently. Social scientists view vulnerability as a set of socio-economic factors which determine people's ability to cope with stress or change (Allen, 2003). They tend to use it in the context of a specific explanatory model, for example in this research of sustainable livelihoods (O'Brien et al. 2004). This research adopts the definition by Wisner et al., (2004) who argue that characteristics of an individual or group influences their ability to cope, resist or recover from a natural hazard. This approach is favored because it considers vulnerability as the starting point-a present inability to cope with external pressure or changes (O'Brien et al, 2007). This definition brings the human dimension into the study of vulnerability to climate change and climate variability and extreme weather events, and adaptation that has been neglected in past studies (Adger and Kelly, 1999). Therefore, this definition demonstrates that 'socio-economic factors and physical changes result in a state of vulnerability with offsetting and interlocking social, economic and institutional facets' (Adger and Kelly, 1999: 249). This concept will be utilized to conceptualize the characteristics of the community under study in an endeavor to investigate root causes of their vulnerability.

Adaptive capacity

As with vulnerability, many definitions of adaptive capacity exist (Adger et al., 2004). Fussel and Klein (2006) argue that adaptive capacity is closely related or similar to concepts such as robustness, coping ability, flexibility and resilience. In climate change studies, adaptive capacity is defined as 'the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences' (Fussel and Klein, 2006, p.18). In their definition they pointed out that the system or society modifies its behaviour or characteristics in order to cope with external changes.

Adaptive capacity is defined by Adger et al., (2004) as the 'ability or capacity of a system to modify or change its characteristics or behaviour so as to cope better with existing or anticipated external stresses.' They further stated that the reduction of social vulnerability is adaptation of a system against a stressor. Adaptation is defined as the adjustments within a system that enhance

its ability to cope with external stresses (Adger et al., 2004). This definition by Adger et al. (2004) is favored for this research because it helps to conceptualize the potential and characteristics of the Mier community to cope with external pressure or changes.

The drivers or determinants of adaptive capacity influence the ability of a system to adapt (Smit and Wandel, 2006). The ability of a system to undertake adaptation at a local level is influenced by factors such as the institutional environment in which adaptation occurs, political influence, and access to financial, technological and information resources (Wisner et al., 2004). However, the adaptive capacity of systems is not static, because they are flexible and respond to changes in social, political, economic and institutional conditions over time (Smit and Wandel, 2006). The influence of these social factors results in uneven distribution of adaptive capacity within and across societies (IPCC, 2007). What is common to the above definitions is the ability of a system or society to adjust or modify its behavior as a response to external stresses.

Resilience

Resilience is the 'flip side' of vulnerability (Klein et al., 2003). Resilience is defined by Berkes and Folke (1998) as the buffer capacity or the ability of a system to absorb perturbations (p.6). Allison and Ellis (2001) define resilience as 'the ability of an ecological or livelihood system to ''bounce back'' from stress or shocks' (p. 378).The ability of a system to maintain its condition and absorb shocks depends on the magnitude of the disturbance; once a threshold is reached, the system flips from one equilibrium state to another (Berkes and Folke, 1998). It follows that a robust livelihood system displays high resilience and low sensitivity, while a vulnerable system displays low resilience and high sensitivity (Allison and Ellis, 2001). Resilience helps us to understand Mier community livelihoods and their capacity to bounce back after a shock.

This research, therefore, employed vulnerability and adaptive capacity concepts in an endeavor to understand how stressors affect livelihoods outcome of the Mier livestock farmers in Rietfontein. To do so, the research utilizes the 'Sustainable Livelihood Framework' and the 'Pressure and Release' model.

The Sustainable Livelihood Framework (SLF)

The SLF **(**see Figure 2) is the core approach and serves as an important instrument to analyze rural livelihoods whilst focusing on major factors of influences. Carney (1998: 4) defines livelihood as:

"A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base."

Livelihoods can be defined as the means through which people obtain a secure living which meets their needs for food, shelter, health, belonging and well-being (PLAAS 1995: 3). A sustainable livelihood is one which can cope with and recover from stresses and shocks, maintain and enhance its capabilities and assets, while not undermining the natural resource base (Scoones 2007: 175).

The SLF (Carney, 1999, Ellis, 2000) will be used as a methodological approach to understanding the conditions, the alternatives and limitations that affect Mier households, in their efforts to satisfy their livelihood needs. It links inputs (capitals) and outputs (livelihood strategies) and connects in turn to outcomes that focus on employment and sustainability (Scoones, 2009). Scoones (2008) summarizes the framework's practical application by this statement that:

"Given a particular *context* (of policy setting, politics, history, agro-ecology and socio-economic conditions), what combination of *livelihood resources* (different types of 'capital') resulting in the ability to follow what combination of livelihood strategies (agricultural intensification/extensification, livelihood diversification and migration) with what *outcomes*?"

Institutions do play a significant role of mediating the ability to carry out livelihood strategies and they impact livelihood outcomes. The framework emphasizes the economic attributes of livelihoods as mediated by institutional processes (Scoones, 2009). This provides a more flexible and understandable platform for analysing livelihoods' vulnerability and adaptive capacity, because it focuses on the key processes and structures that contribute to livelihood vulnerability or resilience.

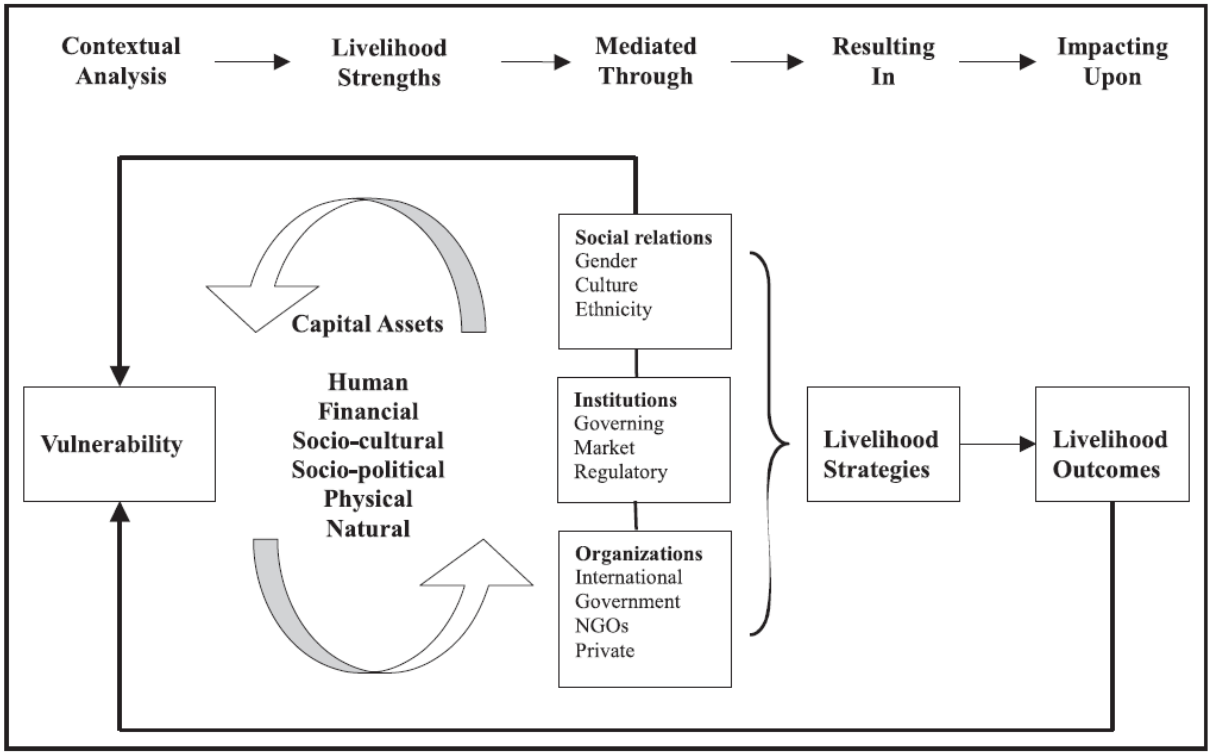

Figure 16: Sustainable livelihood framework Source: Carney 1999

Capital assets

Livelihoods are created by a combination of resources that people have access to and control over. Five types of resources (capital assets) have been identified as illustrated in Table 1 below.

Table 8: Capital Assets

Capital	Description
natural	Natural resource stocks and environmental services from which resource flows and services useful for livelihoods are derived e.g. soil, air, water, hydrological cycle, pollution sinks etc.
economic or financial	Cash, credit/debt, savings and other economic assets, including basic infrastructure and production equipment and technologies which are essential for the pursuit of any livelihood strategy
human capital	Skills, knowledge, ability to labour, good health and physical capability are important for the pursuit of different livelihood strategies
social capital	Networks, social claims, social relations, affiliations and associations upon

	which people draw when pursuing different livelihood strategies requiring coordinated actions
Physical capital	Physical assets comprise capital that is created by economic production processes such as infrastructural assets, e.g., roads, machines, buildings, tools, building irrigation canals, power lines, water supplies etc.

Sources: Carney, 1999; Scoones, 1999; Ellis, 2000

Livelihood strategies

There are three main rural livelihood strategies which are determined by availability of resources in terms of access and control over these resources. These strategies are:

- Livelihood diversification engaging in a range of off-farm activities
- Agricultural intensification or extensification, gaining more livelihoods from agriculture
- Migrancy, moving elsewhere temporarily to make a living (Mokgope, 2000)

However, in reality people combine these different strategies in order to make the best out of a situation. In most cases their strategies are determined by the natural resource base (Scoones, 1998). Lack of access to natural resources such as land and water has limited their capabilities to diversify in other activities such as crop production that are vital for rural livelihoods. Risk and asset strategies are the factors that motivated this community to diversify, and these factors have managed to benefit households in smoothing consumption, spreading risk and generating resources for investment in assets (Ellis, 2000).

The Pressure and Release model

The Pressure and Release (PAR) model proposed by Blaikie et al (1994), **(**see figure 3**)** is utilized to show how natural conditions affect people who are vulnerable due to social causes.

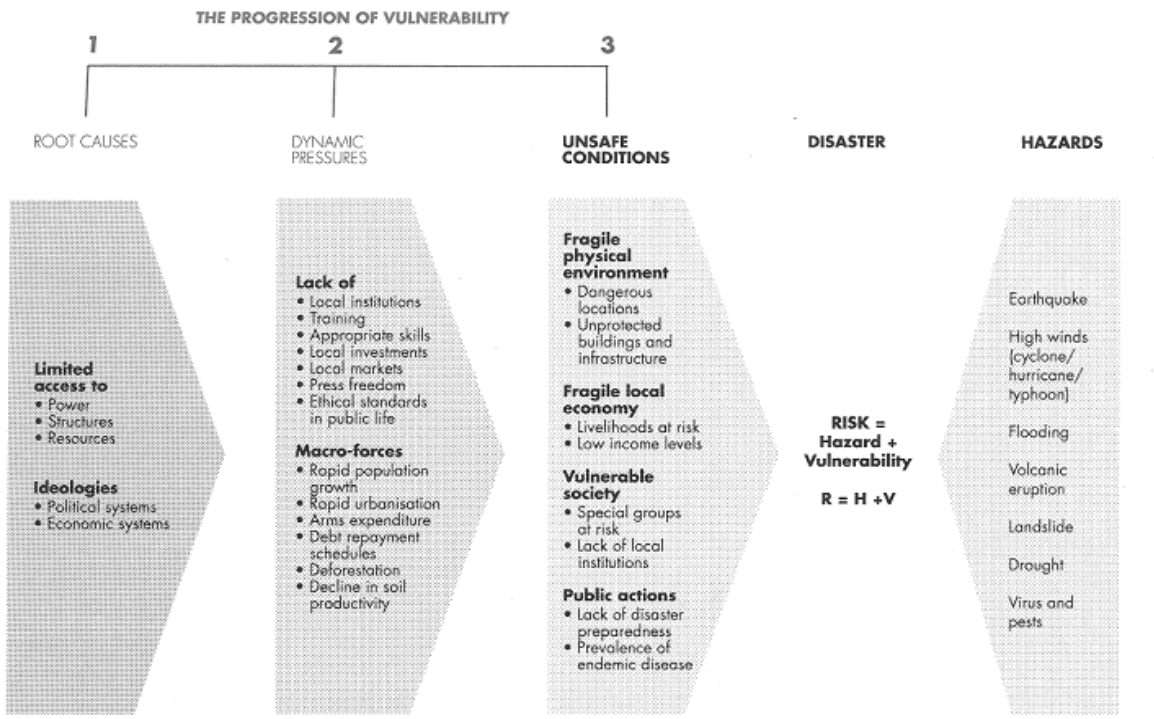

Figure 17: Pressure and Release model Source: Blaikie et al., 1994

The model recognizes two forces that contribute to vulnerability, the physical exposure to a hazard and the process generating vulnerability. Pressure can come from either side and it can only be relieved by reducing vulnerability (Blaikie et al., 1994). The framework helps us to understand that a disaster is a result of two intersecting opposing forces: on one side is the natural hazard event such as drought, and on the other side are those processes that generate vulnerability such as power (Wisner et al., 2004). The application of this model brings out the distinction in vulnerability of different social groups such as gender, age, ethnicity or class due to exposure (Turner at al., 2003). This model will assist conceptualising how power and political factors cause vulnerability in this community or how they can reduce it.

To 'release' the pressure, policies and strategies have to be employed that reduce vulnerability and boost resilience. In order to reduce vulnerability, the root causes such as economic, demographic or political processes have to be identified since they reflect the exercise and distribution of power (Wisner et al., 2004). Blaikie et al., (1994) summarizes the model basis as 'two opposing forces intersecting resulting in a disaster; the opposing forces are those processes generating vulnerability on one side, and physical exposure to a hazard on the other' (p. 22). This

framework gives us the platform to understand how social processes that include power relations and politics, on the one hand, and physical conditions, on the other, influence the generation of vulnerability or adaptive capacity of the Mier in Rietfontein.

METHODS

Study setting

The research employed case study as a strategy of inquiry. A case study, according to Yin (2003,) is an inquiry that investigates a contemporary phenomenon within its real life context. As Bryman (2008) observes, a case study emphasizes intensive examination of settings. It tries to illuminate a decision or set of decisions, why they were taken, how they were implemented and with what results. A case study is being used as a strategy because, as Yin notes, it answers questions of how and why in a more explanatory way. This study involved exploring the process of livelihood vulnerability and adaptation, and the investigator had no control over events but was concerned with a fair presentation of data which aimed at contributing to the body of knowledge of rural livelihoods. A case study is useful in this study of human affairs because it is down-to-earth and attention-holding and it allows analysis of a phenomenon in its naturalistic context (Stake, 2008; Piekkari et al., 2009); that is the major reason why this study adopted it. In order to focus on a specific area, the study chose Rietfontein, a Mier community in South Africa, as a case study. Unfortunately, I could not travel to South Africa because the Norwegian Directorate on Immigration (UDI) did not allow me to do so despite repeated requests.

Description of Study Area

This research was undertaken in Rietfontein, a Mier community in South Africa. Rietfontein is located in southern Kalahari in the Northern Cape Province of South Africa. There are numerous Mier villages scattered in different small locations, namely Welkom, Klipkolk, Askham, Groot Mier, Klein Mier, Philandersbron and Rietfontein (Figure 2). Rietfontein is the biggest Mier village close to the Namibian border to the west of the village. The area is classified as semi-desert characterized by mean rainfalls of less than 200mm per year. The community relies on groundwater for both domestic use and livestock. This semi-arid area experiences extreme temperatures of over 40 degrees Celsius in the summer and can drop below zero degrees Celsius

in winter, particularly during the night (Thondhlana et al., 2012). The vegetation of Rietfontein is characterized by grasses and herbaceous plants that are abundant after good rains. However, most of the grazing areas have been degraded due to excessive overgrazing. Mucina and Rutherford (2006) describe the vegetation in the Kalahari area as composed of thornveld, bushveld and grasslands characterized by shrubs, small trees, herbs, succulent herbs and grasses.

Fig 18: Rietfontein map **Source: Google Earth, 2012**

Rietfontein is the largest village of the Mier community and the nearest big town is Upington which is 280km away. Rietfontein is a colored (mixed race) community and there were no official population figures, but the total population of the entire Mier community is estimated to be around 7,000 people. Livestock production is the main source of livelihood. Crop production is non-existent due to harsh climatic conditions such as extremely hot temperatures and sand soils that have poor water-holding capacity.

Mixed methods research

The purpose of this mixed method research is to explore the livelihood strategies in order to understand their vulnerability and adaptive capacity using face-to-face interviews and a survey. The rationale for using both qualitative and quantitative data was that data obtained by survey could be complemented by in-depth formal interviews leading to triangulation of findings. The metaphor 'triangulation' is derived from navigation and military strategy which use multiple reference points to locate an object's exact point (Smith, 1975: 273). Therefore, this strategy assists in accessing accurate and valid findings.

In this study, both quantitative and qualitative research strategies were used in order to bring greater validity from mutually illuminating data (Bryman, 2008). Validity is 'the extent to which a measurement truly reflects the phenomenon under scrutiny (Pope and Mays (2005). The mixed research approach is a new paradigm in social and natural sciences (Creswell, 2008). Bryman (2008) defines mixed methods research as a strategy that integrates both quantitative and qualitative research in a single project. The employment of both methods is vital in enhancing triangulation of findings (Bryman, 2008). Triangulation is defined by Bryman (2008) as 'the use of more than one method or source of data in the study of social phenomenon so that findings maybe cross-checked'. My selection of these methods is based on the notion that this strategy capitalizes on their strengths while offsetting their weaknesses, thereby increasing the accuracy of this research (Bryman, 2008).

A mixed method research was adopted for this case study (Rietfontein) since it enabled the collection of multiple data using different methods and strategies. Since all methods have weaknesses, I felt that the biases inherent in any method could neutralize the biases of other methods (Creswell, 2008). A survey was conducted first and semi-structured interviews followed pursuing interesting points that came out from the survey. This approach had the advantage of capturing the best of both approaches, since findings from close-ended quantitative data were confirmed through semi-structured qualitative data and observation data (Creswell, 2008). This strategy helps the researcher to enjoy the fruits of each method (Bryman, 1984). Furthermore, this approach helped to provide a complete answer to my research problem by filling in gaps left by one method (Bryman, 2008).

Unit of investigation

The unit of investigation was the household. A household is the unit of investigation for this research because it is the most appropriate for understanding livelihoods and policy implications (Ellis, 2000). Though a household is difficult to define, this research defined it as a social group which resides in the same place sharing the same meals, and making coordinated decisions over income pooling and resource allocation (Ellis, 1993). The research also included members of the same household that had migrated since they contributed through remittances.

Sampling

Fink (1995) defines a sample as a portion of a subset of a population where the population is the universe to be sampled. According to Fink a good sample is a miniature version of the population -- just like it, only smaller if one adopts a random sampling method; but the researcher employed a snowball sampling method instead, which is non-probability sampling. The choice was deliberate because the research was interested in known characteristics of the community such as livestock owners (May, 2011), and furthermore, it is least costly in terms of money, time and effort (Marshall, 1996). The method was the most convenient one for collecting data by virtue of respondents' accessibility (Bryman, 2008), since the researcher was interested in studying livestock farmers in order to get a better understanding of their activities.

The sampling method employed in this study was the best considering that the availability of respondents (livestock owners) could be difficult due to uncertainty of my intentions. It proved convenient in the sense that it enabled the researcher to conduct interviews with people who were available and willing to participate. Furthermore, this method also made accessibility to household heads easier through the help of the interpreter and other respondents since they were the key informants of this research. Both female and male household heads were interviewed. Respondents were permanent dwellers (Mier) of the community. This was meant to eliminate people who were there on a temporary basis and belonged to communities other than Rietfontein. Tourists and traders who were passers-by were to be excluded in this research. Only the household head was interviewed from each household to save time but in cases where the household was away, the oldest dependent was interviewed. The rationale for selecting this criterion was that in order to get well-informed responses, there is a need to have respondents

who actually had the responsibility of providing for a household. Only one person was interviewed from a household in order to save time.

Data collection

Data collection took place in the months of October and November 2012 with the help of translators. Afrikaans is the official language in this community. The translators also facilitated easy access to next informants because they were recruited from the same village. A pre-test was conducted first in order to ascertain if the survey was comprehensible to the key participants, and a few adjustments were made to the questionnaire. This was necessary in order to maintain the validity and reliability of my findings (May, 2011).

Survey

Structured questionnaire interviews were administered. The questionnaire had close-ended and fixed choice questions (see Appendix 1). My choice for fixed questions was influenced by its standardization of asking and recording answers that would aid in providing accuracy and for easy processing of responses (Bryman, 2008). The first key informant was recommended by the female interpreter and next informants were chosen by either the respondents or interpreters.

The questionnaire contained three parts: part A focused on demographic data such as sex, age, and education level; part B covered livestock characteristics and coping strategies; and part C focused on long illnesses (see Appendix 1). A total of 48 pastoralists were interviewed (household heads) and a further eight key informants including one local Mier municipal official. All respondents were furnished with details of the research to reduce speculation on intentions of the study and to establish rapport. It is worth to mention that even if key informants were picked up through help from other key informants, both male and female headed households were interviewed. The duration of the interviews varied from one to one and a half hours, the translation process making it take longer. Respondents from the structured interviews became participants for informal interviews in the form of a discussion after the structured interview. All the respondents selected were enthusiastic to participate in this research and they understood that it was voluntary to do so.

Semi-structured interviews

Face-to-face interviews were conducted using semi-structured questions. Interviews give rich insights into people's biographies, opinions, values, experiences, attitudes and feelings (May, 2011). Eight respondents were interviewed in Afrikaans with the help of the translator using an interview guide (See Appendix 2). This method was utilized for in-depth interviews as opposed to closed questions because the former do not give the respondents a set of possible answers that can be chosen, thereby making it possible for the researcher to follow new interesting themes (Bryman, 2008). According to Yin (2003: 90), 'an interview is a guided conversation which follows a certain line of inquiry in such a way that the actual stream of questions in a case study interview is more likely to be fluid rather than rigid'. The style of questioning was informal and had no sequence but followed the topics and issues from the interview guide.

Information from all of the interviewees was recorded using handwritten notes. Most of the respondents declined the use of a voice recorder, so I relied on writing in my handbook. A voice recorder would have been preferable during interviews to keep the researcher focused not just on what people say but also on the way they say it and avoid distraction for the purpose of a detailed analysis. Interviews were carried out at the houses of residents for most informants in Rietfontein, while some were carried out at other convenient places such as places of work. The body language and facial expressions and tone used during interviews helped the researcher to understand the values attached to what was being described (Creswell, 2008). Face-to-face interviews assisted in highlighting some of the information collected, such as livestock numbers, their perceptions about climate change and variability and adaptation strategies.

Participant observation

Observation method was also employed. Observation of respondents is another method that was significant for this research in order to cross-check whether the information given during interviews and the survey would correspond with what was actually happening in practice by immersion in their day-to-day activities (May, 2011). It enhanced corroboration of findings from other methods (Creswell, 2008). Furthermore, it also enhanced checking the trustworthiness of the research since the researcher would come up with a contextual analysis of daily routines without any interference from the participants. Non-participant observation was conducted, entailing a situation where the researcher observes but does not participate in social settings

(Bryman, 2008). During interviews, the researchers gained information such as how they fed or watered their animals through observation. A comparison of different livestock production and practices was made by observation, and observation helped to confirm some of the data gathered through surveys and informal interviews.

Secondary data

Secondary data relevant for this research was collected from various sources to get a better understanding of the situation in the study. Information was gathered from books, journals, dissertations and a number of published articles. However, the Mier municipality could not assist us with any valuable information.

Limitations

As mentioned above, the major limitation for this research was my inability to travel for the fieldwork. However, this did not compromise the quality of my work since I engaged another researcher to collect data. This confirms the fact that researchers are bound to face a range of challenges which either spring up before or during the research process, and which either could have been avoided beforehand or not. Time and financial resources were also constraints; however, the researcher managed to make the best out of the resources available and produced comprehensible findings.

Ethical considerations

John Barnes (1979) describes ethical decisions in research as those which arise when we try to decide between one course of action and another not in terms of expediency or efficiency, but by reference to standards of what is morally right or wrong. This research was guided by social science ethical principles that aim at protecting participants and the integrity of inquiry (May, 2011). In general, research ethics are centered on two preoccupations, namely informed consent and protection of research respondents (Marrow and Richards, 1996). The researcher took all necessary steps to conceal the identity of respondents in anticipation of any information used for other purposes rather than what was intended (May, 2002).

Participation in this research was voluntary and respondents were free to pull out of the process at any given time if they felt like it. The researcher treated respondents with respect and not as subjects. The research was not used to disempower them (Creswell, 2003),nor were the findings of this research used for any purpose other than that which was communicated to the participants before the interviews and surveys (informed consent).

CHAPTER 3

LITERATURE REVIEW

Introduction

Ellis (2006) noted that vulnerability in the Southern Africa region is rising, and traditional coping mechanisms employed by household and broader community strategies aimed at dealing with risks and the aftermath of shocks have been eroded due to poverty. Marais (2011) defined 80% of South Africans as disadvantaged and vulnerable due to poverty as defined in the Reconstruction and Development Programme. Ellis (2006) argued that there have been uneven coping mechanisms across communities because household asset building and disposal differ from the same process for the rich, as assets for the rich are eroded less compared to those for the poor when dealing with crises of the same magnitude. According to Durang and Tanner (2004), land tenure security and devolving land rights to local communities is critically important for reducing vulnerability in rural areas. Land has been a key development issue for many years and the assumption is that pro-poor policies contribute significantly in reducing vulnerability and contributing towards the eradication of hunger and poverty. Sound land policies that are pro-poor are a product of good governance of natural resources that endeavors to redistribute resources equitably. The Department for International Development (2002) noted that even though there is consensus among scholars and politicians that land is a fundamental livelihood asset, land issues are politically difficult and complex and for that reason it may tend to be neglected. If land issues are neglected, the landless will be further impoverished and vulnerable due to lack of income opportunities or access to other assets that build resilience and adaptive capacity. In contrast, the better off and powerful are more resilient to shocks due to resource access that reduces vulnerability and enhances adaptive capacity.

Towards land reform in post-apartheid South Africa

The post-colonial period of South Africa has been characterized by land reform as a redistributive policy aimed at and improving the asset base of the poor who were disadvantaged by colonization. Chenery et al., (1970) stated that land reform was a central strategy to relieve endemic poverty and vulnerability by transferring property rights to the poor who were previously disadvantaged. Besley and Burgess (2000) argued that political changes such as

decolonization have had significant impact through land reform programmes that saw the transfer of property rights to the poor; however, such instances are rare. Failures of land reforms have been blamed on political constraints that hinder its effective implementation. Land reform is not apolitical. Land reforms often fail to consider contexts and trends, and institutions that influence the success of its implementation. There are political and economic issues that need to be considered rather than taking a blanket approach that puts everyone in the same boat. Land reform in Zimbabwe is a good example of how a blanket approach may turn out; however, it is not clear whether the South African government is being cautious because of that or out of a political interest to save its booming food export business.

According UNDP (2012), impoverishment seems to be decreasing in sub-Saharan Africa (SSA). In this region, most rural communities depend on household-based subsistence agriculture as the main source of livelihood; but access to and control over resources required to pursue livelihood strategies are constrained by political, economic and natural processes. Access to assets such as land and income is vital especially for rural societies that rely on rain-fed agricultural activities. Land tenure reform has been a target in many countries in southern Africa in an effort to address problems arising from settler colonization and dispossession. Adams et al., (1999) provides an account of the colonial history of Southern African countries as characterized by the displacement of native people and forceful dispossession of most productive land. Palmer (1999) stated that indigenous people were resettled in marginal lands that were agriculturally unproductive, making them more vulnerable to food insecurity due to loss of livelihood sources. Shackleton et al. (2000) and Cousins (2012) argue that the concentration of indigenous communities into marginal and limited lands was a result of colonial and apartheid labour resource policies that aimed at exploitation of local people as cheap labour.

Land reform was introduced in 1994 when a democratically elected government came into power with the aim of addressing past colonial imbalances. Most of the intended beneficiaries of the land reform policy were the rural poor. Lahiff (2001) argues that land reform has been progressive with a range of legislations and achievements but also rife with frustration, due to lack of political commitment and priority. According to PLAAS (2011), land reform has been slow and uneven, and many of the land reform projects undertaken failed due to absence of post-settlement or training inefficiency. By 1999, 8% of agricultural land has been transferred so far

versus the initial target of 30% (Cousins, 2012). This has forced the government to postpone the completion of land reform to 2024. PLAAS (2011) argues that the new target of 2024 seems highly unlikely at this current slow rate of land reform.

According to Adams et al. (1999), 30% of South Africa's population live in rural areas and 72% of this rural population is poor and was resettled in communal areas by settlers to further their colonial policies and to create cheap labor reservoirs. Land reform was intended to create employment and sustainable livelihoods for many poor households. Klasen and Woolard (2007) claim that unemployment within the rural population still hovers around 30% despite the overly ambitious goal of poverty eradication in rural areas by the new government. The willing buyer / willing seller (WBWS) concept is the market mechanism for land distribution in South Africa, and this approach has been blamed for slowing the land reform programme, thereby exacerbating poverty within the landless people.

Beyond land reform: the role of global economic forces

Apart from land issues, economic globalisation destabilized livelihood strategies especially for the rural poor of South Africa. Ellis (2005) argues that despite the fundamental role played by agricultural activities, the global policy environment during the 1970s that emphasized the need for marketing boards (crop parastatals, i.e., owned wholly or partially by the government) failed to eradicate poverty in the region by artificially widening the marketing margin between farm gate and sales prices. This led to the birth of the Structural Adjustment Programme (SAP) that equally had negative influence on the outcomes of rural livelihoods in the region due to the following trends (Ellis, 2005):

1. Often quite small domestic markets that already veer unevenly between minor surpluses causing uneconomic returns to farmers, and minor deficits, causing price hikes and food insecurity for the most vulnerable;
2. Continuously declining real-world agricultural prices transmitted to domestic markets through trade liberalisation and globalisation;
3. The absence of state-led agricultural support policies and input subsidies, with these being replaced post–market liberalisation by fragmented and scattered efforts by international and national nongovernmental organizations (NGOs) to provide credit and farm support services; and

4. After market liberalisation, increased output price risk, uneven market coverage by private traders, spatial price variations reflecting poor market integration, and high price instability.

Transformations have taken place in the past two decades following political and economic reforms that saw the disappearance of national marketing boards and subsidy systems and the gaining of independence in South Africa (Tacoli, 2002). However, the effect of SAP was a shift in policy by the democratic government adopting the challenges of globalisation by replacing the Reconstruction and Development Programme (RDP) with Growth, Employment and Redistribution (GEAR) (Tsheola, 2002). It redefined the government's role away from social provision to a position where the market was seen as the perfect distributor. This has posed a big challenge for the rural poor who had to cope with macro-economic policies for survival and one of the strategies adopted was engaging in multiple livelihood strategies (Chambers 1997; Cousins, 1999).

Shackleton et al. (1999) identified livestock production as one of the multiple livelihood strategies adopted in communal areas, because livestock has multiple benefits such as draught power, milk, meat, transport, dung, social status and some form of savings. Livestock has a number of factors which makes it an appealing income source for rural communities alongside other livelihood strategies. However, livestock farming creates the demand for an area of land sufficient to support a herd. Thus, access to land (private, communal) offers opportunities for rural dwellers to diversify their livelihoods, thereby buffering themselves from shocks such as climate change, HIV/AIDS, and job losses, among other misfortunes. Lahiff (2003) stated that this wide array of potential strategies collectively enhances a household's ability to obtain a livelihood under uncertain and perhaps difficult conditions such as drought.

Empirical studies on livelihoods, climate change and vulnerability in South Africa

There is consensus among climate experts that climate change and variability is taking place even though it still remains a complex scientific undertaking to predict the exact rate, changes and magnitude of temperatures, and its final outcome (IPCC, 2007). However, the IPCC report (2007) indicates that SSA will be mostly affected by climate change as shown in Table 3. It is predicted that climate variability will affect mostly pastoralists, subsistence farmers and artisanal fishermen due to constrained adaptive capacity in many areas (Thornton et al., 2007).

Region	Season	Temp. Response (°C)					Precipitation Response (%)				
		Min	25	50	75	Max	Min	25	50	75	Max.
West Africa	DJF	2.3	2.7	3.0	3.5	4.6	-16	-2	6	13	23
	MAM	1.7	2.8	3.5	3.6	4.8	-11	-7	-3	5	11
	JJA	1.5	2.7	3.3	3.7	4.7	-18	-2	2	7	16
	SON	1.9	2.5	3.3	3.7	4.7	-12	0	1	10	15
	Annual	1.8	2.7	3.3	3.6	4.7	-9	-2	2	7	13
East Africa	DJF	2.0	2.6	3.1	3.4	4.2	-3	6	13	16	33
	MAM	1.7	2.7	3.2	3.5	4.5	-9	2	6	9	20
	JJA	1.6	2.7	3.4	3.6	4.7	-18	-2	4	7	16
	SON	1.9	2.6	3.1	3.6	4.3	-10	3	7	13	38
	Annual	1.8	2.5	3.2	3.4	4.3	-3	2	7	11	25
Southern Africa	DJF	1.8	2.7	3.1	3.4	4.7	-6	-3	0	5	10
	MAM	1.7	2.9	3.1	3.8	4.7	-25	-8	0	4	12
	JJA	1.9	3.0	3.4	3.6	4.8	-43	-27	-23	-7	-3
	SON	2.1	3.0	3.7	4.0	5.0	-43	-20	-13	-8	3
	Annual.	1.9	2.9	3.4	3.7	4.8	-12	-9	-4	2	6

Table 9: Regional predictions for climate change in Africa by the end of the 21st century

Source: IPCC (2007)

The table above shows the distribution of temperature and precipitation in different regions of Africa. The seasons are marked by initials of months such as D for December, J-January, and F-February etc. The impact of climate change will not be evenly dispersed as shown in the table above. It is predicted, for example, that Southern Africa will experience a maximum temperature of 5 degrees Celsius during the season of September, October and November and less rainfall in June, July and August. There is agreement among all stakeholders and key investors in agriculture that it is the poor and vulnerable who will be affected most (Cooper, 2008). Rain-fed agriculture and pastoralists will particularly be more affected and they face a daunting task of adapting to future climatic changes (Cooper, 2008). The Mier are within the area that will be most affected by climate variability. This poses a big challenge to sources of livelihood since they are based on natural resources dependent on rain-fed activities.

There have been numerous contributions to the knowledge base of livelihoods in communal areas of South Africa (e.g. Cousin, 1999; Shackleton et al., 2001). Most of the studies indicate that there has been livelihood diversification benefitting from natural resources and livestock farming (Dovie et al., 2006; Shackleton et al., 2000; Shackleton et al., 2001), showing the

necessity and contributions of land reform. The land reform produced mixed results with much literature indicating policy failure due to poor pre-settlement planning (Ruth, 2007). However, there is little analysis of livestock and vulnerability issues in relation to the land reform policy. The contribution that livestock makes to rural livelihoods in dryland areas in the context of climate change is still poorly explored. There is acknowledgement in the literature that most of the poor households resort to livelihood diversification as a strategy since they have a better understanding of how it contributes to livelihood sustainability while simultaneously reducing proneness to stress and shocks (Ellis, 1999, Shackleton et al., 2000). Although it has been shown that rural households are eager to keep livestock for the multiple benefits they give (Shackleton et al., 2001), little is known about how much livestock contribute to reduction of vulnerability when faced with shocks. The aim of this paper therefore is to report on the contribution of livestock to rural livelihoods and draw lessons learnt for a better understanding of rural livelihoods strategies and their constraints.

CHAPTER 4

RESULTS

Socio-demographic characteristics

Table 4 presents the basic socio-economic characteristics of the surveyed respondents and households. The demographic information assisted in giving a better understanding of the household characteristics in terms of income sources (see table 4). Most of the respondents were males, amounting to 73%, and the rest were female. The average size of a household was six members, but household size varies, ranging from 3 to 13 members. Large families were common especially in cases where both parents died and the grandchildren were under the custody of the grandparents. Some households had very few members, especially in cases where one of the spouses died at an early age.

Table 10: demographic information

Variable	**Value**
Position of respondent in household (*n=48*)	**Proportion of respondents (%)**
Husband	63
Wife	37
Education level of respondents	**Proportion of respondents (%)**
Years spent in school	6.5 (Mean)
No education	10
Primary education	36
Ordinary level certificate	4
Advanced level certificate	0

Household composition	**Number of individuals (Mean)**
Average household size	6.1
Average age of respondents	44
Source of income	**Proportion of respondents (%)**
Full time job	18
Casual	29
Remittances	53
Social grants	75

Migration to cities in search of jobs was a common phenomenon in female-headed households. Men migrated to cities and commercial farms areas in search of wage employment. However, due to poor skills and low education levels they were employed in low wage-paying jobs. They also migrated for long periods and came for visits once in a while, some men ending up having extra-marital affairs. Some of the respondents indicated that they got the HIV/AIDS virus from their husbands who had extra relationships with other women while away. Young and old people were dependent on the middle age group which is economically active. Household heads ranged between 30 and 70 years as shown below in Figure 5.

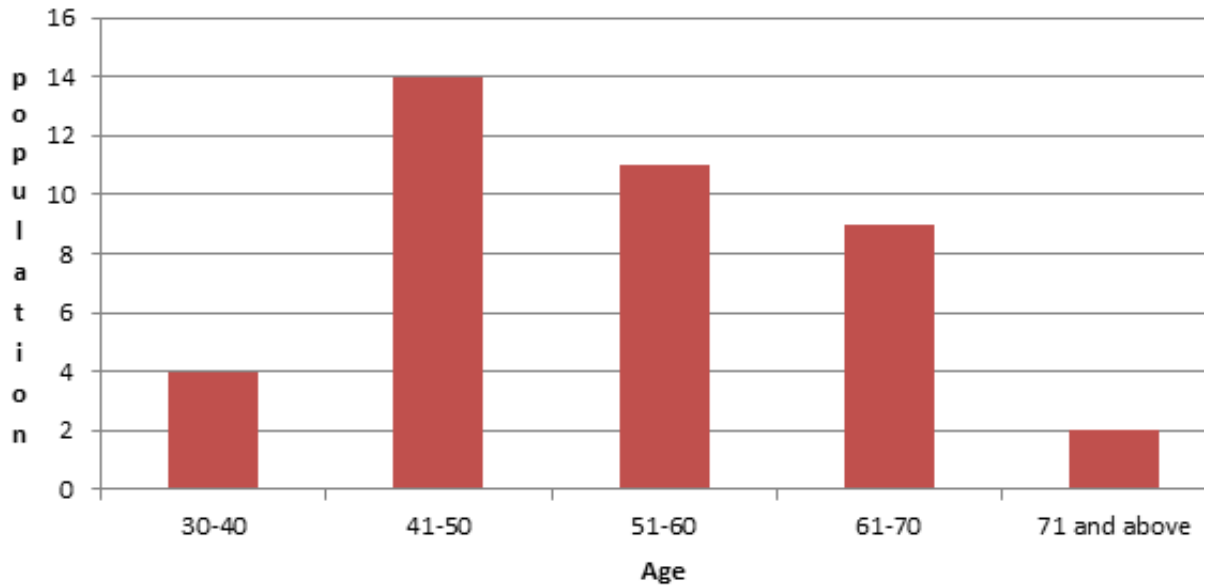

Figure19: Age distribution of household heads

Main sources of income in the area

Respondents were characterized by a high unemployment rate of 53% while 18% were formally employed, and 29 percent were casual labourers as illustrated in Figure 6 below.

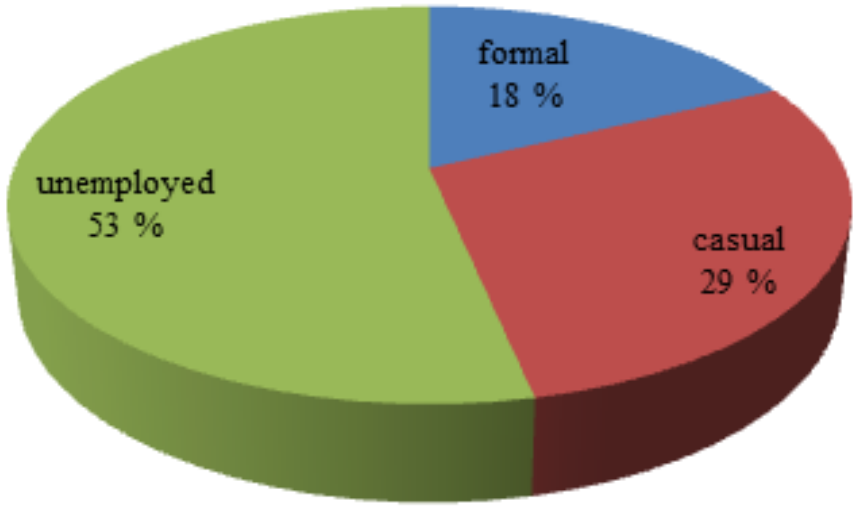

Figure 20: Employment status

The majority of the people were generally unemployable due to a very low education level and lack of job opportunities in the area. The few who were formally employed worked for the government in institutions such as the municipality, schools and local business enterprises.

Social grants in the form of child grants, old age, foster care grants, care dependency grants and disability grants helped tremendously in alleviating vulnerability in the area (See Table 5).

Table 11: Social protection and grants

Type of grant	**Amount in Rands/ month**
Child grant	250
Disability	1080
Care dependency	1080
Foster care grant	710
Government pension	1080

Child grants are given to children under the age of 18 but it was surprising to note that some families did not have access to these funds. They were either ignorant or denied by the local authorities. Old age grants were available for people over the age of 60 but some did not have access to these funds due to lack of power and information. The informants claimed that you needed to know someone at the offices in order for your application to be processed.

Poor families sold some of their livestock in order to get some cash for other purposes. Livestock has been used as a buffer during bad times in this society as one of the respondents mentioned. The key informants claimed that livestock has been a form of savings for many generations but its output had deteriorated drastically due to lack of pasture land and harsh climatic conditions that had increased animal diseases. They also blamed the degradation of the natural resources by colonial settlers who kept large stocks of cattle and farmed biltong in the area. They said that the settlers kept large herds of cattle for resupplying their troops during the colonial period.

Farmers had to adhere to the 40 animals per household limit as stipulated by the municipality; otherwise they were penalized. The municipality argued that the local people caused resource degradation due to overgrazing and over-exploitation of other forest resources. In contrast, rich farmers did not have any restrictions on herd size because it was assumed that they have the capacity to conserve the environment. The informants argued that their situation was worsened by lack of financial resources to rent more land or buy land for private use. These restrictions affected their savings and way of life.

Lack of financial resources was one of the other reasons given for their failure to secure sustainable livelihoods. The majority of the respondents had no access to credit in the form of loans, because they did not have assets such as land for collateral security. Those who were unemployed had low income opportunities as compared to those formally employed. The employed had collateral to borrow money from the banks while the jobless did not have the same opportunity. Remittances were another source of income within the 29% casual labor. Members who migrated to cities sent back money to their families.

Livestock ownership

Ninety-eight percent of the respondents owned livestock. Only 17% of them owned cattle and the rest owned either sheep, goats, donkeys, horses and chickens. Fodder was a big problem in the area and well-to-do farmers supplemented supplies through purchase of agro-fodder. Most of the respondents resorted to small stock due to shortage of animal fodder as shown in Figure 7. Livestock was sold on various occasions in order to get access to income. Slaughtering for household consumption and ceremonies was higher than the number of animals sold because the stocks were deteriorating due to fodder shortages.

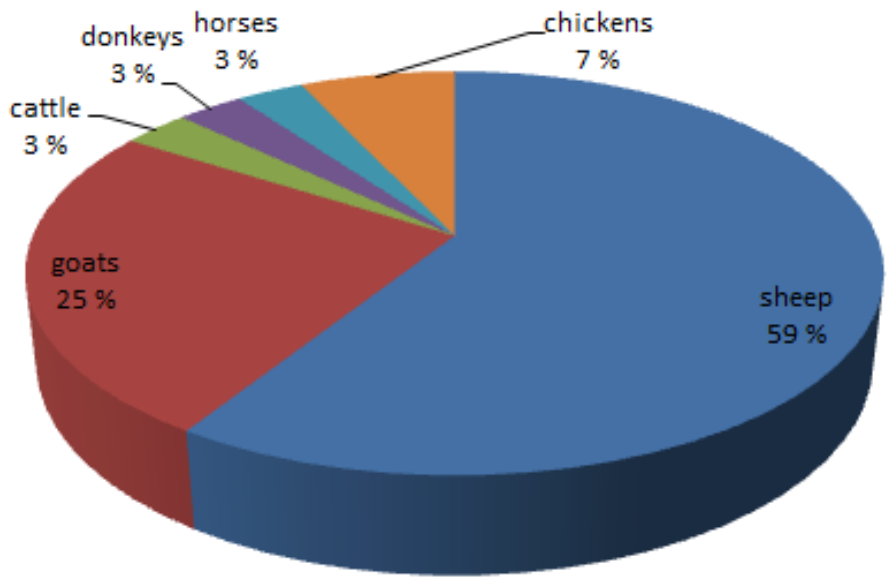

Figure 21: livestock owned

The well-off farmers (10%) who owned private land and large herds of livestock used land and livestock as collateral to access loans. These loans were used to purchase extra stock feeds and

medicine for vaccinating livestock, since animal diseases were rampant in the area. Furthermore, funds were made available for rich farmers for purchasing animal breeds that were more adaptive to the region.

Shortage of grazing land was the biggest hindrance to livestock production. Findings from the study area reveal that land is a scarce resource especially for the poor who do not have any power, financial assets or influential social relations. Ninety percent of the respondents were landless while only 10% owned private land (see Figure 8). The respondents blamed it all on the colonial era which forced their ancestors to migrate from the Cape area where soils are rich and favorable climatic conditions exist for agricultural production. They argued that colonization changed their lifestyles and traditions due to the privatization of public services and discriminatory laws. They claimed that pastoralism was part of their life and they supplemented it with crop production, hunting and gathering; but with colonization livelihood opportunities were disrupted and people were permanently displaced. The continuous process of land appropriation by colonial settlers disrupted their sources of livelihood and disadvantaged them from participating in economic activities.

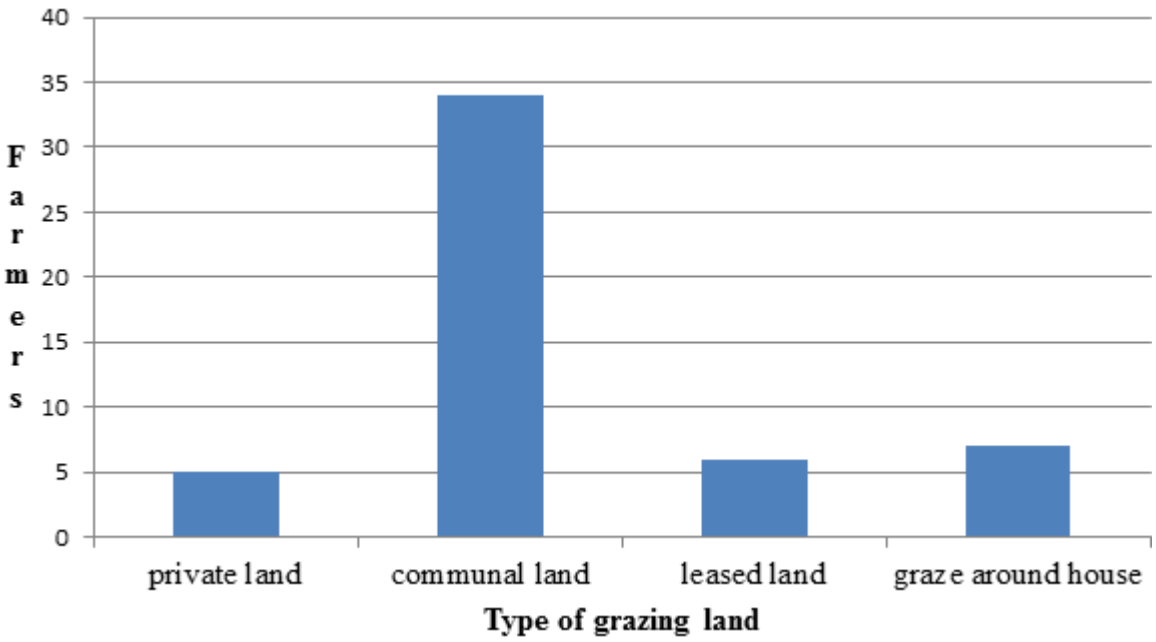

Figure 22: Type of grazing land

Most of the respondents were disgruntled about government's failure to resolve the land issue. The land that they got back through land restitution (50,000 hectares) in 2001 was divided between the Mier and the San. They could not claim full ownership of any part of the land since it was jointly owned. The establishment of the national park (KTP) disadvantaged them because they lost access and control of the land that they utilized before as common property for grazing and gathering. Furthermore, the use rights had restrictions as to what they could do because the government wanted to reserve the park area for conservation purposes. Besides, the two different groups had different interests. The government has promised to allocate land to the landless through purchasing it from farmers who are willing to sell part of their land, and the respondents complained that the government does not worry much about people far away from the cities.

The majority of the respondents did not own land (see Figure 9). They relied on communal land which can be accessed free of any charges. Some grazed their livestock on municipal land which they paid for on a monthly basis.

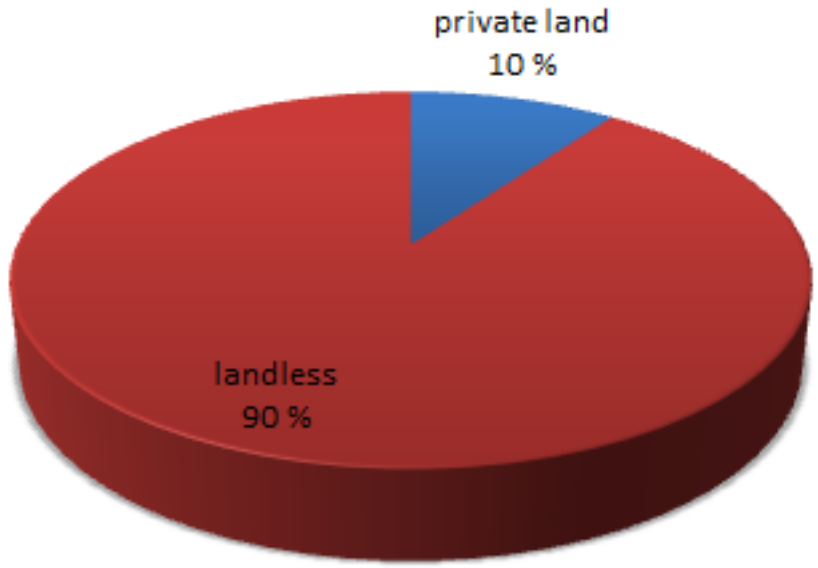

Figure 23: Land ownership

The amount they pay differs according to land size. Most of the respondents grazed their livestock on communal land while private farmers owned vast lands and large amounts of livestock. One rich farmer interviewed owned 300 sheep, 12 cattle, 15 donkeys and 30 chickens. He acknowledged that he had enough land to graze his animals, and if not he would get a loan

from the local bank to purchase extra fodder. Figure 8 below illustrates the type of grazing areas accessed by respondents.

The municipality (local government) owns and controls the rest of the land except for private land owned by some farmers in the area. Access and utilisation of municipal land is through payment of a grazing fee to the municipality. The municipality can lease land to a farmer for a period of five years, upon which that land can be permanently transferred to the farmer if one proves to be a promising producer. However, the discretion for leasing and allocating private land is in the hands of the municipal authorities. Generally, there are disgruntlements among the locals who blame the system as corrupt and benefitting only the powerful and rich in society.

Women do not have the right to own land since it is a patriarchal society. The women are affected mostly when their husbands die and the land is taken by men. The women participants were unhappy about the land reform exercise because it failed to tackle gender disparity. Furthermore, powerful men in the society have more access to land than women because they strike land deals with the municipal officials. In general, female-headed households were more vulnerable because they were domesticated and had no other income opportunities other than from their husbands. Men had more opportunities of owning land that was rented from the municipality. Most respondents stated that the system was not transparent and only influential people benefitted.

Education

The unavailability of other economic activities and the shortage of land left their labor asset untapped. Furthermore, the human capital level within this area is very low since the average education level was seven years of formal education. Generally, there was a low education level among the respondents, and this affected skills development which creates opportunities to find formal employment within the area or elsewhere. Approximately 68 percent of the informants had a very low educational background. Even though there was migration to cities in search of work, normally they settled for unskilled jobs that pay less. Apart from migrating in search of jobs, other people were employed as casual laborers on commercial farms while a few were formally employed (see Figure 6).Education is a very good indicator of development and the status of an individual, because an educated person has more income opportunities.

Infrastructure in the area

The community lived in decent homes that were built by the government. Most of the houses were electrified during the period when government took the initiative to provide basic necessities for the poor, as claimed one municipal official. The houses had tap water and they paid a user fee to the municipality. There was a small shopping center where they accessed basic groceries, and a major road dissected the town in two, running to the border and joining the community to the rest of the country. There were few government buildings providing services to the community such as the municipality building. However, the respondents stated that there was a lack of government commitment to developing the infrastructure system in the area, a development that would create more income opportunities and other assets vital to livelihoods. Instead, they saw the government as a constraint on accessing basic infrastructure that was important for their livelihoods such as a market for their livestock.

Causes of vulnerability

Lack of access to land

Lack of access to land was seen as the biggest barrier to sources of livelihood (see Figure 9). This community was not a government priority for land redistribution, since it had regained land through restitution. Furthermore, land shortage was a barrier in the sense that the government had also imposed user rights on communal land that prohibited big herds. The amount of traditional knowledge that the people had on keeping livestock was constrained by these limitations and this impacted their livelihood strategies. This is because they said that they were used to searching for pasture in large pieces of land while using natural resources for other purposes such as medicine. The restrictions imposed by the government confined them to communal land and private land. Most families in the communities decided to seek help from friends and relatives but this did not solve the land problem since drought impacted heavily on availability of pastures. This will perhaps have long-term consequences for the environment. However, commercial farmers could afford to supplement stock feeds by buying extra fodder.

Lack of healthcare

The majority of the respondents (83 %) acknowledged that HIV/AIDS was a problem in the area. Fifty-six percent of the families had lost some members of the family but they could not reveal the cause. It seemed likely that the epidemic had affected so much of their labor asset because it mostly attacked economically active men and women. However, most of the respondents did not feel free to share information concerning the lost family members. They also blamed the government for not providing adequate and affordable medical services in the area. The interviewees said that they had to pay for consultation and transport to the nearest big hospital in Upington, 280 km away. The distance was a barrier to many who ended up not attempting to seek medical help. In addition, poor food diet contributed to their fragile health. They blamed the government for failing to provide accessible and affordable healthcare.

Lack of employment opportunities

Within the community there were not many employment opportunities. Few learned members of the community were employed as teachers and municipal workers. The community strongly believed that the political system and laws still based on apartheid ideologies increased their vulnerability by failing to provide investment opportunities in the area. They compared their situation with those of the commercial farmers in the country and pointed out that the government is deliberately not doing enough so as to support the interests of the well-off farmers. The communities blamed the government for failing to create employment for them by either supporting livestock production or other income-generating activities through micro-loans.

Lack of financial capital to intensify livestock production

Livestock production has been a common source of livelihood among the Mier communities, and over the years they acquired a lot of traditional knowledge on how to cope and manage stresses. Furthermore, the region is suitable for livestock production. However, lack of funding or financial assistance crippled their production capacity. A majority of people living in this community do not have much of the above-mentioned assets which are vital for collateral and for maintaining ongoing economic activities. Lack of access to capital has been cited as a major obstacle to the pursuit of their livelihood activities.

Figure 24: Small scale livestock production

Climate-related changes

Climate variability is another factor that has impacted livestock production. Drought and dryness as they call it, has become common, thereby affecting the recharge of the underground water, pastures and drinking water for the animals. Very high temperatures have been experienced and the community believes that this has impacted the poor health of their livestock through outbreaks of diseases which were not common before. Over 62% of the informants spent money on buying livestock medicine, which was not a common thing before, while 51% only can afford to buy extra fodder. The community indicated that the constant dryness of the area has heavily affected livestock production, because rangelands are continuously degraded due to overgrazing. They pointed out that only the rich farmers could afford to manage their rangelands sustainably as compared to communal grazing land. Dryness and droughts have worsened the conditions of the community and they believed that access to resources such as land and water would improve

their situation. The harsh climatic conditions and lack of access to resources to develop livelihoods has forced some members of the community to migrate to cities in search of jobs. Lack of pastures forced other livestock farmers to abandon livestock farming and migrate to cities in search of employment. Fuelwood availability has also declined significantly, thereby affecting this source of income as well.

Water scarcity

Water is a scarce resource in the area. The majority of respondents (92 %) mentioned water scarcity as one of the major problems affecting their livelihood strategies. There are no rivers or dams within the area due to its aridity. Only underground water can be accessed through digging boreholes. The underground reservoir is recharged by underground water from as far away as Namaqualand (van Rooyen, 1998). Tap water was provided by the government and each household gets free water and electricity units each month. Once the free units are exhausted any extra use of water should be paid for by the user. Well-off farmers own private boreholes for household consumption and watering animals, whereas poor members of the community either use free minutes or rely on relatives or friends. These social relations proved vital for exchange of other goods and services, especially for vulnerable households in times of need.

Drought and dryness of the area has become a common phenomenon. Most farmers in the community stated that dryness of the area had caused depletion of pastures and had exacerbated livestock disease outbreaks. Disease outbreaks drained the income they had through purchase of livestock medicine.

Coping strategies

Social asset

The respondents identified social asset as one of the major assets that increased their adaptive capacities to different stressors. They pointed out that relatives and friends always helped in times of need; for example, those with excess land and private boreholes cared for the extra livestock from other relations. The extra animals were at times registered under the private owner just to evade the carrying capacity prescribed by the government. They watered each

other's animals and helped each other with cash when the need arose. Just listening to the stories told by these informants, it was evident that social capital was a vital asset that helped the most vulnerable in society. The community had social bonds and institutions that helped to reduce vulnerability. They claimed that these social support networks were based on cultural norms and values of reciprocity, and these practices were passed on from generation to generation.

Changing type of livestock

The unavailability of adequate pasture and user rights imposed by the government forced the community to change their choice of livestock. Previously, cattle farming was very popular, but over the years they have changed from cattle to sheep and goats. Figure 7 above below shows the distribution of livestock kept in this community: sheep production dominates, followed by goats. Cattle production is mostly common on commercial farms. The choice of small stock (sheep and goats over cattle) was considered as a way of adapting and managing depleted wild resources. This was due to the realisation that small stocks also browse more readily than cattle. Pastures had been degraded over the years and the community resorted to keeping small stock because they consume less; additionally, goats are easier to manage, according to them. The respondents mentioned that goats demand less labour because they come back to the kraal by end of day without a herder, unlike cattle which need constant watching. Sheep specialisation has become common in this community. They mentioned that sheep breed and grow faster than cattle. The breeds that they owned gave birth twice a year to at least two lambs. Sheep and goat specialisation (59% and 25% respectively) was viewed as a better production system for economic and ecological reasons because they eat less than cattle.

Traditional livestock management practices

This Mier community possesses a rich package of traditional livestock management knowledge and practices developed for sustainable management of livestock over the years as a way to adapt to harsh Kalahari conditions. Livestock management practices evolved from past generations and have been passed on to the current generation. The community identified herd splitting as a traditional livestock management strategy that was aimed at preventing stock loss from diseases, droughts and predators. Livestock farmers who do not own land rely on

communal land for grazing, but if they have a bigger herd they transfer the rest to a family or relative's farm. In addition, the community quarantined sick animals from the herd and either slaughtered them or gave them traditional medicine. One of the respondents said "Indigenous knowledge related to livestock production and grazing is our cultural heritage trademark, though this is no longer fully intact." Those with power, for example males, can negotiate their way out but female-headed households become disadvantaged in this regard due to lack of power.

Rangeland management

The respondents devised strategies to reduce and adapt to land degradation through traditional knowledge and local beliefs. The value attached to the ecological system helped them in creating norms and values that assisted in coping with the harsh environment. For example, traditional responses to droughts and dry periods and reduced forage included livestock rotation to avoid pressure on wild resources. In periods of good rains, they used *Citrullus lanatus* (tsamma melons) as a source of both food and water. The use of tsamma melons, especially after heavy rains, reduced pressure on pasture and water points, since tsamma melons have a lot of water inside them. Furthermore, they claimed that they had traditional knowledge of medicinal plants from the landscape that they intended to preserve. These medicinal plants were used as substitutes for expensive modern veterinary medicines. In order to substitute for expensive fodder, the respondents indicated that they knew plants and grasses that were palatable and rich in nutrients which they also wanted to preserve but drought had become an impediment. In most cases farmers were forced to keep a small herd through selling excess and slaughtering for their own consumption. The few that had excess to sell (29%) used some of the income to maintain the remaining stock. In some cases, others had to abandon livestock production due to the impact of stressors such as lack of fodder, lack of water, animal diseases and lack of income to effectively manage the herd.

Purchase of medicines and fodder supplements

Livestock diseases were treated either by medicinal plants or veterinary medicines that were purchased from nearby suppliers. Extra fodder was also purchased from the local agro-foods suppliers by 35% of the respondents. The respondents used government social grants (child grants, pension grants etc.) to purchase medicines and supplementary fodders. This was a coping

strategy that was aimed at increasing livestock production at the expense of other priorities. Though this worked well for some who also had financial income from remittances, those who relied on social grants were heavily affected. Only 51% could afford to purchase supplementary feeds. The worst case scenario would be one where a family has no social grants or livestock to act as a safety net, but just relies on food handouts. Livestock production was seen as a form of saving by the community, especially in households which did not have diverse sources of income.

Well-off farmers – adaptive capacity

On the other hand, rich farmers who owned large pieces of land and large herds of livestock experienced a different situation. They seemed to be benefitting from the prevailing conditions in the sense that they had physical assets for collateral in case they wanted a loan from the banks. They bought veterinary medicines to vaccinate their livestock against diseases and to treat animals already infected. Furthermore, they had access to financial resources which enabled them to purchase supplementary fodder from near and distant suppliers (see Figure 11). Their influence on the market could also affect the prices of livestock inputs such as fodder and medicine. Information and access to the market was made available to them by the government.

Their choice of livestock was not influenced by environmental conditions but rather economic conditions such as the prices of livestock on the market. Private farmers owned land that they could manage without any interference. They could keep large herds of livestock without any problem. Degradation of private land was not common because land was owned by an individual as opposed to communal land where the state agents had no complete control. Powerful members of the society had access to their own land which they had rented from the municipality for a period of five years upon completion of their term. Corrupt officials made it easier for the powerful in society to acquire more land.

Figure 25: Cattle feeding trophies for rich farmers

CHAPTER 5

DISCUSSION

'The history of South Africa is part of current politics, for the past has been stormy and memories are long' (Walker, 1928: p.vi).

Factors increasing vulnerability

Poverty

Poverty means deficient access or a complete lack of access to material, economic, social, political or cultural resources needed to meet basic needs. It is mostly associated with lack of access to resources and income opportunities and other factors such as gender, age, ethnicity, community structure and political issues that determine people's vulnerability (Yodmani, 2001). However, poverty should not be viewed as a synonym for vulnerability since they are not synonyms (Wisner at al., 2004). Access to resources helps victims to buffer themselves from shocks and influences their coping strategies and resilience, but dynamic processes and activities create unsafe conditions for the poor and marginalised which become root causes of vulnerability. Adger and Kelly (1999) demonstrated the influence of poverty on adaptation capacity by pointing out that poor people tend to have fewer and less diverse entitlements and a lack of empowerment to adapt. This vulnerability is mostly caused by economic, demographic and political processes that reproduce vulnerability over time (Blaikie et al., 1994).

There is empirical evidence from the study area that poverty and marginalization translate into vulnerability due to the mechanisms and coping behaviors they undertake. Land use and economic aspects of livelihood, power and political dimensions all have an impact on individual and group vulnerability in Rietfontein. Government institutions act as constraints by restricting poor households to maintenance of stocks in accordance with a carrying capacity of forty animals per household. This has a negative impact on families that rely primarily on communal grazing land, while the prosperous ones who own private land have no limit. Policies and practices in agriculture as well as inequitable distribution of productive resources can have pervasive effects on increasing vulnerability (Burton, 1997). Vulnerability of this community is

determined by institutional structures that display income inequality, while formal social security arrangements play an important role in increasing their adaptive capacity (Adger, 1999).

Wisner et al. (2012) noted that food security is determined by food availability, stability of supply, access to food and safe and healthy use of food. There is a tendency to consider food insecurity or poverty as a product of a climate hazard; what is ignored or missed in this process is that the hazard only amplifies an existing problem facing a certain population group. I argue this point because if a hazard such as the 2004 South Asian tsunami was supported by socio-economic structures and institutions, its impact on livelihood security would have been reduced. However, in situations where there is strong institutional support, fragile conditions are brought under control because causes and effects of vulnerability are well understood.

Poverty and vulnerability are interlinked as highlighted earlier because poverty is directly associated with limited access to resources which affect coping with extreme events (Adger, 1999). Rich people almost never starve because they may avoid hazards completely or recover quickly from events which are disastrous for others (Blaikie et al., 1994). The poor people in this community are more vulnerable due to lack of access to productive resources such as supplementary feed stocks that are obtainable by the rich farmers in the area who had access to loans. Access is always based on social and economic relations (Blaikie et al., 1994). Lack of access to productive resources and marginalisation of the powerless is the indicator of vulnerability for poor households in this community. Therefore, poverty affects their ability to invest in alleviating risks, and it affects their coping and recovery through directly constrained opportunities for reducing resilience (Adger et al., 1999). Generally, poor people are more vulnerable than rich people. Approximately 50% of South Africa's population can be categorized as poor due to lack of resources (Cousins and May, 2000). Table3 shows that most of the poor live in rural South Africa with a high percentage of 71% compared to 29% living in urban areas in 1995 (Cousins and May, 2000). In addition, the gendered character of poverty in the country is striking in that women-headed households are likely to be poor because they are usually employed at low wage, piecemeal jobs (Marias, 2011).

Table 12: Poverty, inequality and unemployment (1995)

Indicators	%	Estimated population
Poverty rate total	49.9	19 000000
Poverty rate in non-urban	70.9	13 000000
Poverty rate in urban areas	28.5	6 000000
White poverty rate	1	
Poverty share of non-urban	71	

Source: Cousins and May 2000

Limited access to land

Assets play a pivotal role in reducing vulnerability to hazards (Wisner et al., 2012: 700). This is because assets perform two essential functions in reducing vulnerability, in that they build capacity through enabling better access to resources (for example, the grabbing of a piece of land by a landless household increases its livelihood opportunities), and they also act as buffers between people and external shocks and stresses (Wisner et al., 2012). It follows that the stronger the assets, the less vulnerable one becomes. The poor and marginalised that do not have access to resources will become more vulnerable while the rich become more adaptive and resilient to shocks and stressors. This means that people practice different strategies to build strong livelihoods provided they have access to those assets that create more opportunities.

This brings in the effect of history and power and how it contributes to vulnerability. Power normally is concentrated in the hands of a few individuals and institutions. Power can be used either to increase accessibility to assets such as water and land, or it can act as a barrier, thereby disadvantaging the powerless. This power distribution therefore affects the social distribution of risk and of resources that alleviate risks (Wisner et al., 2012). Most of the people in this community are affected by unequal distribution of resources which favors the elite. Those in power have the potential for addressing 'underlying risk factors' (UNISDR, 2005b), which include landlessness, absence of security of rural tenure, highly skewed access to natural resources and other forms of social injustice (Wisner et al., 2004). Even though factors that influence the vulnerability of a society are complex (Adger et al, 2003), lack of access to land is one of the key factors that generated vulnerability in Rietfontein.

There seems to be a lack of political will by the government to redress the historical legacy, maybe because they want to protect the rights of the commercial farmer who is contributing significantly to the national economy. The government is probably not sure of the right mechanism to employ, since they are afraid that if the situation is not handled wisely, the political situation may deteriorate and affect the nation badly, as happened in Zimbabwe. However, no matter how sensitive and complex the land issue is in South Africa, the longer it takes to address it, the more volatile the situation can become. The government is sitting on a time bomb and there will come a time when the poor people will not tolerate it anymore. There is an urgent need to address historical injustices in order to build sustainable livelihoods built on equal rights.

Land shortage

The influence of social relations in governing the distribution of property (such as land), the distribution of income and the dynamics of consumption and accumulation is inevitable (Scoones, 2009). Land has always been a key element of production in African traditional systems and failure to secure or access adequate land meant disempowerment for rural people (Tsheola, 2002). One of the key findings of this research is that vulnerability of this community was caused by lack of access to land because land ownership is racially skewed. The study revealed that there was generally a lack of adequate land for agricultural purposes for the black majority since colonization. It is unfortunate that patterns favoring landed and privileged elites still exist (Wisner et al., 2012). The massacre of 34 miners at Marikana (Lonmin platinum workers) on 16 August 2012 is one of the most recently publicized events which demonstrate some of the apartheid systems that have not yet been addressed (Satgar, 2012). The Marikana case illustrates the appalling living conditions and low wages (social inequality) that were a product of the former regime.

The land reform intervention by the South African government was a policy endeavor to correct historic injustices and to redistribute land more equitably. Even though there was broad consensus about the significance of land reform, there was controversy with regard to choice of mechanisms to transfer land from the minority to the landless and land poor (FAO, 2002). Adams et al. (1999) and DFID (2002) acknowledge that land tenure reform is a complex and politically sensitive issue; it is no wonder why some governments in SSA have neglected it. I do

agree with him in that the land reform process is a very complex and sensitive issue and failure to implement it will have devastating consequences, as evidenced by Zimbabwe's land reform programme (Frost et al., 2006). It is important to note that Zimbabwe and South Africa had striking similarities in terms of land inequalities and a slow pace of land redistribution since independence in 1994 (McGreal, 2001). The process has been slow because only those wishing to sell their land need do so - the so-called 'willing seller- willing buyer' (WBWS) principle with the state providing financial support (Palmer, 1998: 2).

This mechanism adopted by the government is what one would call the major flaw of the policy in the sense that the land owner still needs to make a profit and large investments for personal benefit. I strongly feel that they will never sympathize with the landless because if the landless acquire land, then the labor reservoirs are completely eradicated. There seems to be a lack of government priority to redistribute the land, since the approach adopted is taking much more time than was anticipated by the landless. Furthermore, the skewed political economy has cemented previous unjust labor relations where class differences played a big role in exploitation of the lower class. The local wage workers who were employed at commercial farms had low wages and this confirms the historic labor record which was characterised by insecurity and exploitation (Marais, 2011).

Land tenure reform is essential for poverty alleviation, provided the policy is pro-poor, and this can assist towards achieving Millennium Development Goal 1. It has the potential to eradicate poverty through sustainable economic growth, greater equity, security and environmental sustainability (DFID, 2002). Land tenure refers to the terms and conditions on which land is held, used and transacted, while land tenure reform is a planned change in the terms and conditions in an effort to secure people's land rights. Box 2 below illustrates some of the land rights that are addressed. Land tenure is an institution (FAO, 2002). These rights give households and individuals the power to determine their capabilities and coping strategies.

Box 4 Land rights

Land rights may include:

- rights to occupy a homestead, to use land for annual and perennial crops, to make permanent improvements, to bury the dead, and to have access for gathering fuel, poles, wild fruits, thatching grass, minerals, etc.;
- rights to transact, give, mortgage, lease, rent and bequeath an area's exclusive use;
- rights to exclude others from the above listed rights, at community and/or individual level; and
- linked to the above, rights to enforcement of legal and administrative provisions in order to protect the right holders.

Source: Adams et al., 1999

Consequences of inequitable land access are evident in South Africa. These include social instability, rural-urban migration, dependence, civil unrest and other negative conditions that contribute to poverty as shown by this case study. On the other hand, property rights to land give opportunity to more income sources through access to a full portfolio of other assets necessary for sustainable livelihoods, namely natural, social, physical, financial and human (Ellis, 2000; FAO, 2002), (see Figure 12 below). The pentagon illustrates that assets need to follow the same order round the pentagon (Carney, 1998), and this can be used to show the weakness or strength of a group's asset portfolio (Ellis, 2000). Note that the pentagon is not intended to illustrate the quantitative method. The community under study lacked most of the assets shown on the pentagon except for social capital and human capital; and these are also eroding due to globalisation and the HIV/AIDS epidemic, respectively.

Land reform has been a political issue where the government seems to be caught between two paradigms. South Africa earns a lot from exporting food within the region and as such it wants to protect its interests by sustaining adequate levels (Marias, 2011). On the other hand, there is a need to accomplish one of the political goals of the ANC which is land redistribution. The need to maintain commercial food production and redistributing land to the landless and the poor has remained a big challenge for them to accomplish. However, this has affected mostly the poor and

marginalised who are finding it difficult to earn a living from social grants. Lack of access to other assets affects the overall distribution of other assets on the assets pentagon. The inner asset pentagon illustrates the asset profile of the Mier (see Figure 12). For example, if the financial capital asset is less, then it affects human capital due to limitation on food, healthcare and other basics. This will also affect social capital because the affected household does not have any excess to give away, making it more vulnerable.

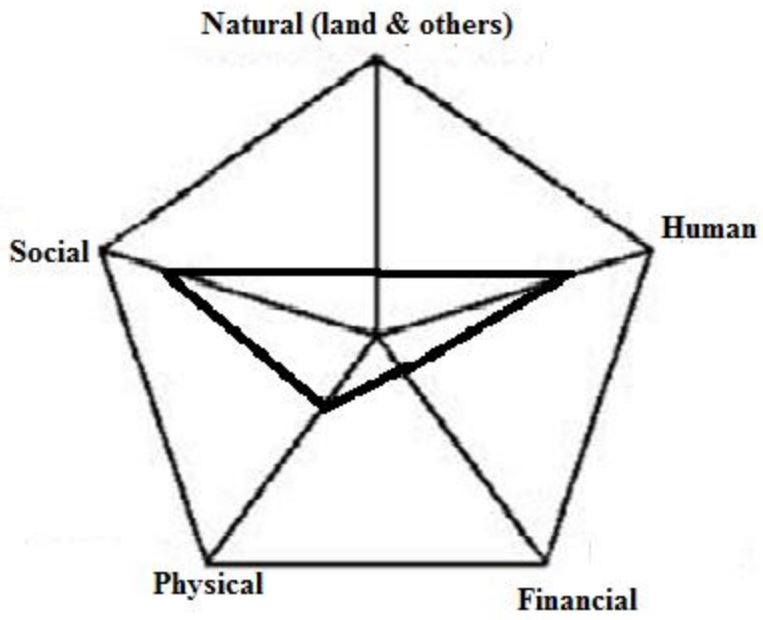

Figure 26: Sustainable livelihood assets pentagon Adapted from Ellis, 2000; FAO, 2002

The mechanism adopted (WBWS) has only managed to redistribute approximately 7.2%, which is 6.3 million hectares only compared to the official target of 30% (24.6 million hectares), (PLAAS, 2011). The initial target was to redistribute 30% by 1999.This target was reviewed in 2000 and extended to 2014, but projections in 2009 showed that it was impossible to fulfill, resulting in a new target date of 2025 (PLAAS, 2011). Meanwhile, most of the people living in rural areas remain poor due to lack of access to land. I certainly agree with PLAAS that land reform is problematic in the sense that the ANC has failed to take decisive measures such as expropriation. The concept that they adopted (WBWS) has to be addressed urgently in order for the beneficiaries to access not just land but rich land while maintaining a reasonable number of large scale commercial farmers producing for food security.

Land reform has the potential to ameliorate vulnerability through tenure security, as was shown earlier that the Mier community is greatly affected by lack of land. Livestock production is a vital source of livelihood for many poor families in rural South Africa because it serves as rural savings, collateral, provision of food, draught and sacrifices in rituals as well as retirement plans (Cousins and May, 2000). The multi-function of livestock builds assets such as human capital and social capital that are essential for acquiring sustainable livelihoods. When an individual has experienced a shock, he/she sells livestock as a coping strategy (some form of savings) and this means that his livelihood strategies are not disturbed permanently.

Lack of access to financial resources

Access to financial resources enhances one's livelihood capabilities. In rural SSA, credit markets hardly exist (Ellis, 2002). There is evidence from this research indicating that landless poor farmers failed to increase their capacity due to lack of income opportunities; it is no wonder that they ended up using social grants to supplement livestock production. Tenure rights increase tenure security and farmers benefit through increased access to credit (FAO, 2002). The financial institutions could not disburse loans to poor farmers due to lack of collateral. They are governed by market principles and regulations that are based on making profit, and therefore they were not prepared to take risks by offering loans to poor people of the community. On the other hand, rich commercial farmers who have a lot of assets, such as a big herd of stock, land and other physical assets built on their private land, had access to loans thereby diversifying their income opportunities. Market institutions became a barrier to eradicating poverty in such poor societies through regulations that are not pro-poor. However, poor people do have informal money lending institutions that they can access in the absence of formal institutions. These institutions are characterized by high interest rates of up to 60% per annum compared for example to approximately 4% for long term loans accessible to white farmers in Namibia (Hammer et al., 1999). In sum, the government did not offer the much needed financial assistance to small livestock farmers who obtained land through restitution.

Globalisation

One of the primary objectives of the new South African democratic government was to take up social welfare responsibility. The adoption of the 1994 Reconstruction and Development

Programme (RDP) was aimed at improving the quality of life and access to basic needs (Tsheola, 2002), and most importantly for the empowerment of poor rural communities (RSA, 1994). The policy clearly defined the 'pivotal' role of government from the national level down to the community level as facilitating sustainable development, providing basic needs and improving people's lives (RSA, 1994). This policy had great potential and it managed to provide social services such as schools, clinics, houses for the homeless, rural electrification, and provision of tap water, to mention just a few. Some of the beneficiaries of this policy happen to be the community under research. Most of the community members named houses built under this scheme 'Mandela houses.' Indeed, the RDP was centered on coordinated and integrated community projects that aimed at alleviating the worst effects of poverty and providing benefaction and empowerment of the poor for sustainability (RSA, 1994).

The RDP notion of growth through redistribution worked (Tsheola, 2002; p. 61). The poor benefitted a lot in terms of shelter, clean drinking water and electrification, but this only lasted for a while due to the challenges of globalisation. The Northern Province of South Africa illustrates how RDP improved the provision of basic needs through government spending on housing, infrastructure, water and sanitation, electrification, health care and education programmes (Munslow and Fitzgerald, 1997). The 'basic needs' agenda had great potential to provide basic essentials in rural communities such as Rietfontein where crop production is non-existent and livestock production depends heavily on availability of land and rain.

Policy shift

The intensification of the globalisation agenda resulted in the South African government changing its policies to comply with the new market economy. In 1996 RDP was replaced by the Growth, Employment and Redistribution (GEAR) policy, a purely pro-market policy, which aimed at adopting the market and the right distributor, thereby reducing government responsibility (Tsheola, 2002). GEAR was a macro-economic strategy that holds the principle that economic growth would translate into the distribution of benefits through income and employment (RSA, 1996). It hopes to achieve 'sustainable growth' through 'a competitive outward-oriented fast growing economy' (RSA, 1996; p. 11). However, the adoption of the macro-economic strategy which relied on globalisation and free-market forces as well as hopes in foreign investors was blamed by some who claimed that the government neglected its pivotal

role of eradicating poverty. Smallholders were prone to struggling because they could not compete with well-established commercial farmers. This was a big disadvantage to upcoming and subsistence farmers who relied heavily on local markets to sell their products.

Consequences

Consequently, all South African provinces saw increased income inequalities, declining standards of living, severely limited job creation, degraded or absent infrastructure and limited access to roads, water, housing, electricity and telecommunication facilities, educational facilities, health care and social center complexes for sports and recreation (Tsheola, 2002; p. 59). Adoption of the macroeconomic policies did not bring the needed development for the rural poor but instead increased the gap between the poor and the rich. The consequences of globalisation to the rural poor and marginalised were disastrous because it disturbed the local systems and their resilience. This policy had negative impact since rural communities such as the Mier continue to experience material poverty. Even though they have been awarded homes with tap water and electricity, they now have to pay for other basics such as medical help, tuition and other benefits which were offered for free before GEAR. For example, those households who had no means to pay for consultation or medication are left to die, and this has an effect on livelihood strategies since labor asset is tremendously eroded. In order to promote sustainable livelihoods, people need to access basic resources such as health in order to build assets (Wisner et al., 2012).

Economic globalisation describes a set of processes whereby production and consumption activities shift from the local or national scale to the global scale (O'Brien and Leichenko, 2000; p. 225). Negation of national and local scale in favor of global scales destroys the normal functioning of a social system due to the level of competition and non-availability of resources to compete equally with foreign actors. Poor and marginalised people do not have access to resources such as capital and infrastructure that is required to compete on the global market like other actors who have a strong financial base. In addition, the government cut its spending and privatised services and reduced its spending on meeting basic human needs. Between 1997 and 2000 the government cut drastically its spending on education, health, welfare and police (Sunday Times Business Times, 12 March 2000).

Therefore, the perception that globalisation is an all-encompassing and unifying force has been rejected by many because of its processes that are uneven as evidenced by global distribution of foreign direct investments among high and low income countries (O'Brien and Leichenko, 2000). Even within countries, some regions are quickly integrated into the global political economy while others are not, and in most cases it is the remote areas and marginalised people who are affected by these processes, since government relinquishes its pivotal role. The processes of globalisation brought economic growth and provision of basic needs to some societies in South Africa but the uneven distribution of the process affected the rural poor who most needed it. While the government redirected its focus on globalisation, the agenda of social benefits and its context were superseded by a free-market economy which increased vulnerability not just for the rural poor but also the urban poor to income and employment disruption. The effect of the recent recession led to the loss of 870,000 jobs in 2009 and the job losses were highly skewed, affecting mostly low-paid and insecure workers (Marais, 2011). During the period 1995 - 2000, real individual income declined, affecting low income earners, especially young workers and Africans (Marais, 2011). Unavailability of paid employment is one of the biggest consequences of globalisation that has crippled strategies for the poor and marginalised.

Respondents in Rietfontein mentioned that globalisation replaced development which brought schools, electricity and water resources with more suffering. Furthermore, the elimination of subsidies was a disincentive to the communities and rural poor in many developing countries (Ellis, 2000). The shift in government policy made these households more susceptible to other stressors such as HIV/AIDS and climate change that in turn affected their production levels. The fact that the government cut its spending on health meant that people had to travel longer distances in search of medical health, and those who did not get it affected the human capital. Health hazards became a common phenomenon since household expenditure on health increased dramatically within a short space of time. Macro-economic shocks caused by the consequences of domestic policies increased the risk of the poor majority in South Africa and the politically marginalised. However, globalisation cannot solely be blamed for the poor conditions of this community because they still benefit from social services such as social grants. Furthermore, the government has not done much in providing both farm and non-farm employment; hence the problem seems to lie with government failure to create local employment.

Prevalence of HIV/AIDS

85% of the participants acknowledged that HIV/AIDS is prevalent in the area and this has forced changes in local livelihoods. The impact of the disease has been devastating in the area because it robs mostly the productive members within a household. HIV/AIDS has negative impacts on livelihoods because it increases the deaths of breadwinners who remit money, thereby affecting other forms of production such as livestock and crop production (Frost et al., 2007). Even though most participants acknowledged the impact of the pandemic, very few were eager to discuss further details on who were directly affected. Stigmatization still remains a big problem and this has negatively affected control of the disease, since people are not open about their status, making it difficult to control its spread. South Africa is a country estimated to have the largest number of people living with HIV/AIDS, with a total of approximately 5.3 million HIV positive people as of December 2007 (Karim and Karim, 2010). High infection rates reduce adaptive capacity (Adger et al., 2004). This epidemic affects livelihood strategies because more time is needed to care for the sick, affecting cash for health care and funerals. Furthermore, livestock is slaughtered during burial ceremonies and this has altered livelihood strategies within households.

Even though there is free medication for HIV/AIDS, its accessibility is problematic, especially in far remote areas such as Rietfontein, due to the poor social services delivery system. The capacity of a social system to adapt to change is determined by access to resources and this is influenced by external political factors that present or constrain adaptive capacity factors (Adger et al., 2004). Even though the healthcare system received a large share (8.7%) of budget in 2008, the health status indicators are still far less than in many middle income countries, and this reflects poor working and living conditions, poor nutrition, inaccessible healthcare and poor resource distribution (Marias, 2011). This is the consequence of a health system that is divided between the public health system, characterized by inadequate health care, and the privately managed system, which is well-equipped and accessible only to the wealthy. Healthcare is a human right that should be provided by the government, but in this case the government has failed to establish institutions which can effectively provide health services comparable to those provided by the private sector. This has affected mostly the poor, who do not have the financial resources to join a private medical scheme offering the best services. This robs the poor of their

human and social capital. These factors have contributed immensely to livelihood vulnerability in Rietfontein as illustrated in Figure 13.

Drought

The research revealed that drought is an endemic phenomenon in the area affecting livestock production. Droughts occur from time to time in the research area during El Niño–Southern Oscillation (ENSO) events (FEWS 1997), and they can have serious impacts on livestock, crop yields and wildlife populations (Boone et al., 2004). Farmers perceive drought differently and that is why they respond differently. It is difficult to understand why farmers took different decisions in response to drought. Some farmers responded by reducing their stock through selling or slaughtering for consumption, others bought fodder while still others did nothing about it. Unavailability of adequate pastures and water for watering animals had affected production levels of most poor farmers in drought-prone areas. Rangelands have been affected especially in periods of drought and farmers have had to supplement by purchasing stock feeds.

Even though climate variability has had some influence on livelihood sources, it is not the main cause of vulnerability in this case. Kelly and Adger (2000) identified two main approaches to vulnerability, namely 'end point,' where vulnerability summarizes the net impact of a shock, and the 'starting point' perspective, where vulnerability is considered as the present inability of a system to cope with external pressure or change. Drought is just a trigger in this scenario because the system is vulnerable prior to any other external stressor acting upon it, due to lack of diversity. A social system that is supported from the base by institutions is resilient to shocks such as drought, floods, cyclones and landslides. I argue this point because local institutions such as kinship and governments at the national level do have institutions capable of reducing, absorbing and financing risks from losses (Wisner et al., 2012).

Individuals in developing countries are affected strongly by a lack of insurance or personal savings due to poverty (Wisner, 2012). Therefore, drought has become one of the stressors of poor communities living in arid and semi-arid parts of South Africa, and its impact can be reduced by government's inclinations towards reducing vulnerability. It is important to note that stressors if not given special attention will influence the impact of other stressors. For example if

drought is not given enough attention by government institutions and organizations, it will enhance the impact of diseases through malnutrition; hence it is vital to address all stressors equally. Therefore, the institutional context of vulnerability is a key determinant of vulnerability (Adger, 1999). Climate variability, therefore, should not be used as an excuse for institutional failure to address key issues, which is a climatic condition in this case.

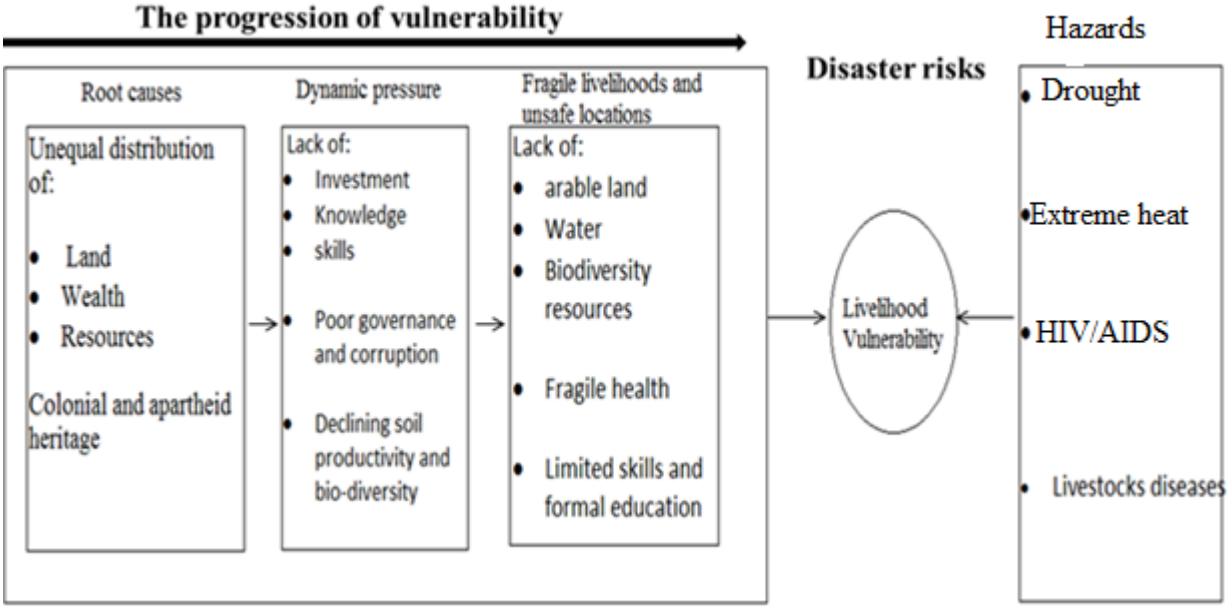

Figure 27: The progression of vulnerability **Adapted from Wisner et al. 2012**

Factors enhancing adaptive capacity

Social asset

Reciprocity between households and other members within a community is a vital asset that is used for supporting each other based on previous favors (Ellis, 2000). Social asset is an intangible asset that is based on networks, social groups, family ties, trust and knowledge sharing (Wisner et al., 2012), and is complex to understand because it is hidden (Ellis, 2000). Social asset is a fundamental asset for this community, especially for the poor, because it enables risk-sharing and reciprocity among members, thereby improving access for marginalised and poor households. It is evident in Rietfontein that social asset was used to assist members of the society in times of need, as with keeping livestock of friends or relatives. Some watered animals for

households with less access to water while food and other services were exchanged as favors to other households.

A household is a basic economic institution by itself, but these households are connected by kinship ties to other households which help to define the economic organization and resource allocation among families. The cultural setup of this tribe was based on a barter system; hence, the idea of strong social relations was central to their strategies on a daily basis. They usually exchanged livestock products such as milk, draught power, transport or meat for something else like maize, and this simplified their livelihood strategies. Money was exchanged or rather given to families in dire need, especially for burial ceremonies or when a breadwinner was sick. Economic activities tended to be inseparable from the social system, and people seemed more interested in maintenance of social relations rather than personal accumulation. Many households appeared to benefit from these social relations, especially in times of need. However, these traditional coping mechanisms have been eroded, as most of the community members are experiencing livelihood stresses and are therefore unable to perform customary obligations (Ellis, 2006). This is because stressors such as market liberalisation, drought, HIV/AIDS prevalence and declining effectiveness of public institutions have destabilised local coping strategies.

Traditional knowledge

Traditional knowledge is another important asset inherited from generation to generation. Livestock production, hunting and gathering were among the most prominent livelihood strategies enhancing reciprocity. The knowledge that they acquired and accumulated over the years living in this semi-arid area was vital for their understanding and use of local resources such as shrubs for adaptation. Despite its aridity, they had managed to buffer themselves from shocks such as droughts because they had learned from past experiences. Wisner et al. (2012) emphasizes that memory experience is essential, as highlighted by the December 2004 tsunami survivors who employed traditional memory. This knowledge and experience increased robustness in response to unpredicted perturbations and uncertainties. Berkes et al. (2000) pointed out that in rural subsistence communities, traditional knowledge is a central concern for regulating and balancing the exploitation of natural resources in order to maintain stability and regenerative capacity. This knowledge has been pivotal for this community in maintaining the

resource base such as pastures and forest resources for sustainability, and yet the government imposed herd size as a control measure to avoid land degradation. It is evident that the local community had adequate knowledge to preserve the environment; if the previous occupiers degraded the land through biltong farming and livestock farming, why should the blame be put on them? Instead of utilizing their acquired knowledge to sustain their livelihood, this asset has been under-utilized due to inhibition by institutions. Institutions such as marriage or land tenure can either inhibit or facilitate the capabilities of household and individuals (Ellis, 2000). In this case, the government created institutions such as carrying capacity that drastically contributed to vulnerability of local societies.

But over time, deterioration of the asset base and limitation on livelihood strategies drastically eroded this tradition. Institutions established by the government to manage resources in the area have put barriers such as restricted access to the park where they used to hunt and gather, and these have impacted their livelihood strategies and assets. Furthermore, the interaction of many stressors such as HIV/AIDS and drought has eroded their culture and traditions, making the less resourceful vulnerable to their effects.

Livelihood diversification

Ellis define rural diversification as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and improve their standard of living (Ellis, 2000: 15). There is evidence from the study area that there is little impact from livelihood diversification due to lack of assets. Remittances considerably improved the standard of living for many households. Social grants are another big source of income for many poor households in South Africa and they divert some of the income to supplement and boost livestock production. There is evidence that rural households in South Africa draw 21% of their income from social grants, showing how influential they are on the household income portfolio (Marias, 2011). The local farmers utilize social grants income to purchase water, supplementary fodder and veterinary medicine to treat infected animals. Their livelihood portfolio is characterized by income from livestock, remittances, social grants and wages for those who work on commercial farms and formal employment. They use income obtained from different sources to intensify livestock production.

Resource dependency in the Rietfontein context is characterized by diversity of income, social stability and resilience (Adger et al., 1999). Many households in agrarian economies rely on the diversity of livelihood sources which have many impacts and determinants (Ellis, 1998); but unlike in other societies, most households in this community rely on livestock farming, social grants and remittances (3%) as their main sources of livelihood. Diversifying sources of income is one strategy that households can undertake to reduce dependency and vulnerability, but it is argued by others that it can actually increase vulnerability (e.g., Berry, 1993; Ellis, 1998).

Migration has become a common phenomenon in this area especially where men migrate to cities in search of employment. About 27% of the respondents were female-headed households; 31% of their husbands migrated to cities in search of employment. Upon finding some wage employment in the cities, they in turn sent back money to their families in this community, thereby increasing their income level. Remittances are then used to purchase basics such as food, health and educational costs, services which were provided for free during the RDP era. The strong linkage of individuals working in cities to their households is an essential part of their identity and a way of sharing assets across space (Tacoli, 2002). It enhances resilience of the household in the community by providing extra cash that can be used as a safety net on a rainy day. In the Mier community remittances contribute approximately 3% of household income (Thondhlana et al., 2012).

Changing livestock

One of the key strategies that the local community members have employed to cope with local stressors such as land shortage and lack of fodder was to change the type of livestock from cattle to small herd animals such as goats and sheep. Over the years they have accumulated a lot of knowledge about the local land environment and harsh climatic conditions. They realized that it was wiser to keep goats because they eat less and they come back home by the end of the day, thereby adapting to stressors such as HIV/AIDS which cripple the labor asset. Some have resorted to sheep because they give birth twice a year and they eat less than cattle. In contrast, rich farmers continue to keep cattle in large numbers because they have access to financial assets, human asset (cheap labor) and natural capital. They are resilient to shocks such as drought

and animal diseases simply because they possess financial capital and other assets vital for livestock production in such environments.

Vulnerability of the study area

It is evident that the majority of people in the study area do not have secure livelihoods because of limited access to resources. This has been revealed by their lack of access to land, financial capital, water, forces of globalisation, poor health care and poverty in general. There have been many institutional changes in the area such as conservation and market privatisation that have resulted in disruption of livelihoods and loss of security (Adger, 2000). For example, market liberalisation and privatisation shifted the government's focus from local to global, thereby destabilising their adaptive capacity and livelihood strategies through loss of markets for their products. Loss of resilience had a negative impact on livelihoods and collective institutional resilience supported by social relations. Disruption of local institutions from lack of good governance trapped many in chronic poverty by destroying their ability to maximize use of their traditional knowledge and social assets. The history of colonization has trapped a significant number of South Africans in chronic, structural poverty due to lack of access to resources and entitlements (Carter and May, 1999). They have no access to adequate resources to escape from poverty and vulnerability. The most vulnerable are households without social grants, access to land, with less livestock, no water source and no relatives to keep some of their livestock.

The underlying causes of vulnerability in this society are the social and economic factors that contribute to lack of income and resources through marginalisation (Chambers, 1989). Despite the fact that the community had adequate capacity to adapt to changes, they have been exposed continuously to those factors that contribute to their vulnerability, namely lack of access to resources. This resulted in the social system reaching its threshold, leading it to the undesired condition of vulnerability. Therefore, vulnerability in this area is a human-induced phenomenon that has been amplified by natural hazards such as drought and pests (Adger, 1999). Even though they had different strategies to cope with the changes through diversification of livelihoods, the system had become too sensitive to shocks because of lack of resilience. This affected its ability to adapt to changes taking place in the area. By contrast, rich households were resilient to shocks such as drought because they had resources that enhanced their capacity to cope. They had the adaptive capacity because they influenced the local economy in terms of distribution and

allocation of resources. Their buffer capacity or ability to absorb perturbations was enhanced by the institutionalisation of their interests through government failure to address the root causes of social exclusion and marginalisation.

CHAPTER 6

CONCLUSION

Most of the people in Rietfontein were vulnerable and lacked secure livelihoods. The study found that vulnerability in Rietfontein was a result of lack of access to land, wealth and healthcare, among other things. The inequitable distribution of land has disadvantaged the rural poor who now rely on social grants, remittances and livestock as safety nets. Livestock production has deteriorated significantly due to lack of land, pastures and disease outbreaks. Government's failure to address historic injustices has trapped a significant number of people in chronic vulnerability. Despite the effects of climate variability, social factors are the main causes of vulnerability in this society. This has been proven by the different adaptive capacities of well-off farmers and of poor farmers whose asset base continues to dwindle year after year.

It is evident from the findings that well-off farmers had better access to resources such as land and financial assets. This enhanced their adaptive capacity to shocks and stressors. They enjoyed the fruits of cheap labor and exploitation of natural resources because they had the power and resources to do so. The imbalances between the rich and the poor are reinforced by the continual existence of apartheid infrastructures that cement injustices and corruption, especially by local government authorities. This has helped to maintain the distinct classes within this society where the poor are getting worse-off and the rich getting richer by accumulation. Most of the poor households were vulnerable to any kind of shock due to these institutional arrangements.

This study reveals that vulnerability can be a human-induced phenomenon. Natural shocks can act as a trigger on an already vulnerable system and amplify its vulnerability. It also reveals that interventions which ignore history can in some cases fail to reduce vulnerability and instead build what they try to eradicate. This study therefore maybe important to the government of South Africa in that it has shown that historic injustices can cause tremendous harm to people's lives if not addressed. Though this study does not suggest conclusive ways of how to reduce vulnerability, it gives possible approaches such as fast and effective equitable redistribution of wealth, resources and power. It does not suggest that equitable land redistribution alone will reduce vulnerability because there is evidence showing that it needs to be supported by other services such as provision of inputs. Therefore, further research is required to address the key

wishes and interests of marginalised and socially excluded people in order to provide resources that promote their adaptive capacity.

Lessons learnt

In order to bring development to the rural areas, there is a need to understand the root causes that contribute to vulnerability and loss of rural livelihoods. The case study findings revealed that institutions established to displace existing institutions alter and destabilise the normal functioning of a social system. Interventions which fail to recognize existing institutions are bound to fail. Social vulnerability is not only a product of natural causes but, as this case study points out, it can also be a human-induced phenomenon. In order to reduce vulnerability in this area, the 'root causes of vulnerability' (see Figure 13) should be reversed in order to reduce pressures on a social system, as illustrated in Figure 14. Furthermore, households should be analysed separately and conclusions should not be based on individual perceptions, because individuals are heterogeneous. Assumptions about rural livelihoods should not be the basis for designing intervention, because social systems are dynamic. There is a need to invest in physical and market infrastructures in rural areas which enhance their capacity to participate in the local economy.

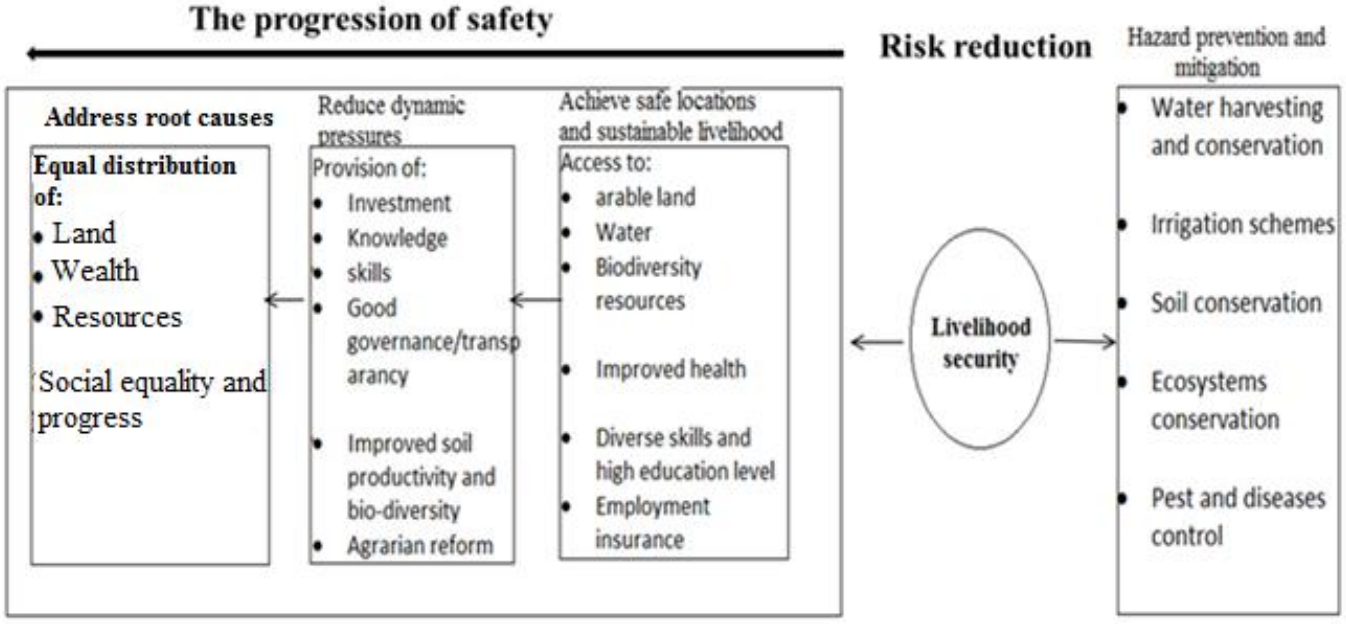

Figure 28: Reducing vulnerability **Adapted from Wisner et al. 2012**

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APPENDIX 1: Household questionnaire

Introduction

My name is Timothy Zviripi Munjoma, a student with the Department of International Environment and Development Studies (Noragric) at the Norwegian University of Life Sciences (UMB) in Norway. As part of the study programme, students are expected to engage in research and produce a thesis for their 'Masters' degree' programme covering areas of interest. I am, therefore, conducting this research on livelihoods vulnerability in Rietfontein to fulfill the afore-mentioned requirement. I guarantee that the information gathered during this research will strictly be used for academic purposes, and the respondents' confidentiality will be respected. Having said this, I would like to request for your participation in facilitating my research by answering the few questions of my survey. You can of course, decide not to answer any uncomfortable questions or to pull out of the interview at any time if you feel like. Thank you in advance.

HOUSEHOLD LIVELIHOODS VALUATION SURVEY Date: _____

Household characteristics and income

1. Identification and location of household.

(1) Household number	
(2) Village name	**Rietfontein**

2. We would like to ask some questions regarding this household.

1. Who is the head of this household head?

Resident married male [ ] Married male working away [ ] Widow/widower [ ] Divorced [ ] Single/never married [ ] Other, specify?	
2. If the head of the household is away, who makes most of the domestic decisions? Head [ ] Wife [ ] Son [ ] Other [ ]	
3.When was this household formed?	*Years*
4. Was the household head born in this village? *If 'Yes', go to 6.*	
5. If **'No':** how long has the household head lived in the village?	*Years*

3. Household members. Who are the members of this household and what is their level of education?

Personal identification number	**Name/code of household member** *(see codes below)*	**3. Age**	**4. Sex** *(M=male F=female)*	**5. Education** *(number of years completed)*
1				
2				
3				
4				

Codes: 1=Father; 2= Mother; 3=Son/Daughter; 4=Grandchild; 5=Son/Daughter in law; 6= Other family members

4. Which people in this household have a full-time, part-time or casual job?

Name No	**Job type**	**Full-time/part-time/casual**	**Self-employed (describe)**	**Local/Remittance**	**R/month**
1					
2					
3					

5. Do any of the household members earn any type of grant/income? If yes tick

Name	**Tick**	**No of grants**	**R/month**
Old-age pension			
Disability grant			
Child grant			
Posing for photos			
Any other income *Specify*?			

Livestock

1. Does your household own any livestock? ***Yes [ ] No [ ]***

2. If **Yes**, fill out table, if **No**, go to section **C**

Animal	Number	Where kept	Animal	Number	Where kept
Cattle			Horses		
Sheep			Chickens		
Goats			Other; specify		
Donkeys					

Where do your livestock graze? _____

6. Do you pay for fencing, medicine (dip & dose) or grazing fees? ***Yes [ ] No [ ]***

If **Y**, how much and how often

a. Fencing:R_____frequency:_____

b. Medicine: R_____frequency:_____

c.Grazingfee:R_____frequency:_____

7. What benefits (uses) does your household get from the livestock?

Livestock products	Total production	Own consumption	Quantity sold	Cash costs (specify)	Estimate value of each (R)
Meat					R
Milk					R
Skins		R			R
eggs		R			R
manure		R			R

Others: specify					
Transport		R			

Was livestock used for any ceremony or paying lobola, if so what was the total cost? R_____

Give information of inputs used in livestock production

items	Hired labour	Unpaid labour use	Costs of accessories	Cost of hired labour/day/month	

Shocks and coping strategies in livestock production.

Event ID	***Type of event***	***When it occurred***	***Estimated severity on HH***	***Estimated loss of income due to the event***	***Estimated loss of assets due to the event***	***Major coping strategy***	***2nd coping strategy***	***3rd coping strategy***
1.								
2.								
3.								
4.								

Did the household change its consumption pattern due to the event? If Yes, explain _____

_____

Was any asset affected by the shock, and how was it affected?
_____
_____
_____

Estimate the value of the assets that were affected: R _____

How many years did it take to recover from the event?

Explain in detail how this event/shock affected your household and livelihood options:
_____
_____
_____

Coping strategy for shock event

Coping strategy 1: Change in number of livestock

livestock	Which livestock did you change?	What did you change?	When did you start to change?	How did you change?	Number of livestock before the shock
1.					
2.					
3.					

Did you incur any costs for changing? Specify
_____
_____

Coping strategy 2: Change in assets and household durables

Assets	Which assets did you change?	What did you change?	When did you start to change?	How did you change?	Number of assets before the shock
1.					
2.					
3.					

Coping strategy 3: change in household expenditure

1 Did your HH change the amount of household consumption expenditure to deal with this shock event only?

Did you change HH consumption expenditure?

HH cost	Which HH consumption did you change?	What did you change?	When did you start to change?	How did you change?	Previous expenditure before shock
1.					
2.					
3.					
4.					

Coping strategy 4: Change in output sales

Did your HH change the output amount sold to different buyers to deal with this shock event only?

livestock products	Which livestock product did you change?	What did you change	When did you start to change?	How did you change?	Previous expenditure before shock

1.					
2.					
3.					

Coping strategy 5: Change in households labor allocation

1 Did your HH change the household labor allocation to deal with this shock event only?

HH member	HH member	Activity before the shock	Location	Activity after the shock	location
1.					
2.					
3.					

1. Self-employment 2. Own agriculture 3. Off farm employment 4. unemployed
5. Collecting + others

Coping strategy 6: Change in amount of transfer/remittances

1 Did your HH receive/give a different amount of transfer/remittances from different sources to cope/deal with this shock event only?

Transfer ID	Sources of transfers/remittances you received/ give	Identify HH member ID	Specify type of funding or programme	Identify location	When did you start to change?	How did you change?

Coping strategy for shock event ID:

Coping strategy 7: Change in amount of borrowing

1 Did your HH increase or decrease amount of borrowing from different sources to cope/deal with the shock event only? Yes [ ] No [ ]

If your HH increase or decrease amount of borrowing from different sources to cope/deal with other shock events simultaneously, please specify those shock events;

C. Long term illness

1. Is HIV/AIDS an issue in this area? Y/N/don't know

2. Can you talk openly about it? If yes, with who?

3. Is anyone taking any long time medication in the household If yes, is it household head, child etc.?

4. Have you lost any household/family member in the last 5 years? If yes who?

5. Cause of death……

6. Any impacts on household income, expenditure as a result of the loss?

APPENDIX 2: **Interview guide/ checklist for key informants**

Livelihoods

1. What are the main sources of livelihood?
2. What other livelihood strategies do they do?
3. What are the main barriers to access their livelihood sources?

Livestock

4. Who can own livestock?
5. What is the prevalence of drought in this region?
6. How does drought affect livestock production?
7. How does water scarcity affect other livelihood activities?

History

8. Please explain the history of the Mier people's movement (voluntary or forced) during the past.
9. Was this the tribe's original location or was it resettled by the government?
10. Was it voluntary or not?
11. Which political changes have affected the community over the years?

Resources

12. What assets are owned by different households?
13. What determines access to resources?
14. What strategies are utilized to enhance access to resources?

Gender

15. Is there any difference between men and women regarding access to land ownership?
16. Are there any customary laws which disadvantage men or women in particular?
17. Are there any women who own livestock?
18. Are female or male headed household more susceptible/prone to hazards/natural disasters?