

RESPONSES TO THE LINKED STRESSORS OF CLIMATE CHANGE AND HIV/AIDS
AMONGST VULNERABLE RURAL HOUSEHOLDS IN THE EASTERN CAPE, SOUTH
AFRICA

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ABSTRACT

Climate change and the HIV/AIDS epidemic are two of the most critical long-term global challenges, especially for Africa and even more so Southern Africa. There is great concern that the poor will be unable to adapt to the impacts of climate variability and change while HIV/AIDS will exacerbate the impacts of such stressors and deepen the insecurities of many communities already affected by this disease. Studies that consider the interlinked effects of climate change and HIV/AIDS along with other multiple stressors are increasingly needed.

This study, located in two rural communities in the Eastern Cape Province of South Africa, namely Lesseyton and Willowvale, assessed the responses of vulnerable households to the linked shocks and stressors of climate change and HIV/AIDS. This involved assessing, through household surveys, life history interviews and Participatory Learning and Action (PLA), the way in which multiple stressors interacted and affected vulnerable households, the way in which these households responded to and coped with such shocks and stressors, and the barriers which prevented them from coping and adapting effectively.

Unemployment emerged as the dominant stress amongst households. The lack of development and having too few opportunities for employment has limited vulnerable households from being able to invest in assets, such as education or farming equipment. This, in combination with the impacts of increased food and water insecurity from recent drought, has created an extremely vulnerable environment for these households. They rely largely on two important safety-nets, namely social capital and the use of natural and cultivated resources; however the latter has been limited due to the impacts of water scarcity and an inability to farm. It was evident that there was little planned long-term adaptation amongst households and from government. Maladaptive short-term coping strategies, such as numerous household members depending on one social grant and transactional sex, were too often relied upon, and although they may have helped relieve the stress of shocks momentarily, they did not provide for the long-term well-being of individuals and households.

Poor communication and capacity between the different levels of government and between the government (especially at the local level) and the two rural communities has created an environment full of uncertainty and lacking in advocacy. Local government needs increased human, informational, and financial capacity and a clear delegation of responsibilities amongst the different departments in order for the two communities to benefit from the implementation of support strategies. There is also a great need for educational programmes

and capacity development within the two rural communities, particularly based on improved coping and longer-term adaptation strategies in response to climate change in order for households to better prepare themselves for the future.

Keywords: Vulnerability, coping, climate change, HIV/AIDS, multiple stressors, barriers.

DECLARATION

This thesis has not been submitted to a university other than Rhodes University, Grahamstown, South Africa. The work presented here is that of the author unless otherwise stated.

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**CHAPTER ONE:
INTRODUCTION**



1.1 Introduction

It is becoming increasingly evident that climate change and the HIV/AIDS epidemic are two of the most critical long-term global issues facing contemporary society (UNEP and UNAIDS, 2008) and will increasingly become major challenges for Africa, especially southern Africa (Drimie and Gillespie, 2010). Given the increase in climate variability and extreme events, it is important to understand, from the perspective of local rural households, how households and communities are being impacted and whether or not they are coping and adapting to this change and associated shocks (Adger *et al.*, 2006; Stringer *et al.*, 2009). There is a growing recognition amongst those undertaking research on the human dimensions of climate change that climate change impact studies need to take into account the effects of other on-going multiple stressors and global drivers of change. Research which focuses on one specific threat may yield an in-depth understanding of the topic, however, in reality people's lives are plagued by a host of social, economic, political, and biophysical challenges which interact in complex ways to generate vulnerability (Reid and Vogel, 2006; Quinn *et al.*, 2011).

The impacts of climate change will be far reaching due to its all-inclusive and multi-dimensional nature especially for poorer, more resource dependent rural communities (Agrawal *et al.*, 2009). Declines in the provision of ecosystem services, biodiversity loss, increased extreme events and variability in weather patterns, droughts, floods, increased temperatures, the spread of disease and pathogens, food insecurity, changes in agricultural productivity, changes in land suitability, and hindered development are just some of the impacts that climate change will bring (Agrawal *et al.*, 2009; Reid and Vogel, 2006; Quinn *et al.*, 2011). HIV/AIDS will exacerbate existing livelihood shocks and undermine livelihood strategies previously used to respond to such shocks. This will weaken community and household level capacity as well as that of key stakeholders including state extension services (Drimie and Gillespie, 2010). These manifestations of climate change and the impacts of HIV/AIDS can combine to increase a rural population's exposure and sensitivity to livelihood erosion, mainly through increased exposure to environmental risk, loss of livelihood opportunities and increased stress on a variety of formal and informal social institutions (Agrawal *et al.*, 2009).

The challenges of climate change and HIV/AIDS share many interactions and similarities, however, limited research and analysis has been done to look at their combined impacts

(UNEP and UNAIDS, 2008). Consequently, there is an increasing need for studies that consider the interlinked effects of climate change and HIV/AIDS along with other multiple stressors on human vulnerability. Only a few studies have had such a focus (Drimie and Casale, 2009; Drimie and Gillespie, 2010; UNEP and UNAIDS, 2008). Recognising this gap, the University of Alberta in collaboration with Rhodes University have been involved in a research project for the International Development and Research Council (IDRC), titled “Vulnerability, coping and adaptation within the context of climate change and HIV/AIDS in South Africa: Investigating strategies and practices to strengthen livelihoods and food security, improve health and build resilience”. This particular study aims to contribute to the broader project by assessing the responses of households to the stressors they face, particularly climate change and HIV/AIDS. This involved assessing the way in which multiple stressors interact and affect vulnerable households, as well as identifying the key challenges and risks that household’s face and the way in which they respond to such stressors and risks. It is very important for this study that the methods employed allow for the elucidation of deeper underlying processes, perceptions, and understandings. Therefore the study employed a mixed method approach, including a quantitative survey as well as qualitative life history interviews and participatory workshops using Participatory Learning and Action (PLA) approaches (see Chapter 4).

1.2 Aim and objectives

The overall aim of this study was to assess the responses of vulnerable rural households to multiple stressors including climate change, HIV/AIDS, and others identified in the course of the research. Objectives were:

- To explore, from a perspective of local rural people, what makes communities, households and individuals vulnerable.
- To identify the key shocks and stressors that vulnerable households face.
- To assess how multiple shocks and stressors interact and effect on vulnerable households.
- To identify the ways in which vulnerable households respond to such shocks and stressors, with a focus on the use of safety-nets including natural and cultivated resources, social capital, and social protection.
- To identify and understand the constraints and barriers hindering vulnerable households’ ability to respond to shocks and stressors.

An important final consideration is what households need in order to cope and adapt better in the future. Therefore the final objective is:

- To propose what support households might need to facilitate improved coping, adaptation and transformation in the future.

1.3 Structure of the thesis

The empirical basis of this thesis was formed from surveys, workshops and life history interviews of local experiences of shocks, stressors and change, and the coping and adaptation responses to these in two rural communities, Lesseyton and Willowvale, in the Eastern Cape Province of South Africa. The research focused on the complex nature of vulnerability and aimed to understand the interacting factors which contribute to it.

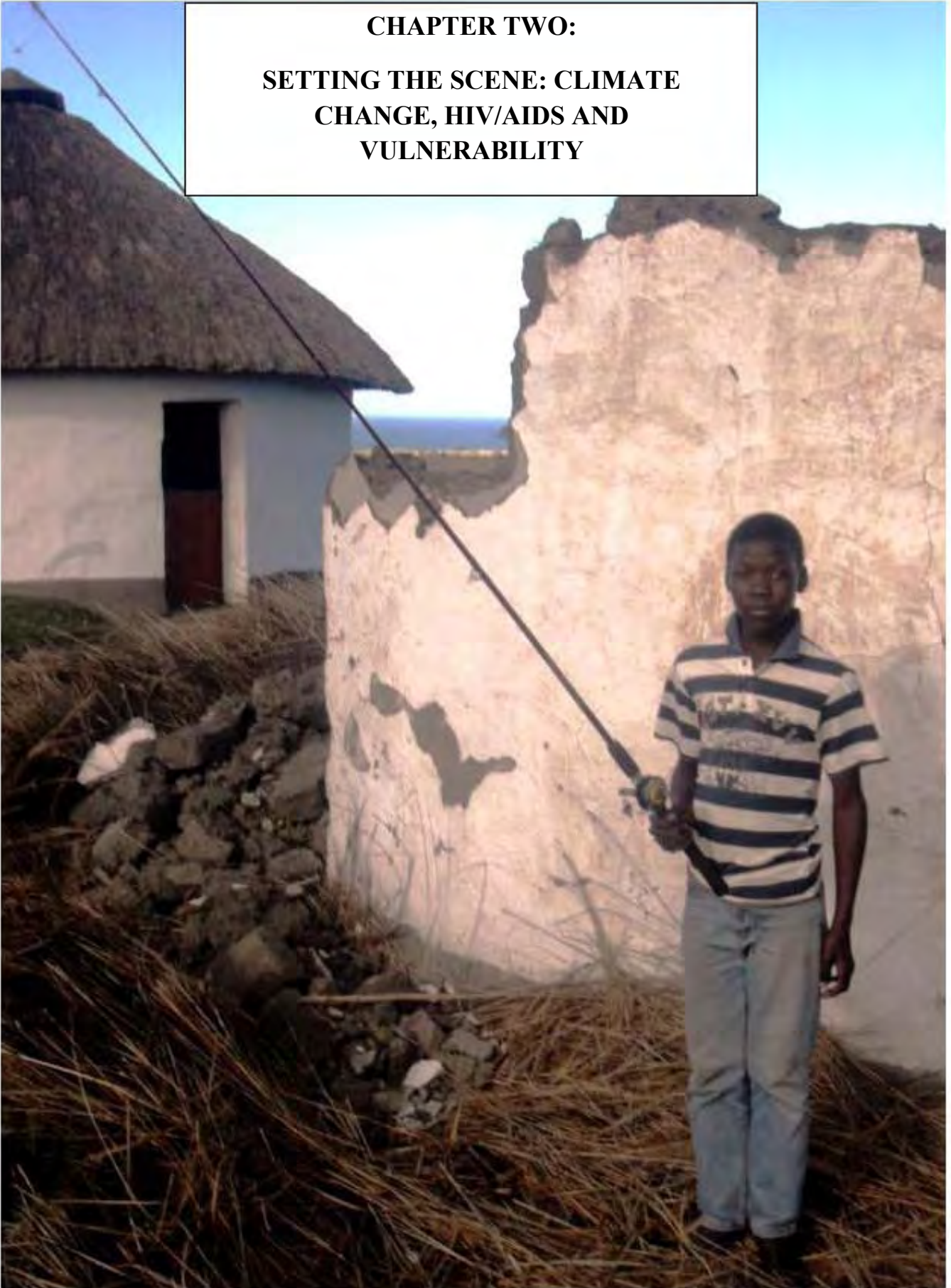
Chapter 1 (this chapter) provides a brief introduction summarising the rationale for this research and presents the study aim and objectives. This is followed by a detailed discussion of the broader theoretical and conceptual context of the study (Chapter 2) including a literature review of relevant research trends and perspectives as well as definitions of key concepts and terms. Chapter 3 contextualises the study by providing the South African position in relation to climate change, HIV/AIDS and social protection. Chapter 3 also provides a more specific look at the relevant socio-economic and biophysical context of Eastern Cape Province, and more specifically, Lesseyton and Willowvale. Chapter 4 is the last of the background chapters and introduces the reader to the research design and methodological approaches used in the research.

The next set of chapters (Chapters 5 to 7) presents the findings of the study. Chapter 5 provides a profile of the households surveyed and highlights the existing local vulnerability context, whilst Chapter 6 focuses on households' exposure to multiple shocks and stressors and the resultant impacts. The last of the results chapters, Chapter 7, presents households' responses to the shocks and stressors discussed in Chapter 6. The survey and life history interview results of actions that people have taken to deal with vulnerability are presented, as well as the barriers to coping and adaptation in both sites.

The final chapter, Chapter 8, provides an overall synthesis of the thesis. It discusses how households have used various safety-nets and brings together the key messages emerging from the results presented. It aims to illustrate how these key messages relate to the literature

and ultimately what they mean for adaptation in South Africa's rural areas. The policy and research implications are discussed followed by suggestions for possible future research.

**CHAPTER TWO:
SETTING THE SCENE: CLIMATE
CHANGE, HIV/AIDS AND
VULNERABILITY**



2.1 Theoretical framework: complex socio-ecological systems

Humans have had an increasing impact on the earth's bio-, geo-, and hydro-spheres (Jahn *et al.*, 2009) over the decades, and because of this, Paul Crutzen (the Nobel Prize winning chemist (2002)) has suggested that we have entered a new geological epoch called the 'Anthropocene'. If one takes this idea seriously, it is impossible to separate nature from society as human societies have always been dependent on ecosystem services and functioning, and therefore, this has created system interdependencies involving complex human-nature relationships (Jahn *et al.*, 2009). A socio-ecological system can be defined as "A bio-geo-physical unit and its associated social actors and institutions. Social-ecological systems are complex and adaptive and delimited by spatial or functional boundaries surrounding particular ecosystems and their problem context." (Glaser *et al.*, 2008).

Socio-ecological systems, complexity research and transdisciplinarity share close conceptual and methodological relations as their ideas are similar (Hadorn *et al.*, 2008; Jahn *et al.*, 2009; Norberg and Cumming, 2010). Holling (1998) provides an insightful explanation of the structure of the problems involved within complex socio-ecological systems:

"The answers are not simple because we have just begun to develop the concepts, technology and methods which can address the generic nature of the problems. Characteristically, these problems tend to be systems problems, where aspects of behaviour are complex and unpredictable, and where causes, while at times simple (when finally understood), are always multiple. They are non-linear in nature, cross scale in time and space, and have an evolutionary character. This is true for both natural and social systems. In fact, they are one system, with critical feedbacks across temporal and spatial scales. Therefore, interdisciplinarity and integrated modes of inquiry are needed for understanding. Furthermore, understanding (but not necessarily complete explanation) of the combined system of humans and nature is needed to formulate policies."

Understanding and predicting complex system behaviour has been an important challenge which has risen out of the realisation that complex socio-ecological systems are responsible for much of the unpredictable behaviour observed throughout the world (Commonwealth Scientific and Industrial Research Organisation (CSIRO), 2011). The behaviour of these systems are characteristically complex and unpredictable, multiple, non-linear and cross-scale, with many critical feedbacks (Ostrom, 2007).

Shocks and stressors, such as climate change and HIV/AIDS, do not act in isolation, but rather have compounded effects and interactions embedded within complex socio-ecological systems. Poor rural communities do not have the capacity or resources to respond to unexpected shocks and stressors, especially when coupled with other stresses (Adger and Vincent, 2005). Human vulnerability can have implications for the provision of ecosystem goods and services as poor people frequently rely on natural capital as a form of coping and insurance (Takasaki, 2010). An over-reliance on ecosystem goods and services, which can occur during times of heightened stress amongst people, can result in ecosystem degradation (Osbahr *et al.*, 2008, Shackleton *et al.*, 2010, Völker and Waibel, 2010), and render ecosystems more vulnerable (Dovie *et al.* 2002) which, in turn, has implications for food security (Shackleton and Shackleton, 2004; Turpie *et al.*, 2006). Food and nutritional security, in turn, is important in slowing the progression of HIV/AIDS (UNEP and UNAIDS, 2008) (see section 2.3.5.1).

This research is embedded within a complex socio-ecological paradigm as it aimed to understand how multiple shocks and stressors linked to climate change and HIV/AIDS interact and how this affects rural household and community vulnerability, poverty, livelihoods, and behaviour and responses to change. How people then respond to shocks and stressors and change in both social-political and ecological systems is an important focus of this study. To develop understanding of this, definitions of key concepts and terms are explained in the following sections.

2.2 Linking climate change and HIV/AIDS

Climate change will be one of the primary challenges facing future development, especially for Africa, a continent already struggling with issues such as poverty, poor health and food insecurity (Mertz *et al.*, 2008). There is substantial evidence that climate change is occurring and given our historic emissions surpassing the critical 2°C threshold is likely regardless of mitigation efforts (Berrang-Ford *et al.*, 2011; Smith *et al.*, 2009; Parry *et al.*, 2009; Department of Environment and Heritage (DEH), 2005). However, the term ‘uncertainty’ is a key conceptual issue in climate related research. Climate change is certain; however the way in which this change will manifest at the local level is still uncertain (IPCC, 2001). Although there may be an agreement on the qualitative impacts, there is no precise information on the exact changes that will occur in terms of droughts, floods, distribution of temperatures and impacts on crop production (Shewmake, 2008). However, changes in precipitation patterns,

increased temperatures and impacts on ecosystem services will likely have pronounced impacts on crop yields, livelihoods, health and human well-being (IDRC project proposal, 2010), especially in southern Africa where increasing temperatures are likely to increase the occurrence of drought causing detrimental effects on agricultural systems (Thomas *et al.*, 2007; Reid and Vogel, 2006; Vetter, 2009; Lobell *et al.*, 2008).

The developing world will also face a host of other shocks and stressors including policy changes and market fluctuations, inequity, poor governance, trade liberalisation, and other infectious diseases (Misselhorn, 2005; O'Brien and Leichenko, 2000; O'Brien *et al.*, 2004; O'Brien *et al.*, 2009; Shackleton and Shackleton, 2012). HIV/AIDS will exacerbate the impacts of these other shocks and stressors as well as deepen the insecurities of many communities already affected by the disease (Gillespie and Kadiyala, 2005). For example, multiple interacting processes of change will influence a household's capacity to respond to HIV/AIDS. The household's response capacity may have already been weakened by the multiple interacting shocks and stressors, which could set in motion a vicious cycle of deteriorating conditions. These processes of change influence the contextual environment of households which in turn influences the exposure and response capacity of a household to such processes (Bolton and Talman, 2010; O'Brien *et al.*, 2009). In such a dynamic cycle, vulnerability is generated by exposure to change, reduced capacity to respond to such a change, as well as the outcomes of such interacting processes.

Communities with high rates of HIV/AIDS will be especially vulnerable to the impacts of climate change (UNEP and UNAIDS, 2008). There have been two major pathways identified in which climate change and HIV/AIDS are likely to interact (UNEP and UNAIDS, 2008). These are, firstly, through the deterioration of global and regional food security. Good nutrition helps increase one's immune system and helps slow the progression of HIV/AIDS. With food security reduced due to climate change, health impacts will increase particularly for those already living with the epidemic (UNEP and UNAIDS, 2008). Production and income will be reduced as labour and capital deteriorate, along with undermining household's ability to cope with other shocks (Drimie and Casale, 2009). Secondly, it has been predicted that climate change will alter the spread of infectious diseases (especially malaria in southern Africa), which will interact with HIV/AIDS to fuel increased incidence of poverty and food insecurity (UNEP and UNAIDS, 2008; van Jaarsveld and Chown, 2001).

Even though people have lived and coped with climate variability throughout history, the concern is that today the capacity humans to adapt has been affected by the scale of the projected impacts, existing social, economic and political vulnerabilities, and inadequate attention towards adaptation (Berrang-Ford *et al.*, 2011; Bunce *et al.*, 2010). HIV/AIDS, high levels of poverty, lack of infrastructure and basic services, poor access to health care, unemployment and education are just some of the key challenges already escalating vulnerability (Bunce *et al.*, 2010). These multiple stressors interact with climate change and HIV/AIDS in numerous ways which affect households' and communities' adaptive capacity, threatening their livelihoods and driving the cycle of poverty (Bunce *et al.*, 2010; Shackleton and Shackleton, 2012; Drimie and Gillespie, 2010).

2.3 Definitions and concepts

The growing body of literature on climate change, adaptation and vulnerability contains a vast array of terms, which may share similar meanings, or may have different meanings when used in different contexts (Brooks, 2003), therefore being unclear. The following section aims to provide clarity on the array of terms and concepts used throughout this thesis.

2.3.1 Stressors, shocks and risk

Understanding vulnerability and crisis involves unravelling the multiple shocks and stressors at play (Drimie and Casale, 2009). Shocks and stressors may have multiple causes which may vary over different spatial and temporal dimensions (Ostrom, 2007) (see Chapters 5 and 6). There are a variety of micro and macro-level environmental and social changes which can manifest from either gradual (land degradation) or sudden shocks (death and floods) and can impact on the individual, household and community levels (Drimie and Casale, 2009; O'Brien *et al.*, 2009). Leach *et al.* (2007) explains that vulnerabilities that arise from enduring shifts are termed 'stressors', whereas vulnerabilities that arise from temporary disruptions are termed 'shocks'. Shocks can be idiosyncratic whilst stressors are generally common (however, there is the potential for overlap) with the former referring to individual risk and the latter referring to the aggregate or economy-wide risk (Dercon, 2002).

Numerous studies have defined the term risk (Downing *et al.*, 2001; IPCC, 2001; Smith, 1996). In the context of climate change, risk refers to the result of the interaction of disturbances (shocks and stressors) with the properties of exposed systems, such as their sensitivity (see section 2.3.2) or social vulnerability (World Bank, 2012a). Risk can also be

defined as the combination of an event, its likelihood and its consequences or as an equation where risk equals the probability of climate hazard multiplied by a given system's vulnerability (World Bank, 2012a). Climate change alone will seldom have a direct effect on countries or communities, but rather it is just one of the stressors which facilitates and exacerbates existing vulnerabilities (Ospina and Heeks, 2012). Each country or community will have a unique situation, and therefore adaptation and coping strategies should be appropriate to existing vulnerabilities.

The ways in which multiple shocks and stressors interact will inevitably introduce a great deal of complexity into such a study. Communities risk being exposed to double or even multiple shocks and stressors as these can be hidden along with their interactions across the different scales at play (Bunce *et al.*, 2010). The nature of shocks and stressors has large implications for one's capacities to cope as the timing, frequency, intensity and the persistence of the impacts are important determining characteristics (Dercon, 2002). For example, it will be easier to cope with small but frequent shocks, such as a transient illness, than a large, infrequent stressor, such as a chronic illness. Responses to idiosyncratic shocks can be shared within the community; however common stressors affect the entire community and therefore it becomes increasingly difficult to share the responses to such stressors amongst the community as everyone has been impacted (Dercon, 2002). In this study, stressors refer to the longer-term disturbances, such as unemployment and poverty, whilst shocks refer to short-term disturbances, such as floods or fire.

2.3.2 Vulnerability and poverty

Different disciplines have different definitions and concepts of vulnerability, and therefore different ways of assessing vulnerability (Alwang *et al.*, 2001). The term 'vulnerability' is commonly used to relate to some type of situation of deteriorating conditions (Drimie and Casale, 2009). Geographers have defined vulnerability as the extent to which a region, sector, ecosystem, or social group is able to respond to natural and socioeconomic shocks once they have been impacted by environmental and economic changes (Leichenko and O'Brien, 2002). Economists who study the stochastic nature of poverty define vulnerability as a measure of future well-being, reflecting a household's future scenario (Shewmake, 2008). Poverty is an important component of vulnerability (Drimie and Casale, 2009). Poverty can be understood as a multi-dimensional concept of economic, political, human, socio-cultural and protective capabilities, whereas vulnerability is understood in terms of exposure,

sensitivity and capacity to adapt to shocks and stressors (as explained below) (Drimie and Casale, 2009). The way in which poverty is linked to vulnerability is that it creates conditions of increased vulnerability, as poor people have few physical and financial assets, limited income and poor access to basic services (see Chapter 5), and are therefore likely to be significantly more affected by shocks and stressors (Drimie and Casale, 2009). This increased vulnerability reduces an individual's capacity to respond and adapt to shocks and stressors, pushing them deeper into chronic poverty (Parker and Kozel, 2007). It is important to distinguish between chronic poverty and transitory poverty, where chronic poverty persists for years or even lifetimes and transitory poverty is more short-lived (Barrett and McPeak, 2004; Devereux, 2002; Drimie and Casale, 2009). The magnitude and duration of poverty are also important differentiating concepts to consider. Poverty can also be defined as structural or stochastic, where structurally poor refers to the inability to generate expected income or expenditures above the poverty line due to the lack of asset endowments, and stochastically poor refers to asset holdings which may generally be sufficient, however observed income or expenditures are below the poverty line (Barrett and McPeak, 2004).

The most widely accepted definition of vulnerability is that of Chambers (1989) which explains that vulnerability refers to the exposure to likely events and stress and the means for coping with them. It distinguishes two sides to the term 'vulnerability': the external side, which refers to risks, shocks and stress to which individuals or households are exposed, and the internal side, which refers to individuals' or households' means of coping without damaging loss (Chambers, 1989). External vulnerability is affected by various biophysical and socio-economic factors, such as climatic shocks or conflict, whereas internal vulnerability is more complex as it includes behavioural, cognitive, and institutional foundations which influence how individuals respond and cope with change (Jones, 2010; McCarthy *et al.*, 2001).

Three common dimensions of vulnerability include exposure, sensitivity, and the capacity to adapt or respond to such situations (IPCC, 2001). In terms of human vulnerability, exposure generally refers to the degree to which people are exposed to external hazards such as disease and storms. Sensitivity refers how at risk people are to certain threats and the degree to which they will be impacted by such threats. A person's adaptive capacity refers to how able they are to respond and recover from exposure to threats (Shackleton and Shackleton, 2012).

Vulnerability has been defined as an ‘end point’; however it can also be analysed as a starting point where people’s vulnerability is determined by pre-existing socioeconomic, structural and political factors which undermines household adaptive capacity and determines how people are able to cope and adapt to external shocks and stressors (Fussel and Klein, 2006), such as the different shocks and stressors illustrated in Figure 2.2. A household’s response will inevitably be subject to the various biophysical, socio-economic, cultural, technological and institutional conditions including the availability of assets. For example, the cost of a response to a particular shock or stressor may influence the way in which other factors are responded to, possibly undermining a household’s ability to respond adequately to other changes. The frequency and timing of stressors and shocks therefore have important consequences for a household’s response and coping capacity (O’Brien *et al.*, 2009). Having a greater understanding of exposure and sensitivity to shocks and stressors across different scales, particularly the impacts they may have on different social groups (see Chapter 6), is critical in order to reduce vulnerability (Bunce *et al.*, 2010). It is important for research such as this to move beyond focusing on assessments of linear relationships of vulnerability and focus on the reasons why people are impacted by and struggle to cope with shocks and stressors (Bunce *et al.*, 2010).

In this study, the assessment of vulnerability aimed to incorporate the above mentioned aspects of vulnerability. This study relied largely on Chambers’ (1989) definition of vulnerability as well as the IPCC’s (2001) three common dimensions of vulnerability. This study also looked at vulnerability as an ‘end point’ and ‘starting point’, and incorporated Jones (2010) conceptual groupings of barriers to coping and adaptation (see section 2.3.6). Households’ pre-existing socio-economic, environmental and political conditions (Chapter 5) were considered to understand the broader vulnerability context of each study site. Household exposure (external vulnerability) and sensitivity to the impacts of shocks and stressors were assessed (Chapter 6) along with the way in which households responded to such shocks and stressors and what prevented household coping and adaptation (including internal vulnerability) (Chapter 7). This study considered the different spatial and temporal scales at which vulnerability plays out as well as the factors which influenced household adaptive capacity.

2.3.3 Livelihoods

A livelihood system can be defined as the capabilities, assets, and activities required for a means of living (Chambers and Conway, 1992; Ellis, 2000). Assets, which can be tangible or intangible, refer to a range of resources available to a household. These assets can be categorised into five different capital stocks, namely physical, natural, human, social, and financial capital (Department for International Development (DFID), 1999; Rakodi, 1999). The way in which these are combined, incorporating cultural and social choices, can be referred to as a ‘livelihood strategy’ (Twyman *et al.*, 2010). A local livelihoods perspective aims to explore issues from the perspective of local people, focusing on what they believe is important in their everyday lives (Hajdu, 2006). Livelihoods must be able to cope and recover from shocks and stressors as well as maintain or improve their capabilities, both now and in the future, without undermining their asset base in order for them to be sustainable. The terms ‘adaptive capacity’ and ‘resilience’ are important components of a livelihood system, and refers to a system’s capacity to experience shocks and stressors whilst still maintaining a similar function and structure (Walker *et al.*, 2006), or an individual, household, or community’s ability to cope with, recover from and adapt to shocks and stressors (Drimie and Casale, 2009).

Livelihood activities and the kinds of assets used can influence a household’s exposure and sensitivity to shocks and stressors as well as their adaptive capacity (O Brien *et al.*, 2009; Rakodi, 1999). The combined effects of climate change and HIV/AIDS can reduce multiple forms of capital (UNEP and UNAIDS, 2008), increasing household vulnerability and poverty. However, diversifying livelihood activities can reduce household exposure and sensitivity to shocks and stressors as well as increase household adaptive capacity. Livelihood diversification involves creating a collection of livelihood activities with different risk attributes, such as both farming and non-farming activities (Paavola, 2008), and can be used to increase a household’s resilience in response to shocks and stressors. The use of a variety of assets has been shown to help reduce stress. For example, in the face of drought or a costly event, natural capital can be used as a safety-net. Capital stocks, however, such as natural resources, can be eroded if not used sustainably (Shackleton and Shackleton, 2010), and human capital can be eroded by HIV/AIDS (Drimie and Gillepsie, 2009).

It is important to consider livelihoods and assets in determining household vulnerability to multiple shocks and stressors, as poverty stricken households are a consequence of

inadequate livelihood and asset endowments (Parker and Kozel, 2007). This will influence a household's ability to adequately respond to multiple shocks and stressors and inevitably increase vulnerability (Drimie and Casale, 2009). Assets also form an important part of adaptive capacity as they influence how households respond to shocks and stressors. In this study, the use of assets are considered in the way in which households utilise various forms of safety-nets, such as natural and cultivated resources and social protection (see section 2.3.5). Households' financial (Chapter 5) and social capital (Chapter 5; Chapter 7) was also considered, however a more in-depth assessment of households' asset and capital stocks in the same study sites can be found in Stadler (2012).

2.3.4 Responding to shocks and stressors

2.3.4.1 Coping, adaptation, and transformation

Coping and adaptation has been a strong focus within the climate change literature (Adger *et al.*, 2009; Agrawal *et al.*, 2009; Berrang-Ford *et al.*, 2011; Dessai *et al.*, 2009; Thornton and Manasfi, 2010; Quinn *et al.*, 2011). Agrawal *et al.* (2009) defines coping as using existing resources to achieve desired goals immediately after unusual or adverse conditions. Strengthening such coping capacities is an important aspect of adaptation and resilience (Agrawal *et al.*, 2009). Coping generally refers to a short term response to deteriorating conditions, whereas adaptation is a longer term response and usually involves more extensive livelihood changes (IDRC project proposal, 2010). McDowell *et al.* (2010) defines coping as a temporal survival strategy under constrained conditions whereas adaptation is the process of reinventing systems to better anticipate and avoid stress. The IPCC (2007) defined adaptation as “the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”. Adaptation within social systems occurs as a response (either anticipatory or reactive) to shocks and stressors and relates to the practices people use to overcome such adverse effects on their livelihoods and well-being (Jones, 2010; Reid and Vogel, 2006; The Energy and Resource Institute, 2007). Adaptation can however positively increase the vulnerability of certain groups or sectors to future shocks and stressors. In such a case, these outcomes are referred to as ‘maladaptations’ (Barnett and O’Neill, 2009). Maladaptation can be defined as “action taken ostensibly to avoid or reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups”

(Barnett and O'Neill, 2009), or undermine long-term adaptive capacity (as found through the over-dependence on social grants, Chapter 5).

Current observations of climate variability suggest that the incremental changes usually concerned with coping and adaptation strategies may be insufficient, and rather that a process of transformation may be required which includes fundamental changes in a system's function or structure (Kates *et al.*, 2012; Marshall *et al.*, 2012). Kates *et al.* (2012) explains that there are at least three types of adaptations which can be described as transformational: adaptations which are adopted at a much larger scale or intensity, those which are truly innovative both to a particular location or a system, and those that induce change on places and shift locations. Common adaptations can become transformational when used at a larger scale (Kates *et al.*, 2012). Scale is very important in distinguishing transformation: it can occur in larger socio-ecological systems when its principal members change the core functions of the system through collective action and institutional change (coordinated and uncoordinated action); changes at an industry level, resulting from numerous smaller changes made by individuals, can create transformation; at the individual scale, major changes in livelihoods, locations or identity, may also lead to transformation (Gallopin, 2002: Olsson *et al.*, 2006).

As in common adaptations, transformational adaptations can include both planned and autonomous adaptations, and be responsive or anticipatory (Kates *et al.*, 2012). Elements of transformation can be found in Thornton and Manasafi's (2010) eight fundamental human adaptation processes, namely innovation and revitalisation (section 2.3.4.2, Table 2.1). Although autonomous short-term coping strategies were largely used by respondents throughout this study (see Chapter 7), both planned and autonomous adaptations were considered, as well as whether they were responsive or anticipatory.

Despite the increasing importance placed on transformation as a response to change, there is still limited knowledge of whether there is sufficient capacity across scales (and amongst local rural communities and government) to facilitate transformation (Park *et al.*, 2012). Large scale transformation will require a critical mass of individuals engaging in transformation. However, not all individuals will have the same capacity to transform as some may experience considerable barriers (see Chapter 7, section 7.6), which will inevitably reduce the likelihood of a larger scale transformation (Adger *et al.*, 2009: Marshall *et al.*,

2012). This study considers the barriers which prevent longer-term adaptation and transformation within the households and their communities.

2.3.4.2 Typology of response strategies

Many studies have explored numerous adaptation strategies used by individuals, households and communities (Agrawal *et al.*, 2009; Christian Aid, 2009; Downing *et al.*, 1997; International Institute for Environment and Development (IIED), 2009; Leary *et al.*, 2007; Thornton and Manasfi, 2010). This study draws specifically on Thornton and Manasfi's (2010) eight fundamental human adaptation processes or response strategies described below (Table 1).

Table 2.1. Eight fundamental human adaptation processes (Thornton and Manasfi, 2010).

Human adaptation processes	Description
1) Mobility	Seasonal movement or permanent migration in response to economic and environmental stressors in order to achieve improved circumstances.
2) Exchange	The flow of goods and services, both physical and symbolic, between people.
3) Rationing	Controlling the circulation and consumption of limited resources as to extend their supply.
4) Pooling	Sharing, linking or having joint ownership of assets, such as wealth, labour and knowledge, across social groups.
5) Diversification	A form of risk management whereby one increases the variety of food, income production strategies, specialisation, etc., to enhance livelihoods.
6) Intensification	Increasing the availability and utilisation of resources by boosting their yield within a specific space and time.
7) Innovation	New, unplanned method or technique that arises to address a certain need.
8) Revitalisation	Restructuring society's ideologies, practices and organisation to reduce stress and create a

Human adaptation processes	Description
	more satisfying culture in response to environmental stress, or creating social change and producing more sustainable livelihoods through redefining humans' priorities, attitudes and practices.

Mobility or migration is not a new concept as shown by the nomads throughout history (Warner, 2011), and specific mention to the topic began appearing in the literature since the 1920's (Swallow, 1994). Human migration has increased (Thornton and Manasfi, 2010) as projected climatic impacts such sea-level rise, flooding, and drought, as well as poor economic conditions has created a wave of movement in search of better living conditions (Agrawal *et al.*, 2009; Stern, 2007; Warner, 2011; van der Berg *et al.*, 2002). Despite being an adaptation strategy, migration creates a connection between rural and urban risks (Quinn *et al.*, 2011) (see Chapter 3, section 3.2.4). Increased pressure on infrastructural capacity and ecosystem services (Sward and Codjoe, 2012; Thornton and Manasfi, 2010), the spread of infectious diseases, such as HIV/AIDS, and social conflict created due to competition and cultural differences, are some of the negative effects of migration (Reuveny, 2007; Sward and Codjoe, 2012). Despite the negatives, migration can have a lasting effect on how cultures evolve through the sharing of ideas and institutions promoting equality and economic efficiency (Richerson and Boyd, 2008). Migrant labour is a common trend in the rural areas of South Africa especially (as seen in Lesseyton and Willowvale, Chapter 5), where a significant proportion of household income is earned in urban areas (van der Berg *et al.*, 2002). A study by Djoudi and Blockhaus (2011) showed that there can be both positive and negative impacts of migration (as discussed in Chapter 7, section 7.2.3). However, migration may not be a viable strategy for every household as it depends on the existing infrastructure and services as well as household financial capacity.

Exchanges can include numerous risk sharing activities involving labour, assets and knowledge (Thornton and Manasfi, 2010). In rural communities, traditional ecological knowledge (TEK), which is the transfer of knowledge, practices and beliefs through cultural transmissions (Gomez *et al.*, 2012), plays an important role in developing coping and adaptation strategies. This body of knowledge is developed and evolved through trial and error over many generations to produce a range of strategies in response to stressors (Gomez

et al., 2012). Informal group-based risk sharing is another form of exchange which helps households respond to risks. Numerous studies highlight the importance of mutual and kin-based support as community safety-nets (Baylies, 2002; Lundberg *et al.*, 2000; Rugalema, 1999). However, there are still many households that have limited assistance whether due to poverty, poor community or kinship ties or the more discerning stigma which is attached to households suffering from HIV/AIDS (see Chapter 5, Table 5.8, HH66). HIV/AIDS can create limitations not only for individualistic attempts to secure income, but also for communal assistance (Baylies, 2002). The level of poverty within the community can also seriously affect the reliability and effectiveness of community safety-nets as poor households may not have much to offer other households in times of crisis (Baylies, 2002). Rural local institutions are important in this regard as they help shape a household's capacity to respond to stressors and adopt adaptation practices (Agrawal *et al.*, 2009). Community safety-nets can be unreliable and be subject to power structures. In such a case, those households most in need may be somewhat overlooked (Baylies, 2002).

Rationing is an effective adaptation strategy as it limits consumption and can ensure a more equitable distribution in response to limited or critical resources (Thornton and Manasfi, 2010). Adjusting food intake by spending less money on food or eating less are coping strategies adopted for more temporary shocks (see Chapter 5, Figure 5.4; Chapter 7, Figure 7.1). A study undertaken in the Limpopo Province of South Africa showed how struggling households had sent family members to eat with more well-off family members as a temporary coping strategy (Quinn *et al.*, 2011).

Pooling spreads risk across households by giving households the opportunity to use assets and resources (including knowledge), which are collectively held, during times of scarcity (Agrawal *et al.*, 2009). Farmers' cooperatives and community based organisations (CBO's) are forms of pooling together for collective action (Ngigi, 2009). Pooling of common resources and technology was shown to be more effective in combating climate extremes than any one specific piece of technology (Thomas *et al.*, 2005). It requires institutional capacity to manage activities across households, however, if maintained, it empowers and increases the adaptive capacity of households, especially those more dependent on natural resources, to the impacts of climate change (Agrawal *et al.*, 2009; Ngigi, 2009).

Diversification, which generally refers to food and income production strategies (Thornton and Manasfi, 2010), helps reduce vulnerability by spreading risks. Rule *et al.* (2005) showed,

in a study conducted in Sekhukhune District Municipality of the Limpopo Province, South Africa, that households who had more diversified income sources were more food secure. Households are often reliant on a combination of off-farm and land-based livelihood activities. Off-farm activities include local waged employment, government grants or migrant labour, whereas land-based activities include farming, animal husbandry as well as the use and sale of natural resources (Paumgarten, 2007). Multiple livelihood strategies are linked to early studies done on coping and survival strategies within the drought-prone areas of the Sahel. People diversified from agriculture to include many activities due to the high risk of harvest failure (Hajdu, 2006). Research has increasingly shown that livelihood diversification not only is positively associated with wealth accumulation, but also with a household's ability to cope with exogenous shocks and stressors (Block and Webb, 2001). Gender also has an influence on livelihood diversification as men and women often have different roles and responsibilities within a household and therefore diversify differently (Niehof, 2004). Diversifying livelihoods allows for potential risks to be spread as one would not be so dependent on a limited number of livelihood strategies (Paumgarten, 2007). As a coping strategy, it is important that a livelihood diversification strategy includes activities that are not susceptible to the same risks. Households which adopt livelihood strategies that incorporate a greater variety of choice and flexibility and have a broader asset base are more able to cope and adapt to shocks and stressors (Dekker, 2004). It also allows for households to be less reliant on kinship and community based support (Dekker, 2004).

Intensification is defined as the act of increasing the availability of resources, within a certain space or time, by boosting their yields (Thornton and Manasfi, 2010), or, agriculturally, as “increased average inputs of labour or capital on a smallholding, either cultivated land alone, or on cultivated and grazing land, for the purpose of increasing the value of output per hectare” (Carswell, 1997). Intensification may occur as a result of an increase in the gross output due to inputs expanding proportionately without technological changes, or a move towards more valuable outputs, or from technical progress which increases productivity (Triffen *et al.*, 1994; Carswell, 1997). An example of intensification can be seen through The Green Revolution: a somewhat controversial adaptive strategy (it increases food yield for an ever expanding population, however it reduces diversity and has been said to be maladaptive) (Thornton and Manasfi, 2010). Intensification can be achieved more simply by adopting more efficient practices such as reducing waste through recycling or fertilisation.

Innovation can have implications for climate change adaptation. True innovation, such as mutations in biological evolution, is quite rare and unpredictable therefore making it difficult to rely upon it for increasing adaptive capacity (Thornton and Manasfi, 2010). However, innovation has been found to contribute to adaptive capacity through identifying creative solutions and adaptation options, thereby shifting adaptation more towards transformation (as discussed in section 2.3.4.1) (Marshall *et al.*, 2012). New technologies will continue to play an important role against climate change, such as mitigation technologies which strive to achieve greater energy efficiency and reduced emissions of greenhouse gases (Esteban *et al.*, 2008; IPCC, 2007). Examples of innovation within the realm of climate change include technologies involving nano-technology, biofuels, carbon capture and ocean energy (Esteban *et al.*, 2008). Information and communication technologies (ICT's), which are becoming increasingly available in developing countries, provide innovative support through the use of mobile phones, internet-based applications, community radios, etc. to help exchange knowledge and information and provide early warning of extreme weather events (Ospina and Heeks, 2012). However, innovation, as well as each of the other response strategies mentioned, cannot singularly solve the issues of climate change, and therefore should be used in combination with other adaptive strategies.

Revitalisation, which has the potential to create transformation, is important for adaptation as it can allow for rapid social change in response to stressors (Thornton and Manasfi, 2010). Behavioural changes amongst the community are a vitally important step towards reducing the risk of crossing a threshold and improving their mitigation strategies (Barrett and McPeak, 2004). This may also include reverting to past strategies used, such as subsistence farming (see Chapter 8, section 8.3). Revitalisation can also restore ecosystems for example, by implementing efforts to restore important coastal habitats like wetlands, or to revitalize threatened species (Thornton and Manasfi, 2010). Revitalisation and transformational adaptation require supportive social contexts which act as key enabling factors by ensuring the availability of appropriate options and resources needed for change (Kates *et al.*, 2012).

The combination of adaptation strategies used can be complex as not only does it depend on the kind of environmental stress experienced, but also the available capital and asset base households or communities have (Thornton and Manasfi, 2010; see Chapter 7). Although adaptation strategies may be prompted indirectly by climate variability, they usually result from a variety of non-climatic shocks such as increased food costs and conflict (Jones, 2010).

Long-term climatic stressors may produce more lasting changes in behaviours (and transformation) which are more strategic, for example, changing one's farming technique or crop type in comparison to selling a few household assets in response to a sudden shock (Stringer *et al.*, 2009).

In the reality, adaptation is much less definitive and easily classified. Most often, households and communities will use several strategies simultaneously to respond to shocks and stressors. However, these adaptation typologies have helped identify the different types of response strategies employed by the households within the two study sites (Chapter 7).

2.3.5 The role of safety-nets in responding to shocks and stressors

The preceding discussion helped illustrate the different adaptation typologies or response strategies used by individuals, households, and communities. In addition to the adaptation typologies and strategies discussed above, safety-nets offer an alternative buffer against shocks and stressors. Safety-nets have been defined as transfers targeting the poor in some manner (World Bank, 2012b). Common examples of safety-nets include cash transfers (such as social grants, see section 2.3.5.2), transfers in kind (food aid), fee waivers (such as free health care), and conditional transfers (income support in the exchange for participation in work or training activities) (World Bank, 2012b). However, in addition to cash transfers, the use of natural and cultivated resources can also act as a buffer to shocks and stressors and can also be classified as a safety-net. Natural resources offer a vast array of goods and services to the rural poor, and play an important role in poverty reduction through the provision of ecosystem goods and services (Organisation for Economic Co-operation and Development (OECD), 2008). This study investigated whether and how households used various forms of safety-nets as a means of responding to shocks and stressors, with a particular focus on the use of natural and cultivated resources and social protection. The role of natural resources as a safety-net is further discussed in the following section (section 2.3.5.1) followed by a discussion of public safety-nets (section 2.3.5.2).

2.3.5.1 The use of natural and cultivated resources as a safety-net

The use and sale of natural resources, such as fuel wood, wild vegetables, fruit, bush meat and medicinal plants, has been an important way in which rural households insure themselves during times of hardship by providing a safety-net to turn to (see Chapter 5, Figures 5.1 and 5.2; De Klerk, 2007; Paumgarten, 2005; Paumgarten and Shackleton, 2011; Twine and

Hunter, 2009). Natural and cultivated resources enable rural poor households to substitute or supplement their income, purchasing costs or food and act as a buffer against shocks and stressors (Dovie *et al.*, 2006; Paumgarten, 2005; Shackleton *et al.*, 2001). The use of wild foods as a safety-net has been noted by Kaschula (2008), Hunter *et al.* (2007), and Shackleton (2006). In response to shocks or stressors, households may choose to liquidate a portion of their asset base to meet more urgent financial needs, for example selling livestock. Although liquidating assets may increase vulnerability against future shocks, it is a common strategy used to contribute towards household security (Niehof, 2007). An important distinction made by Niehof (2004) is that households have assets and use resources. In the case of liquidation, households convert their assets into resources. The available stocks, such as bank deposits, livestock and other financial resources, form part of a household's financial capital and it is this type of capital that is generally least available to the poor, forcing them to rely more on social and natural capital (Niehof, 2004) (see Chapter 7).

A study done by Dovie (2001) in the lowveld, South Africa, explains how 57.5 % of a household's income came from land-based activities, whereas off-farm activities contributed 42.2 %. Many households rely on natural resources for subsistence throughout the year; however when dealing with a specific shock, adjustments are made to their daily activities (Takasaki *et al.*, 2010). For example some riverine households in the Peruvian Amazon increased their labour allocation towards fishing following flooding of their fields. Half of the households had made some form of labour adjustment in response to a shock, of which fishing and gathering of non-timber forest products were quite common (Takasaki *et al.*, 2010). A study of the Mt. Elgon National Park in Uganda showed that environmental goods and services have played an important safety-net function for the rural poor in times of natural and social disaster (OECD, 2006). The use of natural and cultivated resources can also allow households to diversify their livelihood strategies and spread risk by relying on a variety of natural and cultivated resources to supplement or substitute their household needs (see previous discussion on diversification in section 2.3.4.2).

As rural households are pushed further into poverty, their reliance on natural resources tends to increase (Kaschula, 2008; Shackleton and Shackleton, 2004). The increased reliance on and unsustainable use of natural resources can result in ecosystem degradation (Shackleton and Shackleton, 2010) and deplete a household's asset base which will have serious implications for increased poverty and food insecurity. As discussed in section 2.2, the

erosion of household food security can exacerbate the progression of HIV/AIDS. In the context of climate change, the rate of ecosystem degradation and the resultant increase in food insecurity and the progression of HIV/AIDS will intensify. Also, the effects of HIV/AIDS, particularly the death of a productive member, on the use and role of natural resources as a coping strategy has been noted as an important research gap that needs further exploring (Hunter *et al.*, 2011). A more detailed analysis of the use of natural capital amongst households in Lesseyton and Willowvale can be found in Stadler (2012).

2.3.5.2 Social protection: a public safety-net

There has been an increased focus on social protection within the development policy agenda and it has been suggested that the use of social protection can positively contribute to poverty reduction (Davies *et al.*, 2008). Social protection and climate change adaptation have commonalities as they both seek to prevent people from falling deeper into poverty and passing the critical asset thresholds into chronic poverty or severe vulnerability (see section 2.3.2). Social protection aims to build individuals, communities, and society's resilience and reduce their vulnerability to shocks and stressors (Davies *et al.*, 2008; Davies *et al.*, 2009). However, not all views on social protection are positive: neo-liberal critics believe social protection is a fiscally unaffordable mechanism which makes no real lasting contribution to poverty reduction (Devereux and Sebates-Wheeler, 2004; World Bank, 1994).

Social protection can be defined to include all initiatives that transfer income or assets to, and protect the poor and vulnerable against livelihood shocks and stressors whilst improving the rights and social status of the marginalised. Overall, it aims to reduce economic and social vulnerability of the poor and extend benefits on to them (Davies *et al.*, 2009; European Report on Development (ERD), 2010; Devereux and Sabates-Wheeler, 2004).

The ERD (2010) mentions three ways in which social protection targets poverty and vulnerability: 1) social insurance, which offers protection against risks and events; 2) social assistance, which offers payments in cash and in kind to support people; and 3) social inclusion, which enables the poor to obtain social insurance and assistance through legal rights, entitlement, insurance markets and community systems. Example of instruments that can be used to achieve insurance, assistance or inclusion are contributory pension schemes; health, disability, unemployment, work injury insurance (insurance), and child support grants; old age pensions; emergency relief (food aid, drought and flood relief); self-insurance

(savings and credit); public works programmes (assistance); rights-based entitlement; labour market and work place regulations; and affirmative action (inclusion) (ERD, 2010). Davies *et al.* (2009) provides an in-depth look at the potential adaptation benefits of numerous types of social protection which fall into four categories: 1) protective, such as social pension schemes; 2) preventive, such as livelihood diversification and social insurance; 3) promotive, such as access to credit and common property resources; and 4) transformative, such as the promotion of minority rights and social funds. Each country has different policies on social protection (especially developing versus developed countries).

Climate change and HIV/AIDS in the context of multiple shocks and stressors are likely to reduce the efficiency of social protection initiatives, especially in southern Africa where the impacts have been projected to be more severe. Governments must therefore explore different approaches towards social protection and move towards the concept of ‘adaptive social protection’ to enhance the resilience of their initiatives (Davies *et al.*, 2009). In this study, the use of social protection, particularly government grants, proved to be quite extensive amongst households (see Chapter 5, Table 5.2). The forms of social protection in South Africa are discussed in Chapter 3 (section 3.1).

2.3.6 Barriers to adaptation

Barriers prevent individuals, communities, governments and businesses in undertaking adaptation activities and using resources effectively in order to respond to shocks and stressors, such as climate change impacts (Productivity Commission, 2012). Moser and Ekstrom (2010) define barriers to be obstacles or impediments that may delay or divert the adaptation process; however they can be overcome with considerable effort. In situations where barriers are too costly or pose absolute limits, the process of transformation (discussed in section 2.3.4.1) may be required to shift the system to a new state (Moser and Ekstrom, 2010; Shackleton, 2012).

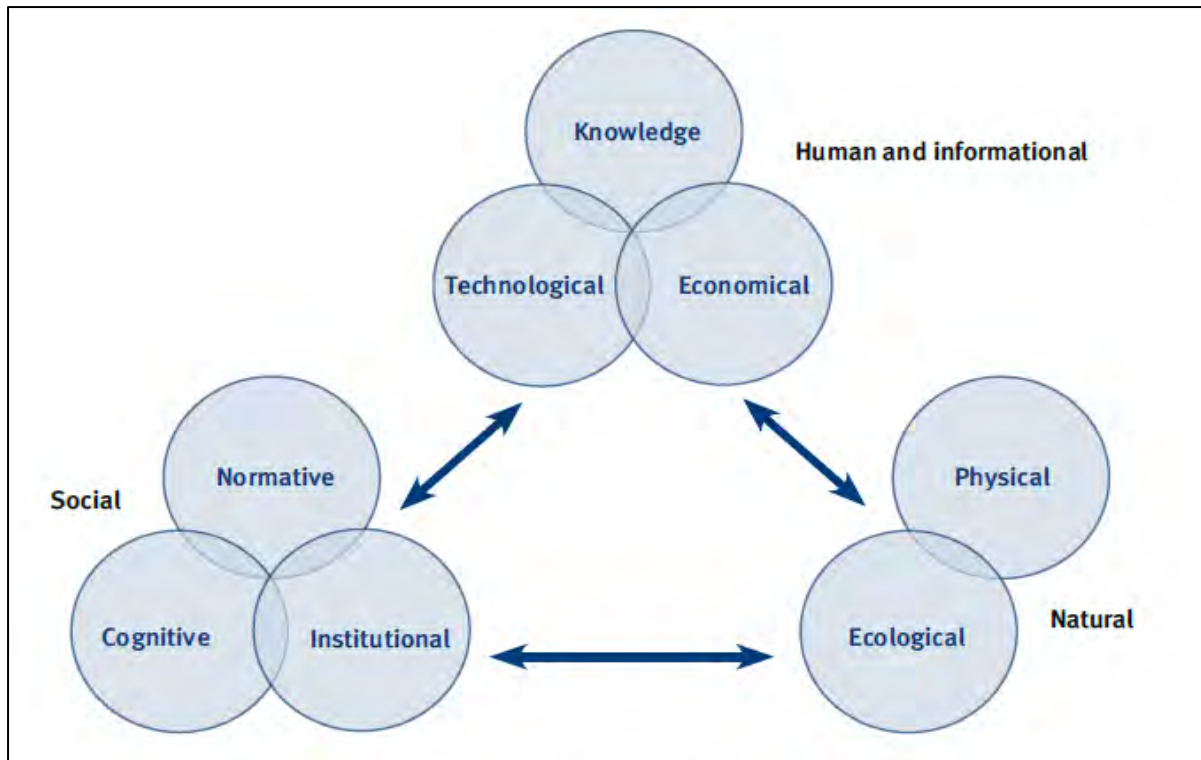


Figure 2.1. Conceptual groupings of limits and barriers to adaptation (Jones, 2010)

Barriers and limits to adaptation can be broadly categorized into three groups (Figure 2.1). Firstly, the natural environment comprising of ecological and physical barriers and limits, such as sea-level rise and temperature increases which can present critical thresholds to some systems. Secondly, human and informational barriers and limits comprise of technological, knowledge and economical restrictions. These include multi-scaled uncertainties present within forecast modeling, low levels of awareness and knowledge amongst policy makers regarding the impacts of climate change, and limited financial resources and capacity needed to facilitate adaptation plans. Thirdly, social barriers, comprising of psychological (cognitive), behavioral (normative) and institutional foundations and that influence how societies respond to change and stress (Jones, 2010) (Table 2.2). Social barriers comprise of a variety of cognitive and normative processes which can restrict individuals or households from pursuing the most appropriate forms of adaptation (Jones, 2010).

Table 2.2. Elements of social barriers to adaptation (Jones, 2010)

Social Barriers	Examples
Cognitive	<ul style="list-style-type: none">• Belief that uncertainty is too great to warrant taking adaptation action now• Lack of acceptance of risks associated with implementing adaptation action• Change not yet seen as a problem: temptation to wait for the impact then react
Normative	<ul style="list-style-type: none">• Cultural norms that discourage change and innovation: an unwillingness to adopt new practices• Traditional means of reacting to climate stress and shock may no longer be appropriate given that there is no cultural memory when it comes to future climate change• Restrictive traditional and religious norms (i.e. reliance on traditional means of weather forecasting and planting, restricted role of women in the household/community, dependence on traditional means of coping with climate hazard)
Institutional	<ul style="list-style-type: none">• Institutional inequities and social discrimination restrict access and entitlement for certain groups• Social/cultural rigidity: lack of institutional flexibility

Institutional barriers act as the ‘rules of behaviour’ and have a profound influence on cultural and societal norms and behavior, belief systems, and organisational structure (Jones, 2010; Ostrom, 2005). The IPCC (2007) acknowledges that social and cultural limits to adaptation have not been well understood and researched, therefore presenting a knowledge gap within the climate change literature.

Even if individuals have the knowledge, will and capacity to adapt, this may not be enough as they also require “the economic space for action” (Raihan *et al.*, 2010). In the context of vulnerability and poverty, resources are extremely important: resources are required for adaptation in order to enhance one’s resilience to climate change (Raihan *et al.*, 2010). Safety-nets (as previously discussed in section 2.3.5) can therefore play a large role in reducing household vulnerability.

2.4 The conceptual framework: multiple shocks and stressors, vulnerability, and responses

The changing nature of shocks and stressors, the relative factors which make people more susceptible to exposure as well as their capacity to respond to such shocks and stressors need to be taken into consideration when dealing with a complex concept as vulnerability (O'Brien *et al.*, 2009). Too often the term 'vulnerability' or concepts surrounding it can be vague, leading to confusion (O'Brien *et al.*, 2004). This study aims to understand the complex interactions between multiple shocks and stressors, vulnerability, and the resultant response strategies. Figure 2.2 illustrates this in the form of a conceptual framework for this study based on the preceding discussions. It provides a useful starting point in illustrating the key interactions and processes between multiple shocks and stressors, vulnerability, and responses, which can be integrated into the theoretical discussions and principles of complex socio-ecological systems discussed in section 2.1.

The conceptual framework presented here can be viewed as a system with great variability, as explained by Holling (1998). Shocks and stressors, being the drivers of change (A in Figure 2.2) can have varying degrees of impact on vulnerability at the individual, household and community level (C). As a result, assessing vulnerability can become quite complex, as one would be dealing with multiple interacting factors. This is influenced by individual, household, and community sensitivity to these shocks and stressors, as well as their adaptive capacity (B), as explained in section 2.3.2.

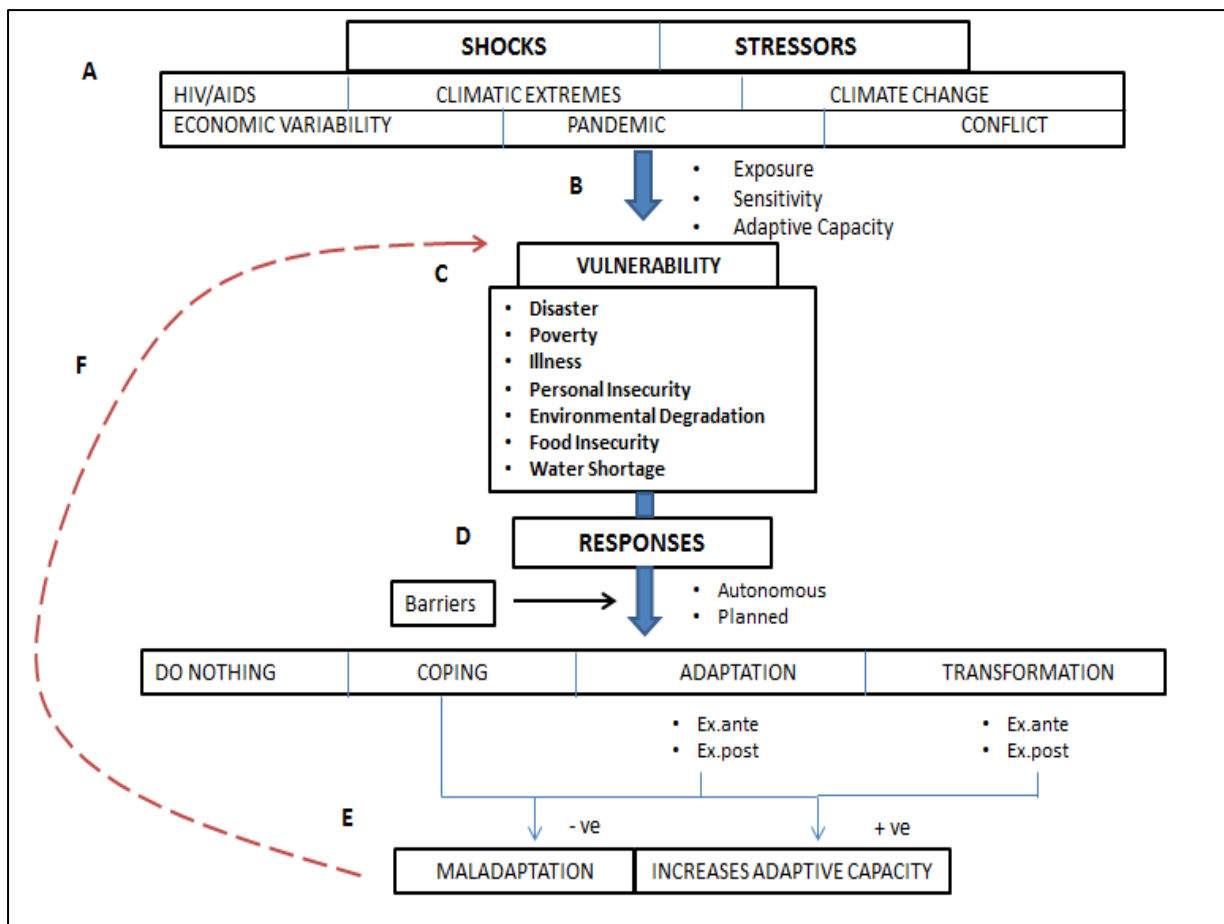


Figure 2.2. Conceptual framework of multiple shocks and stressors, vulnerability, and response strategies (Adapted from Ospina and Heeks, 2012)

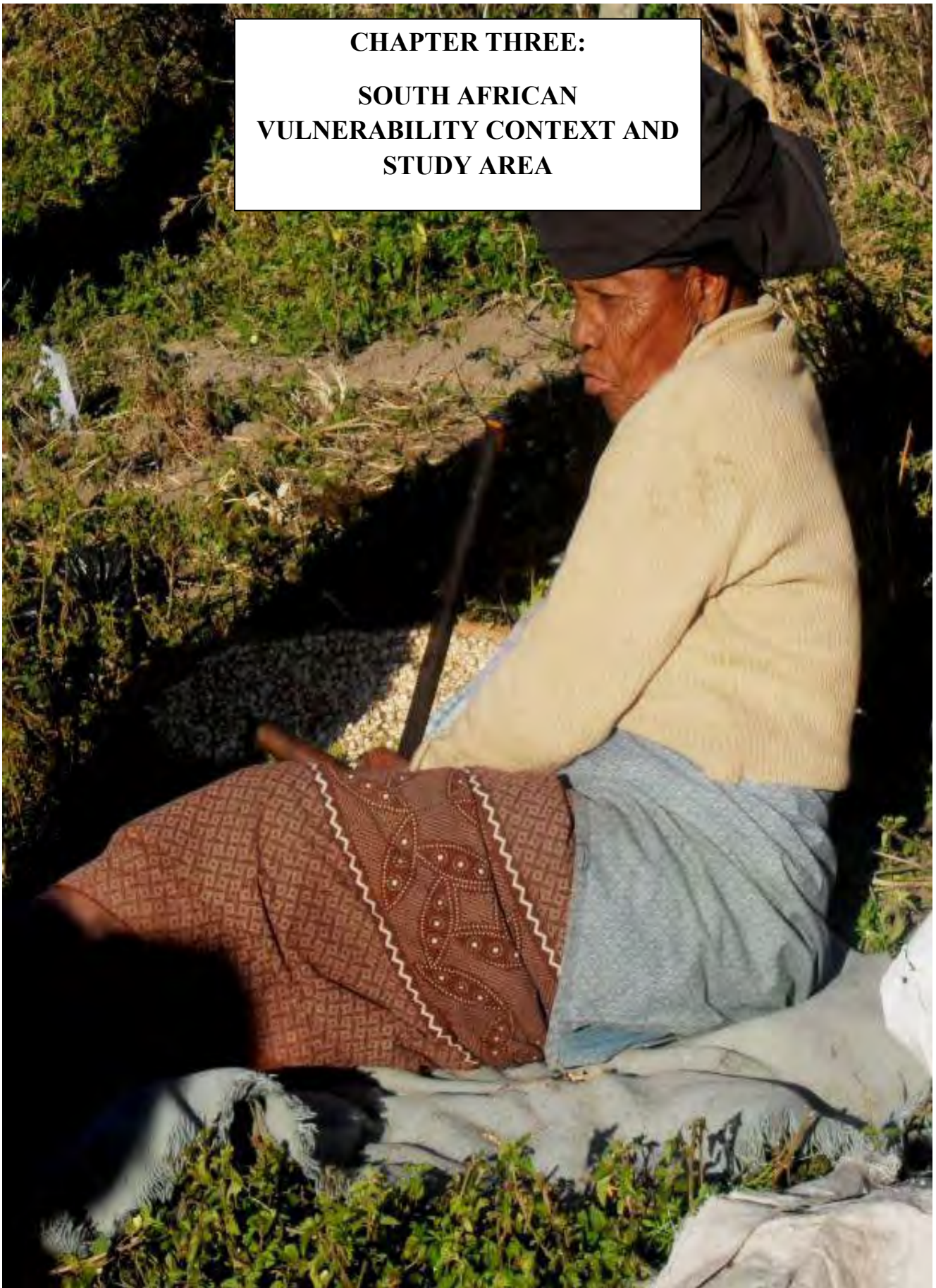
As previously defined (section 2.3.2), vulnerability has two dimensions: the external side and the internal side. These dimensions of vulnerability are considered simultaneously within this research. It is also important to incorporate pre-existing socio-economic, environmental and political factors which may influence households' ability to respond to shocks and stressors. This is incorporated into the conceptual framework (Figure 2.2) and it is an important starting point of the research as explained in Chapter 5 (section 5.1).

There are numerous ways in which households can respond to shocks and stressors, as discussed in section 2.3.4. Responses can be autonomous or planned, and can occur before (ex.ante) or after (ex.post) a shock or stressor has been experienced (D). However, individuals and households may be faced with a variety of barriers which may prevent them from adequately responding to shocks and stressors (section 2.3.6). The response strategy employed by the household will lead to two broad outcomes: an increase in adaptive capacity (positive) or maladaptation (negative) (E). In the case of maladaptation, this creates a

feedback loop (F) by increasing vulnerability once more and possibly presenting itself as an additional shock or stressor. Examples of maladaptation include meeting the needs of one social group, whilst increasing the vulnerability of minority and low-income groups, actions which may have high social, economic, and environmental costs, adaptations which encourage dependence on others, adaptations which reduce incentives to adapt and limit choices available to future generations (Barnett and O'Neill, 2009), and adaptations that erode assets and response mechanisms, such as the over-dependence on natural resources that results in their degradation.

Understanding this complex socio-ecological system requires employing a combination of both qualitative and quantitative methods, which is discussed in-depth in Chapter 4. This research targeted the most vulnerable households within each study site to truly gain insight into their lives and to understand the complex interactions between multiple shocks and stressors and how this impacts on vulnerability. Such purposive sampling was based on both the physical attributes of the household as well as their assumed adaptive capacity. The assumption was that poorer households are generally more vulnerable to shocks and stressors and have a weaker capacity to respond adequately. The selection of the households is further explained in section 4.2.1.1.

**CHAPTER THREE:
SOUTH AFRICAN
VULNERABILITY CONTEXT AND
STUDY AREA**



3.1 South African vulnerability context with particular reference to climate change and HIV/AIDS

The issue of livelihood vulnerability to multiple stressors is not unknown in South Africa (Quinn *et al.*, 2011). Climate change predictions for South Africa show that the climate will become increasingly unpredictable in the future, exposing people to a host of challenges, especially water security issues (Peterson and Holness, 2011; Ringler, 2007; Quinn *et al.*, 2011). Climate change impact scenarios for South Africa predict that temperatures will increase by 1-3° C (Peterson and Holness, 2011). There will be disrupted regional rainfall patterns with the already semi-arid to arid western side of the country becoming drier (5 to 10 per cent reduction in rainfall) and the eastern side of the country becoming wetter (Department of Environmental Affairs (DEA), 2010). More intense rainfall events are expected to be scattered between longer dry periods, with associated increases in drought and floods, decreases in river flow, and more frequent and intense wildfires (Peterson and Holness, 2011). Climate change will increase the spread of vector-borne diseases, such as malaria, with climate change scenarios showing that the proportion of the South African population at risk of contracting malaria to double (van Jaarsveld and Chown, 2001). Climate change will also affect the provision of ecosystem services by putting increasing strain on the resilience of ecosystems. It has been projected that the provision and regulation of water quality will be the most heavily-affected ecosystem service in South Africa (Peterson and Holness, 2011). This will not only negatively affect health and food security but also the provision of employment from industry and hinder local development (Peterson and Holness, 2011). Climate change is expected to impact multiple sectors of the economy including water management, agriculture, health and food security (Drimie and Gillespie, 2010).

Mid-year estimates for 2011 show the total population for South Africa to be 50.59 million, with 79.5 % being African, 9 % coloured, 9 % white, and 2.5 % Indian/Asian (SSA, 2011). Fifty one per cent of the population is female. The growth rate has been shown to have declined from 1.33 % to 1.10 % between 2001 and 2011 (SSA, 2011). HIV prevalence estimates in South Africa increased from 9.4 % to 10.6 % (4.21 million to 5.38 million) of the total population from the year 2001 to 2011 (Statistics South Africa (SSA), 2011). However, the HIV prevalence was estimated to be 17.9 % of the total population in 2009 by the South African National Aids Council (SANAC) (2011). A study by Makiwane and Chimere-Dan (2010) showed that the estimate for deaths due to AIDS in the province was 41.9 % in 2009.

HIV/AIDS has reduced the life expectancy of men and women to 47 and 49 years respectively (Quinn *et al.*, 2011) resulting in a decline of the adult work force. The elderly and children are left with little to no income creating a downward spiral of poverty and food insecurity and as well as a higher dependency on government grants (Quinn *et al.*, 2011; Ziervogel and Drimie, 2008). Demographic trends can exert a lot of pressure on the state (Guthrie, 2002). For example, in South Africa, the percentage of the population in dependent age groups, namely the youth and the elderly, is increasing in relation to the economically-active proportion of the population. HIV/AIDS is one of the reasons for this change in the population trend, and will continue to exacerbate poverty and inequality (Guthrie, 2002).

The inequalities of apartheid has had a strong influence on South Africa's social protection policy (Guthrie, 2002), which boasts the largest and most developed social security system in Africa (Overseas Development Institute (ODI), 2011). The government has various publically provided safety-nets, such as income support (basic income grant, old age pensions, child support, disability, and foster care grants), public health care, education, housing programmes and emergency food aid (Barrett and McPeak, 2004; Guthrie, 2002), and has a strong focus on poverty alleviation for marginalised rural communities. There has been a dramatic increase in the coverage of social grants, from just two million beneficiaries in 1996/97 to nearly 14 million in 2009/10 (ODI, 2011). The extension of the child support grant (eligibility extended from age seven up to the age of 18 by 2010 (refer to South Africa Social Security Agency for additional qualifying requirements (SASSA) (2012)) is largely responsible for this dramatic increase where the number of beneficiaries increased from 320 000 in 2000 to 9.4 million in 2009/10 (ODI, 2011). According to the statistical reports of SASSA (2012), the number of beneficiaries increased to 16 million in 2012. Although social protection has provided a type of cushion against climate variability and other shocks experienced, it has been suggested that it has also created a culture of dependency which may impede adaptation (Vincent, 2006).

3.2 General overview of the Eastern Cape Province with a focus on the former Transkei and Ciskei

3.2.1 Location

The Eastern Cape Province is situated in the south-east of South Africa and has a total surface area of 169 580 km² and a population density of seven million (13.9 % of the total land of South Africa) (Statistics South Africa (SSA), 2003). The western half of the Province is more

developed compared to the former homelands within the eastern half which largely consist of poverty-stricken informal settlements and poorly managed small towns (Bank and Minkley, 2005).

3.2.2 Socio-economic context

The Eastern Cape Province is largely rural (66 %) (Eastern Cape Socio Economic Consultative Council (ECSECC), 2009) and has the second highest poverty levels in the country (47 % below the poverty line) as well as the highest unemployment rate of 27 % in 2009 (SSA, 2010), with many people living without basic infrastructure and services. The demographics of these rural areas largely consist of women (52 %) and children, which reflects how many of the parents, especially men, migrate to more industrialized areas for employment (ECSECC, 2009) (see Chapter 5).

In 2008, the Eastern Cape Province had a high prevalence of HIV/AIDS with 28 % (ECSECC, 2009). In 2000, HIV/AIDS was the leading cause of death, accounting for 20 % of all deaths (Bradshaw *et al.*, 2000). At the district level, the HIV prevalence levels of women present at antenatal clinics in 2008 were 26.5 % for Amathole district and 29 % for Chris Hani district (ECSECC, 2009), the districts in which the study sites are situated. The rural people of the Eastern Cape Province are some of the most vulnerable in South Africa as their livelihoods have been impacted by multiple shocks and stressors: climate change impacts, HIV/AIDS prevalence, high levels of poverty, poor access to basic services and ecosystem degradation (IDRC project proposal, 2010).

3.2.3 Biophysical context

The majority (97 %) of the Eastern Cape Province, except for the coastal belt, is classified as dryland. All nine biomes are found within the Province, with the Nama Karoo, Grassland, Savanna, and Thicket biomes being the most widespread (Mucina and Rutherford, 2006). The Eastern Cape Province has a high degree of land degradation due to over-grazing, invasion of alien species, and other anthropogenic activities which in turn has a negative impact on ecosystem services (DEAT, 2004). The Province also ranks amongst the top three most vulnerable provinces to the impacts of climate change (Gbetibouo and Ringer, 2009). The western regions of the Province (Lesseyton study site) are expected to become hotter and drier with the coastal belt (Willowvale study site) experiencing impacts such as a rising sea level, late summer rainfall, and floods (IDRC project proposal, 2010). Downscaled

projections (SRES scenario A2: assuming business as usual conditions) for monthly rainfall (based on data from the three nearest weather stations to the two study sites - Queenstown (for Lesseyton) and Mthatha and Port St Johns (for Willowvale) - show high variability between the nine different Global Circulation Models (GCMs). Monthly temperatures are projected to increase by several degrees throughout the year resulting in increased evapotranspiration rates (Climate Systems Analysis Group (CSAG), 2012).

The Eastern Cape Province in general has been subjected to severe drought in 2009/2010 of which these two study sites are no exception (CHDM, 2010). The subsequent two years have been the opposite with very heavy rainfall and devastating floods (South African Broadcasting Commission (SABC), 2012). Climatic stress along with a high prevalence of HIV/AIDS and poverty makes Willowvale and Lesseyton ideal sites for this study. Research within these sites will make a significant contribution towards a deeper understanding of the complexities of vulnerability in the context of rural South Africa.

3.2.4 History and governance of South Africa's former homelands with specific reference to the Transkei and Ciskei

The Native Land Act of 1913 marked the onset of segregation in South Africa. Black Africans were forcibly removed from urban or 'white' areas to demarcated homelands or Bantustans, and were prohibited from owning or renting land outside of these areas (Perret, 2002). The Transkei and Ciskei were two of the homeland areas which existed within what is now known as the Eastern Cape Province. The 'Homeland' policy dramatically shaped the history of South Africa (Beinart, 2012). White farmers had privileged access to natural resources, infrastructure, and financial and agricultural facilities (Perret, 2002), whilst these homeland areas become progressively over-populated, degraded and unproductive (Davies *et al.*, 1985).

The 1936 Native Trust and Land Act saw the 'Betterment' scheme being introduced and implemented within these homelands. This scheme was a way of transforming and dividing up the current land use reserves into residential units, arable and grazing units which were fenced, and grouping the households together in village clusters. This scheme was met with resistance as the locals saw it as a scheme of loss: livestock loss through culling, reductions in the availability of arable land, and restrictions on the use of grazing land (Beinart, 2012; Davies *et al.*, 1985; De Wet, 1989; McAllister, 1989). Moving from a relatively sparse settlement to a more concentrated one had its problems. Apart from the more complex

impacts on social relationships, the majority of fields were now located a greater distance from homesteads creating hardship as limitations had been placed on garden sizes. The Betterment scheme also placed pressure on water points close to settlements. No provisions were made for sanitation facilities and toilets, therefore creating threats of water pollution and negative health impacts (McAllister, 1989). Such a scheme limited the choices of the locals and undermined their social and economic lifestyle (McAllister, 1989). The retention of the communal tenure system emerged from below and was accepted by local chiefs within the homelands. This system, which became increasingly rooted in legislation and controlled by officials rather than local chiefs and people, slowly reverted back, in practice, to more local control (Beinart, 2012).

The Transkei was the first of the 10 homeland areas to become self-governing and in 1976 it became the first independent homeland (Dugard, 1980). The Ciskei became independent in 1981 (Khanya, 2000). These policy changes and the gradual removal of Apartheid legislation had a large effect on the Eastern Cape Province. There was a dramatic increase in labour out-migration, especially from the former Transkei area, as rural residents sought employment on the mines (Perret, 2002). In 1974, 83 % of employed Transkei males were migrant workers (Marks, 2002). This out-migration had a variety of impacts: it resulted in a rapid increase in townships and locations surrounding urban areas and had multiple impacts on family structures such as increased teenage pregnancy, the absence of parents having emotional impacts on children, spread of infectious diseases such as HIV/AIDS, decline in marriage, and break-up of traditional household structures (Coovadia *et al.*, 2009)

After democracy in 1994, the Transkei, Ciskei and the eight other homeland areas were reabsorbed back into South Africa. In this present day, the areas of the Eastern Cape Province formally known as the Transkei and Ciskei are still plagued by problems such as high levels of poverty, poor service delivery and development, high dependency on government grants, communal land tenure and a reliance on arable agriculture, animal husbandry, and informal employment (Coovadia *et al.*, 2009).

3.3 Rationale for the selection of the two sites: Lesseyton and Willowvale

The two study sites had been selected prior to this study for the larger IDRC project in conjunction with the project's local partners. Lesseyton is a peri-urban cluster of small villages in close proximity to Queenstown (10 km) which falls within the Lukanji Local

Municipality (Chris Hani District Municipality). Willowvale consists of a strip of rural villages extending to the coast within the Mbashe Local Municipality (Amatole District Municipality) (Figure 3.1). Both of the study sites fall within two of the four Integrated Sustainable Rural Development Programme (ISRDP) nodes of the Eastern Cape Province. These nodes form part of a national programme which aims to fight poverty within these areas with a particular emphasis on women and the disabled.

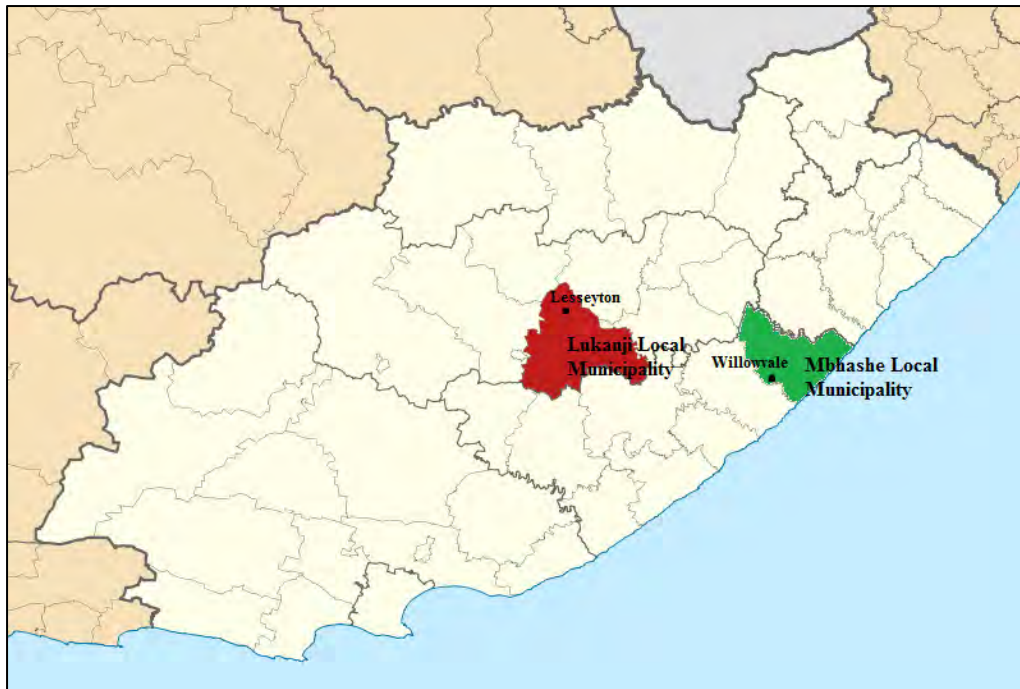


Figure 3.1. Location of the study areas within the Lukanji Local Municipality and the Mbashe Local Municipality, Eastern Cape Province, South Africa

Additional criteria were also used by the IDRC team to select these two sites. Willowvale falls within what was formerly known as the Transkei (IDRC project proposal, 2010). Lesseyton's origin came after the establishment of Queenstown (1853), and falls outside the boundaries of both the former Ciskei and Transkei (see Figure 1 in Wotshela (2003)). There is a decreasing gradient of rainfall between the two sites, with the coastal site of Willowvale receiving higher mean annual rainfall than the inland site of Lesseyton. Climate change and the HIV/AIDS epidemic are becoming increasingly evident in these two sites. The elevated levels of the HIV/AIDS epidemic are a great concern which is exacerbated by poor access to health care facilities. Both areas, especially Willowvale, rely on natural resources and a variety of livelihood strategies are employed by the residents (Stadler, 2012). Both sites are within a few hours of travel from Rhodes University.

3.4 General overview of the two study sites

3.4.1 Lesseyton

The Lukanji Local Municipality, in which Lesseyton falls, came into being in December 2000 and is one of eight local municipalities which make up the Chris Hani District Municipality. The largest urban centre in the District is Queenstown which is located in close proximity (20 km) to Lesseyton (Chris Hani District Municipality (CHDM), 2010). The estimated total population for the Lukanji Local Municipality is 208 081, with 83 % of the population living in formal dwellings and 6 % living in informal dwellings (SSA, 2008). The majority of the population (71 %) of the Chris Hani District resides in rural areas (CDHM, 2010). Throughout the Local Municipality, high unemployment rates result in a high dependence on remittances and grants. The district also has a very high malnutrition and hunger index (CHDM, 2010).

Queenstown, being an administrative and commercial centre, is a popular destination for rural-urban migration flows, especially since the onset of democracy in 1994 (Fröden, 2009). Consequently, the formal labour market of Queenstown has not been able to absorb all of the new residents, which has resulted in a high unemployment rate (Fröden, 2009). Lesseyton follows a more formal governance structure (in contrast to the more traditional structure of Willowvale), as each municipality in the District has a municipal council and a political executive. The local municipalities themselves consist of elected councillors and representatives who form a district-wide council (Fröden, 2009). A broad range of stakeholders, located in Queenstown, exist to support local municipalities in promoting economic development, such as the Eastern Cape Development Corporation (ECDC), the Citizen's Entrepreneurial Development Agency (CEDA), the Rural Livelihoods Programme (RuLiv), and Mbumba (Fröden, 2009; Stadler, 2012).

Lesseyton's recent origin can be seen in the dense layout of the villages with houses divided by roads into blocks (Stadler, 2012). Lesseyton is comprised of six densely built villages which form distinct clusters (in contrast to Willowvale). The majority of the houses within the villages have access to electricity and communal water taps, and have been benefitting from free government housing and toilets from before the start of this research (Stadler, 2012).

The rainfall of the area differs greatly according to altitude and distance from the coast, with the greater part of the district being arid to semi-arid in nature receiving less than 400 mm of mean annual rainfall. Temperatures can range from above 40° C in summer in the lower lying areas to below 0° C in winter in the higher lying areas (CHDM, 2010). The topography varies with the east of the region being more mountainous and the west being dominated by Karoo plains (CHDM, 2010). The grassland biome, specifically the Queenstown Thornveld and the Tarkastad Montane Shrubland, dominates the area (Mucina *et al.*, 2007).

3.4.2 Willowvale

The Mbashe Local Municipality, the former Transkei area, in which Willowvale falls, is one of eight local municipalities within the Amatole District Municipality. Willowvale is the nearest urban centre. The Mbashe Local Municipality has an estimated population of 262 008, with 20.3 % living in formal dwellings and 0.6 % living in informal dwellings (SSA, 2008). Many people in the Willowvale area are poor and rely on diverse livelihood strategies including both off-farm and land-based activities (Andrew, 2003). The Mbashe Local Municipality is largely rural consisting of low-density rural settlements and communal grazing and agricultural areas (The South African LED Network, 2012). There are high levels of unemployment, poverty, and dependency as it is the most grant-dependent local economy in the Eastern Cape Province (The South African LED Network, 2012).

The main administrative office of the municipality is situated in Idutywa. Although each local municipality does have its own councillor and representatives, the villages are still known to follow a more traditional structure, where the chiefs, local headmen and sub-headmen carry a lot of authority. Labour out-migration has been a common trend in the former Transkei area since the end of the 19th century (Perret, 2002). Adults within households are often absent from these areas, as many have become migrant workers. Generally, the older generation (pensioners) head the households and look after the children (Perret, 2002). Farming contributes very little to household cash income (largely subsistence); the majority of the households rely on grants and remittances from migrant family members (Perret, 2002).

Willowvale, the area in which this study took place, is not to be confused with the small town of Willowvale, as no research was conducted in the town itself. In this study, Willowvale refers to a collection of several villages spanning across the landscape, from the small town of Willowvale to the coast, of which their demarcation is not as clear as in Lesseyton. Households are scattered widely on the hilltops and ridges with somewhat identifiable

clusters largely inhabited by agnatic groups (clans) or extended family (McAllister, 1989). The majority of the homes are more traditional in structure in comparison to Lesseyton, consisting of round 'huts' or rondavals customary to the isiXhosa culture. There is no electricity within the villages and communal taps are scattered (Stadler, 2012). The road networks are poorly maintained, with very few tarred, resulting in many basic services being inaccessible to the households (The South African LED Network, 2012).

The mean annual rainfall for the Willowvale area is 1090 mm. Temperatures range from 22° C to 27° C (higher and lower altitudes respectively) in the summer to 3° C to 10° C in the winter. The terrain is uneven with irregular undulating lowlands and hills in the north and central areas of the Mbhashe Local Municipality, changing to highly dissected hills and deeply incised valleys towards the seafront (Andrew, 2003). The area falls within two major biomes, namely the Indian Ocean Coastal Belt and Savanna. There has a diverse range of vegetation types: Eastern Valley Bushveld, Bhisho Thornveld, Transkei Coastal Belt, Southern Mistbelt Forest and Scarp Forest (Mucina *et al.*, 2007).

**CHAPTER FOUR:
METHODOLOGICAL APPROACH, STUDY
DESIGN AND METHODS**



4.1 Methodology and study design

Assessing the impacts and vulnerabilities of multiple stressors is complex. The use of multiple methods, both qualitative and quantitative, can provide a deeper understanding of the issues at play which one type of methodology may fail to do (Sallu, 2007). There has been a growing recognition, and trend, over the past decade to use qualitative research methods as a way of expanding the more traditional quantitative assessments (Addison *et al.*, 2008). Quantitative methodology applies a natural science approach to social phenomena. Qualitative methodology differs in that it applies a more fluid and flexible approach aiming to ‘see the social world through the point of view of the actor’ (Bryman, 1984). A flexible methodology has a great advantage of uncovering unanticipated findings and allows for the option of altering the research in such a way as to explore these opportune occurrences (Bryman, 1984) and therefore to deal with the complexities involved.

Quantitative research methods are typically based on statistically representative surveys, usually with little opportunity for unstructured responses and are analysed with set hypotheses in mind (Kanbur, 2003). In addition to structured interviews, qualitative research is also based on unstructured interviews which are usually analysed in a textual manner. Examples of this type of research include semi-structured in-depth interviews, life histories, ethnography, participant observation, and using participatory methods such as mapping and Participatory Learning and Action (PLA) (Box 1) exercises to gather information (Kanbur, 2003).

The nature of the research will typically determine whether one would use more quantitative or qualitative assessments. Qualitative assessments are highly recommended for eliciting deeper underlying processes, and therefore add a great deal to the understanding of such processes, as is the case in this study, which can be very important for local level implementation of policy (Addison *et al.*, 2008). Qualitative research is more concerned with the process rather than specific outcomes to gain in-depth understanding and meaning (Bogdan and Bilken, 2003). Qualitative methodologies also allow for the exploration of more complex social relations and patterns (Bryman, 1984). Surveys on the other hand are useful when the research calls for quantitative data, when the respondents are familiar with the information needed as well as when the researcher has prior knowledge of the likely responses (Bryman, 1984).

Box 1: Participatory methods: PRA, RRA, and PLA.

PRA or Rapid Rural Appraisal (RRA) and the more inclusive Participatory Learning and Action (PLA) techniques are part of a family of participatory methodologies which have evolved as a set of approaches, methods, behaviours and relationships for investigating local context and life (Chambers, 2008). They aim to empower local people by giving them opportunities to express and enhance their knowledge and take action (Chambers, 2008). The difference between the techniques lies within the way the research is conducted (Socio-economic and Gender Analysis (SEAGA) Programme, 2001). If outsiders are largely responsible for facilitating the learning process, it is called RRA. If the local people are the main actors, it is called PRA (Chambers, 2008; SEAGA, 2001). It is believed that PRA evolved from RRA by the early 1990s, and more recently, has moved beyond these labels. PLA is a much broader and more recent term as it includes other similar or related methods (Chambers, 2008).

PLA techniques have been used in a variety of studies which fall within the context of multiple stressors (Bunce *et al.*, 2010; Lynam *et al.*, 2007; Ozesmi and Osezmi, 2004; Sallu, 2007). Chambers (2008) illustrates the three main components of PLA to be that of methods, behaviour and attitudes, and sharing. Methods are visual and tangible and usually involved small groups of people. PLA provides a variety of techniques, such as the construction of maps (village resource maps, transects), diagramming (flow, venn, and seasonal diagrams, profiles, daily routines, time and trend analysis), ranking and scoring matrices, case stories (life histories, narratives), dramas, and participatory workshops which can be adapted and combined accordingly to elicit local knowledge (Mikkelsen, 2005; SEAGA, 2001). A participative approach is important as it allows one to access local knowledge which may not surface through the use of more quantitative techniques. Using local knowledge allows a study to present more relevant and context specific data, essentially enabling development programmes and policies to be more successful (SEAGA, 2001). For simplicity, such methods will be referred to as PLA throughout this study.

Past and present trends of vulnerable households are particularly important to this study. One way in which to obtain this information is to ask people about their past. Oral history

methodology captures various forms of in-depth life history interviews along with personal narratives and biographical interviews (Haynes, 2010). Individuals are engaged in semi-structured interviews about their life course, which helps elicit a well-being trajectory for the individual as well as the causes underlying it (Addison *et al.*, 2008). Such interviews differ from the more typical structured interview in that they are far more interactive, drawing on a wide range of topics and giving those who have been marginalised a chance to be heard (Haynes, 2010).

Recently there has been an increase in the use of life history methods as they allow for a large amount of a person's contextual and historical data to be collected. Data can be gathered on all aspects of people's lives and participants are given the opportunity to express meaning rather than just telling their story (Haynes, 2010). In a study done by Haynes (2010), participants were encouraged to express their emotions, aspiration and such throughout their life histories rather than just stating simple facts. Questions were asked in such a way as to stimulate conversation: "Let's talk about how and why you became a farmer". Adopting such an approach allows for a deeper exploration of people's perceptions, beliefs and understandings of complex situations and processes (Davis, 2006). Surveys on the other hand can introduce some sort of objectification on behalf of the respondent as the process is very structured. The life history methods allow the respondent to have more freedom of expression and greater control over the interview process (Davis, 2006).

One concern about using the life history method is that of ethical issues in the ownership of research (Haynes, 2010; Matthews and Pirie, 2001; Stacey, 1991). Authors typically have interpretive authority transforming the oral interview into a written representation of life. They therefore choose what they would like to include and leave out in such a representation, raising the concern of whether it is more the author's interpretation rather than a true account of the respondent (Haynes, 2010). Matthews and Pirie (2001) dealt with this concern by allowing their respondents to review and edit their transcripts to give them the opportunity to withdraw or correct responses. Lengthy responses may also be given which presents the challenge of uncovering key issues and events within a complex monologue. However, life histories can possibly bring to light the way that personal narratives are embedded in the wider socio-economic and political context (Haynes, 2010).

There are many ways in which qualitative and quantitative methods can be combined to improve the understanding of research questions. Quality of data is very important; however

the choice of such combinations also depends of time and budget constraints. Marsland *et al.* (1998) discusses the different types of qualitative and quantitative combinations that may be used with surveys. Sequencing is the one combination which applies to the methodology of this study as it involves choosing a random sample, conducting a short questionnaire survey to gather information on key variables which are then investigated further through in-depth interviews and participatory enquiry (Marsland *et al.*, 1998). The initial structured survey acts as a baseline as it provides information that can be further investigated as well as providing a basis for soliciting individuals for more in-depth interviews.

Box 2: Combination of mixed methodologies (Example 1)

A good example of a study that employs a mixed methodology is that of Sallu (2007). The study used a mixed method approach, using preliminary key informant discussions, participatory meetings with the elderly, and a well-being ranking exercise during the first phase of data collection. A household survey was then used as well as more semi-structured interviews. The interviewees for the semi-structured interviews were selected based on the data collected from the household survey, such as demographics and livelihood structure so as to have a mixed representation. A livelihood trajectory method was used to investigate livelihood patterns and trends through time. Sallu (2007) also undertook a few case-study interviews to further investigate factors affecting household's livelihoods. Data collection then moved onto the third phase, which included participant observation, and various participatory focus group meetings.

Box 3: Combination of mixed methodologies (Example 2)

Davis (2005) undertook a study in Bangladesh to assess how people coped with episodes of crisis throughout their lives. The study took place in three towns and six villages, and an initial household census of 100 households was done. From these households, 20 were selected for more in-depth interviews using the life history method. Visualisations were used, such as mapping and time lines, to provide a visual output at the end of each interview. Including major life events created a benchmark for respondents to refer back to and aided their memory of life events (Davis, 2005).

This study was designed to elicit information at the local level by interacting with the community, households and individuals. A mixed method approach was used comprising of quantitative as well as interactive and participatory methods. Such an approach included a survey to elicit the initial baseline data, participatory workshops including PLA techniques, as well as life history interviews. The different methods employed gave rise to different results (see Chapter 6) and allowed findings to be triangulated. There was a strong focus on gathering information on the interactions of multiple shocks and stressors on the more vulnerable households that had not been captured from the overall project's larger household survey. The targeting of the more vulnerable households has been discussed in section 2.4 and is further discussed in section 4.2.1.1 below.

4.2 Methods

4.2.1 Rapid quantitative survey

4.2.1.1 Household selection

Google aerial maps and random numbers were used to randomly select the villages as fieldwork was planned to be undertaken within a neighbourhood rather than surveying all the villages (Figures 4.2 and 4.3). This was done for time management and efficiency as well as for the reason that households nearer to each other will be more familiar with one another and can therefore be more informative about response strategies used, particularly regarding social and community capital.



Figure 4.1. Two photographs illustrating the visible differences between household appearances in Lesseyton. The household on the right is visibly better-off in comparison to the household on the left

Households were purposively selected by comparing their physical attributes and appearances. The number of livestock and the presence and size of kraals, along with the physical appearance of the house (building materials used and the condition it was in) were criteria used to select the households. The presence of costly assets such as vehicles, washing machines, and dstv dishes were used as indicators of apparent wealth and these households were avoided (Figure 4.1, household on the right). This method was followed for all 100 households interviewed for the rapid survey (50 households in each study site).

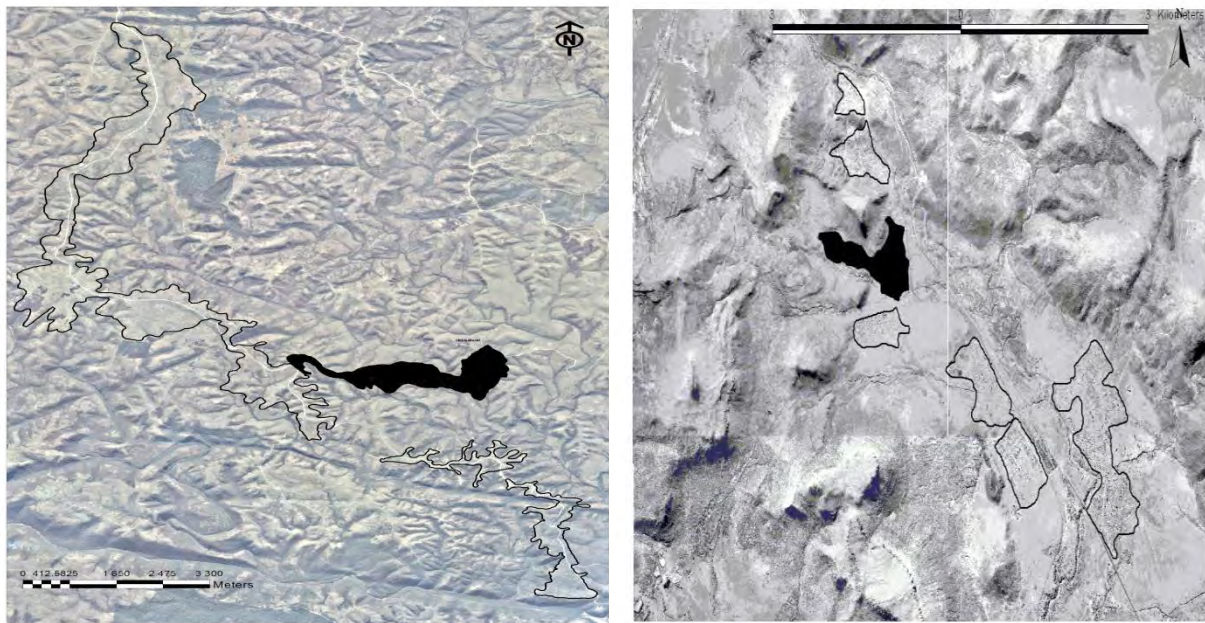


Figure 4.2 (left) and Figure 4.3 (right) are Google images of Willowvale and Lesseyton respectively showing all of the villages. The villages highlighted is where the research took place

4.2.1.2 Data collection and survey design

The rapid survey was conducted in person by the author with the assistance of a translator. The head of each household were primarily asked to participate in the survey, however, in their absence the next most elderly and responsible adult was interviewed. The majority of the respondents interviewed were the household head and only two respondents out of the 100 interviewed were not. As a coincidence of the sampling, the male and female ratio of respondents selected was almost equal in both sites, with 23 females and 27 males in Lesseyton and 27 females and 23 males in Willowvale.

The survey instrument was divided into seven short sections. The first section ‘Household composition and human capital’ focused on eliciting who the household head was and how many household members there were in each household along with other biographical information. For each adult member in the household, information was collected on employment status (full-time, part-time, self-employed, and unemployed), incomes, level of education and formal/informal training and skills. The second section ‘Coping, shocks and stressors’ focused on the shocks and stressors that each household had experienced over the previous two years (a predetermined list, which was created through background reading of literature and existing studies, was presented and respondents had to answer whether or not they had experienced the shock or stressor) and these shocks and stressors were ranked in order of importance. Section three, ‘Climate and natural resources’, asked each household to identify (from a list) climate related impacts they had experienced in the last two years and state which responses applied to them. Various questions were then asked about each household’s reliance and use of natural resources and food security. A short section followed, applying only to those who farmed, asking what changes the respondents had made to their farming practices since their past planting season. Various questions about the household’s main source of income, their reliance on government grants, pensions and remittances, income diversification, and how they would compare themselves to the rest of the households in their village, were asked in section four of the survey. The fifth section ‘Health’ asked questions regarding illness or death in the household, the resulting loss of contributions and how the family had coped with these changes. Section six was framed around community and social cohesion. It asked the respondents whether they were members of a community support group, how easy it was to receive help in their community, and how their community responds to HIV/AIDS. The seventh and final section ‘Barriers to coping’ presented respondents with a list of possible constraints which may have prevented them from coping with shocks and stressors they had experienced in the past two years.

4.2.1.3 Data capture and analysis

Data collected from the rapid survey largely comprised of quantitative data. Microsoft Excel, Statistica, and SPSS were used manage and analyse the data derived from the survey. The data was disaggregated by site as well as by gender (when applicable). Frequency counts, mean percentages, and ranked responses were presented in a number of graphs and tables. Pearson’s Chi-square tests (X^2) were used to determine whether there were associations between certain variables, such as income diversification and gender. Pearson’s Chi-square

tests were also used to determine if there were any significant differences in the shocks and stressors experienced, the responses used, and perceived barriers between the male and female respondents (largely representing male and female headed households).

4.2.2 Life histories

4.2.2.1 Household selection

Because in this study the aim was to target the most vulnerable households, households for the life history interviews were selected by calculating a ‘vulnerability’ score from the households who had experienced the highest numbers of shocks in the last two years. The income data from the household survey provided details on each household’s reliance on child and disability grants, pension, remittances, and income from employment. The different income sources were then weighted and given a score according to how much money each of them are worth. Child and disability grants were given a score of 1, pension grants were given the score of 2, and remittances and employment were given a score of 3. The number of different income sources received was also totalled. The weighted score and the total number of income sources were combined and then used to select the households for the life history interviews. Table 4.1 provides an example of how the ‘vulnerability’ score was calculated. Household 70 receives two child grants and remittances of R600 resulting in a score of seven ($(2 + 3 = 5) + (2) = 7$). Household 56 received one pension resulting in a score of three ($2 + 1 = 3$).

Table 4.1. Calculating the vulnerability score

HH CODE	Income	CHILD GRT	DIS GRT	PENSION	REMIT	SCORE	# SOURCES
70	remit	2	0	0	600	5	2
56	pension	0	0	1	0	2	1

The assumption, as discussed in section 2.4, is that the households with the higher number of shocks experienced and the lower overall income scores are more vulnerable as their assumed adaptive capacity is weaker. In the example above, household 56 would have been chosen over household 70. The 10 ‘most vulnerable’ households were selected in each study site. These households were then contacted telephonically (cell phone numbers were attained during the household survey) to ask for their consent and availability for the life history interviews.

4.2.2.2 Life history interviews

These interviews were treated as unstructured conversations (as per the discussion in section 4.1) in comparison to the more structured household survey. There were five main ‘themes’ which were used to guide the interview: general household information such as who lived there and what the members did for a living, the village’s history and any change that has occurred since they arrived, their personal life story from growing up with their parents to the present, focusing on the hardships they experienced, the specifics of how they coped with these hardships, and their main concerns for the future and the support they felt was needed in their community. Each interview was primarily conducted and recorded in isiXhosa and later transcribed and translated into English through the use of a translator.

4.2.2.3 Interpreting the life history interviews

Because of the qualitative nature of the life history interviews, they were analysed using software for textual analysis called MAXQDA. The interviews were first coded in order to contextualize the text into categories for the systematic analysis of the data. The code system was created using the following categories: vulnerability (shocks and stressors experienced), responses (responses made towards shocks and stressors), assistance (help received), health (shocks and stressors related to health), climate, farming, and natural resource use (climate related shocks and stressors experienced), and future concerns (future shocks and stressors which they were concerned about as well as support they felt was needed). The text retrieval option allowed specific categories and study sites to be analyzed separately. These broader categories gave rise to more specific themes such as unemployment, social grant dependency, and crime related shocks and stressors (Appendix 1).

4.2.3 PLA and workshops

4.2.3.1 Understandings of vulnerability

Assessing households’ personal views and understanding of vulnerability may elicit valuable insider information that may not be captured in some of the definitions throughout the literature (Addison *et al.*, 2008). This study, which forms part of a larger project as mentioned in Chapter 1, is embedded within the project’s Social Learning (SL) process (of the Social Learning Group (SLG)) (Figure 4.4) which aims to gain a more nuanced understanding of how multiple interacting shocks and stressors, including climate variability and HIV/AIDS, influence capital stocks, local livelihood choices, and consequently

vulnerability and food security. Social learning can be defined as a change in understanding that moves beyond the individual to become situated within wider social units through social interactions between actors (Reed *et al.*, 2010).

In order to satisfy the overall aim of the SL process and this study’s first objective of understanding what makes communities, households and individuals vulnerable from a local perspective, a PLA exercise was done at the SLG’s workshop in both sites. These workshops were facilitated by the researchers and a translator was used to allow effective communication between the researchers and the participants. Participants at the SLG workshop were asked to explain what they thought the term ‘vulnerability’ meant. This was done by asking participants to think about what it means to be vulnerable, and then list what they believe makes them vulnerable. Participants were then separated into small groups and were asked to create narratives about vulnerability by basing them on people’s real experiences within their community. This exercise provided the basis for the next step in the social learning process and helped to inform the survey design and life history questions for this study.



Figure 4.4. Community led social learning innovation model for adaptation to climate change (Cundill *et al.*, 2012)

4.2.3.2 *Mental modelling and problem tree analysis*

Separate workshops were held for men, women and the youth in each study site where PLA exercises were used to elicit information on multiple shocks and stressors, the links between them as well as identifying the past, present and future problems in the community. As mentioned above, these workshops were facilitated by the researcher (myself) and a translator was used to ensure effective communication between participants and the researcher. With reference to the methods developed by Ozemsi and Osemzi (2004) and employed by Bunce *et al.* (2010), as well as PLA techniques from the Socio-Economic and Gender Analysis Programme (SEAGA as part of the Food and Agricultural Organisation (FAO)), mental models, or maps as they will be referred to, were created to illustrate and compare shocks and stressors that affected the communities (Chapter 6). The use of mental maps in this study aimed to enable a greater understanding of the complex interaction between people's problems and the shocks and stressors they face, focusing on causes, effects and possible solutions. It also showed how all of the causes, effects and solutions identified were linked and which solutions can be solved at the community level, which solutions will require external support from the regional or national level, and which were believed to have no solutions (through the use of problem trees) (SEAGA, 2001). Such approaches provide a useful way to 'visualise' the complex reality people deal with in their day to day lives (see section 2.1 on complex socio-ecological systems, Chapter 2).

The aim of having separate workshops was to determine whether there were any differences in mental maps between genders or sites. Mental modelling was used in both sites to identify locally perceived shocks and stressors as well as the causes, effects and linkages between them. The number of participants in each of the men and women's workshops varied (4 to 17 participants), as it depended on the commitment of community members who were previously informed and invited to the workshop.

On a large piece of paper, the shocks and stressors perceived by the participants were written down and discussed one at a time. HIV/AIDS was suggested as a starting point to which the participants all agreed that it was a stressor within their community. The first step involved asking the participants to think about and identify all of the possible causes of each shock or stressor. Different coloured arrows were used to illustrate the cause and effect relationship between each shock and stressor identified as well as the linkages between them. Once all of the perceived cause and effect relationships were discussed, participants moved on to

identifying another shock or stressor present within their community. Participants were given a chance to reflect on all of the shocks and stressors identified. After this, participants identified the main shock or stressor within their community, which was further discussed and analysed using a problem tree.

The problem tree was then discussed (on separate piece of paper) by breaking down the main shock or stressor to identify the possible local, regional and national causes of it followed by possible solutions at the local, regional and national level as well. This allowed for the exploration of causes and suggested solutions across scales. Each workshop then ended with a summary of the day's main findings.

The workshops for the youth took place after school hours at Lesseyton and Willowvale's local high school where the grade 11 learners were asked to participate in a discussion on the past, present and future problems within their community. There were 20 participants from the workshops held at Lesseyton high school (10 girls and 10 boys), and 53 participants in Willowvale (mixed gender). They were asked to list and discuss past, present and expected future problems as well as the causes to these problems within their local community.

4.2.3.3 Data interpretation

Each mental map was analysed separately at first to determine which shocks, stressors and interactions were the most prevalent. The mental maps were also compared among one another to highlight differences between the two study sites and any gender differences that may have emerged. Similarly, differences and similarities that emerged from the youth workshops in each study site were highlighted and discussed.

4.3 Limitations

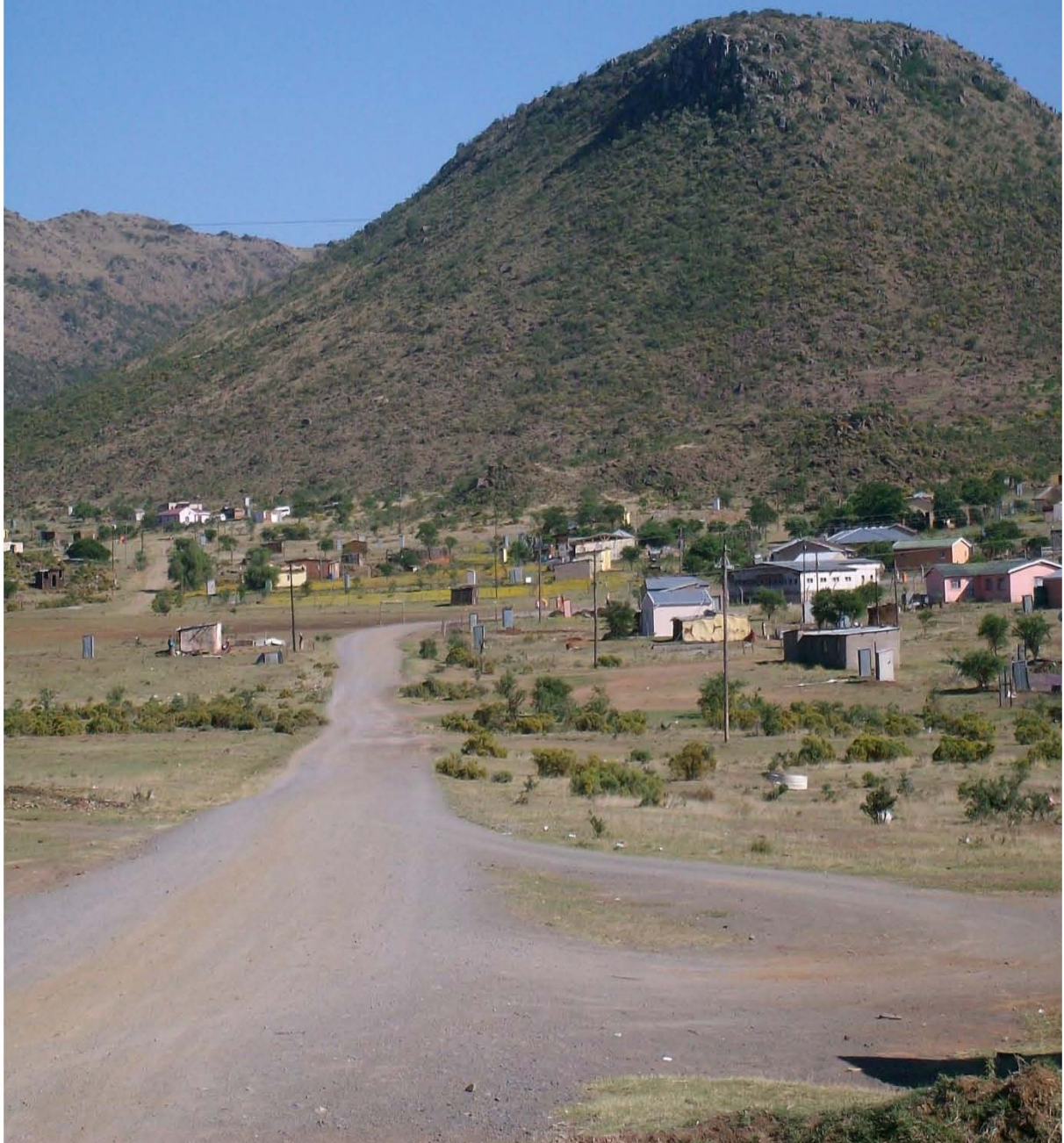
A common concern of surveys is whether they will produce reliable results, particularly with regards to the interviewee providing an accurate account of household members' income, activities and personal information (Fisher *et al.*, 2010). Language barriers may have also affected the level of understanding amongst respondents. The use of a translator aimed to address this issue, however this in itself may have introduced issues of 'lost in translation' (Carlson, 2000). The terms and concepts used in the survey were thoroughly explained to the translator prior to the interviews in the hope of avoiding mistranslation.

It must be noted that the household survey design did not allow for the assessment of the relative effectiveness of specific strategies in responding to specific shocks and stressors. This is mentioned in Chapter 8 as a research gap that may require additional focus. Specifically targeting vulnerable households may have been a limitation in that the study did not include a diverse socio-economic sample. However, the objectives of this study have had a strong focus on vulnerability and its complexities; therefore targeting vulnerable households allowed for the opportunity to gain greater insight and exploration of this.

With regards to the PLA techniques, there are numerous methodological and ethical concerns which exist, such as participants' non-anonymity influencing their responses through incorrect contributions out of fear of being stigmatised by their peers (Manzo and Brightbill, 2007). In addition, collective decisions may be influenced by group dynamics, such as group members taking a more 'risky' stance than usual, participants inaccurately second-guess what other group members may think, or participants being manipulated into certain decisions (Cooke and Kathari, 2001). These issues were addressed by emphasising that there were no 'right or wrong' answers and by encouraging open participation. There were challenges in attaining sufficient participation within workshops, which resulted in many workshops being postponed and reorganised, emphasising how research is reliant on people's willingness to participate (Stadler, 2012).

As this research progressed, it was realised that the shocks, stressors, and barriers which shaped vulnerability were not as clear-cut as is presented in the conceptual framework of the study (Chapter 2, Figure 2.2). Instead, many of the shocks, stressors, and barriers identified overlapped one another, emphasising the complex nature of vulnerability in reality.

**CHAPTER FIVE:
HOUSEHOLDS INTERVIEWED AND THEIR
VULNERABILITY CONTEXT**



5.1 Introduction

The rationale for focusing specifically on the more vulnerable households within the two study sites (as discussed in section 2.3) was that through studying how shocks and stressors impact these households and the ways they respond to these shocks, it will be possible to gain invaluable insights into the complexities of vulnerability and how this impacts adaptation. However, before this was possible, it was important to understand these households pre-existing situation and vulnerability context. Figure 2.2 in Chapter 2 illustrates the various components of vulnerability and how these are influenced by people's exposure and sensitivity as well as their inherent adaptive capacity to different shocks and stressors. Vulnerability can not only be looked at as an 'end point', but also as a starting point as the pre-existing socio-economic, environmental and political factors (including the long-term effects of apartheid explained in section 3.2.4) will influence people's ability to respond to shocks and stressors, as emphasised in Figure 2.2 (section 2.4). Therefore, this chapter acts as the 'starting point' by analysing the vulnerability context (embedded within the conceptual framework (B and C) (Figure 2.2) and SL process (Figure 4.4)) present within the two communities and, more specifically, within the households themselves.

Three sources of data were drawn on to provide the overall vulnerability context of households in the two sites, namely the survey data, data from the SLG workshop, and the life history interviews. This chapter aims to answer the following overarching research question:

- What makes communities, households and individuals vulnerable from the perspective of local rural people?

This can be broken down into three specific questions:

- What are the different components of vulnerability that makes community and households vulnerable?
- How do community members and households understand vulnerability (personal views)?
- What aspects of vulnerability are emerging out of people's personal narratives?

5.2 Profile of respondents and household vulnerability context

Although sampling was non-random (Chapter 4, section 4.2.1.1) and it was not always possible to interview the household head (in two cases), it is still useful to look at the profile of the respondents and how this differs between the two sites, as this could influence the way in which respondents respond to shocks and stressors. Marital status, income, dependencies, levels of education, gender and age can all impact on households' vulnerability context and adaptive capacity.

5.2.1 Household structure and education

The households in Lesseyton had an average of four members per household while Willowvale had an average of six members per household. In both sites, the percentage of single respondents (divorced, widowed and unmarried respondents combined) was higher (Lesseyton 54 %; Willowvale 60 %) than the percentage of married respondents (Lesseyton 44 %; Willowvale 38 %). Willowvale had a much higher percentage of widowed respondents (42 %) compared to Lesseyton (6 %), however they were similar in the percentage of married respondents (Table 5.1). Disaggregating the marital status data by gender showed that there were large percentages of single female headed households in both sites, particularly in Willowvale (48 % compared to 30 % in Lesseyton). This combined with the high unemployment rate amongst the women as well as the large dependency on social grants (particularly in Willowvale) (Table 5.2 in section 5.2.2), makes women especially susceptible to existing vulnerabilities as well as to future shocks they may face.

Table 5.1. Household composition and biographical information of respondents in Lesseyton and Willowvale

LESSEYTON (n=50)		WILLOWVALE (n=50)	
Marital Status	%	Marital Status	%
Married	44	Married	38
Divorced	2	Divorced	6
Widowed	6	Widowed	42
Never Married	46	Never Married	12
Level of Education	Grade	Level of Education	Grade
Average	6	Average	4
Max	12	Max	12
Min	0	Min	0
STDEV	3.60	STDEV	3.63
Age	Years	Age	Years
Average	51	Average	57
Max	78	Max	86
Min	15	Min	27
STDEV	17.20	STDEV	14.69
# HH Members		# HH Members	
Average	4	Average	6
Max	13	Max	11
Min	1	Min	1
STDEV	2.73	STDEV	2.76

Respondents in Lesseyton had a higher level of education with the average grade completed being grade six, compared to an average of grade four in Willowvale. Both the women and the men in Lesseyton had an average of grade six completed, whereas in Willowvale, women had completed an average of grade three and men an average of grade four. The average age was 51 years in Lesseyton (maximum 78, minimum 15) and 57 years in Willowvale (maximum 86, minimum 27). This suggests that amongst the households selected, those in Willowvale are expected to be more vulnerable, with lower adaptive capacity, than those households in Lesseyton.

5.2.2 Household livelihoods, income sources and vulnerability

The difference between the location of Lesseyton and Willowvale in relation to the proximity to an urban area is expected to have a strong influence on the households' employment and income sources. Lesseyton, being a peri-urban rural settlement (see Chapter 3, section 3.5.1), had a higher percentage of households who rely on employment as their major source of

income (46 %). Willowvale, located further away from any sizeable urban centre, has fewer employment opportunities available. With migration being more common in Willowvale as a response option towards shocks (see Chapter 7, Figure 7.1), it is likely that more of the working age population in Willowvale is absent from the area, leaving remaining household members more reliant on social grants and remittances in comparison to Lesseyton (Table 5.2). The major sources of income for households in Willowvale were pensions (40 %) and the child grants (36 %), with employment only amounting to 18 %. Fifty six per cent of respondents in Lesseyton were unemployed, which was much lower than Willowvale (88 %). If full-time and part-time employment is combined, 44 % of the respondents were employed in Lesseyton compared to 10 % in Willowvale. As a result, the average amount earned from full-time and part-time employment by households interviewed in Lesseyton per month (R483 per month) was much higher than that earned in Willowvale (R38).

Table 5.2. Income sources of respondents in Lesseyton and Willowvale

Main income source	Lesseyton % (n=50)	Willowvale % (n=50)
Pension	32	40
Employment	46	18
Child grant	20	36
Remittances	0	4
None	1	2
Disability grant	2	0
Employment	Lesseyton % (n=50)	Willowvale % (n=50)
Full-time	18	8
Part-time	26	2
Self-employed	0	2
Unemployed	56	88
Amount earned	Lesseyton	Willowvale
Average	R 483	R 38
Max	R 3 000	R 650
Min	R 0	R 0
STDEV	R 806.58	R 131.08

Disaggregating the data by gender showed that women in both sites seemed to be more vulnerable compared to the men (Table 5.3). Lesseyton had a larger discrepancy between the percentage of males and females that were unemployed, whereas this was much smaller in Willowvale. Disaggregating the data for those that were employed, showed that, in

Lesseyton, only a small percentage of the females were employed on a full time basis (4 %), compared to 29 % of the men being employed on a full time basis. Because of this, the average amount earned by the employed females in Lesseyton (R650 per month) was lower than that of the men (R1378 per month). In Willowvale, this was much less distinct, with female employment between full-time (4 %), part-time (4 %), and self-employed (4 %) and all of the men being employed on a full time basis (13 %). It was not possible to compare the female (R450 per month) and males' average monthly incomes as only one of the men's salaries was known (R450).

Table 5.3. Employment status data disaggregated by gender for Lesseyton and Willowvale

Employment status	Lesseyton % (n=50)		Willowvale % (n=50)	
	Male (n=27)	Female (n=23)	Male (n=23)	Female (n=27)
Unemployment	42	74	87	88
Employment	58	26	13	12
Employment disaggregated further				
Full-time	29	4	13	4
Part-time	29	22	0	4
Self-employed	0	0	0	4

To establish the household's own perceptions of their vulnerability, respondents were asked to state how well-off they thought their households were in comparison to their neighbours. The majority of the respondents in both sites believed that they were below their neighbours in terms of wealth, with none stating they were above their neighbours (Table 5.4). This confirms that this study was indeed sampling the more vulnerable households within the two study sites.

Table 5.4. Respondent’s perceived position amongst their neighbours in terms of wealth in Lesseyton and Willowvale

Well-off comparison	Lesseyton % (n=50)	Willowvale % (n=50)
Above	0	0
Middle	24	10
Below	68	66
Don’t know	6	24

5.2.3 Perceptions of how gender can influence vulnerability

Respondents were asked to state whether they believed that men and women respond differently to shocks and stressors and whether women were more vulnerable (Table 5.5). Seventy four per cent of the respondents in Lesseyton and 46 % in Willowvale believed that men and women do cope differently. Examples given were that men are stronger and more active whereas women are weaker and have fewer skills; however women are more caring and look after their money. Half of the respondents in Lesseyton and almost the same number (46 %) in Willowvale believed that women are more vulnerable to shocks than men. Reasons given for this were that men bring home the majority or all of the income while women usually stay at home to look after the family. This arrangement generally leaves women unemployed and largely dependent on other household member’s income (the men’s) or social grants, as discussed above (section 5.2.2).

Table 5.5. Gender differences amongst the men and women regarding coping with vulnerability

Men and women cope differently	Lesseyton % (n=50)	Willowvale % (n=50)	Examples
Yes	74	46	Men are stronger, more active Women are more caring, look after money, weaker, less skilled
No	20	54	
Women are more vulnerable to shocks	Lesseyton % (n=50)	Willowvale % (n=50)	Examples
Yes	50	46	Men bring home the income Women left to look after family Less work available to women
No	44	54	

Disaggregating the responses in Table 5.5 by gender revealed that the majority of the women in both sites believed that they were more vulnerable to shocks than the men, however this seemed to be the opposite for what the men believed as majority of them in both sites disagreed with this (Table 5.6). There was a significant difference between men and women's perceptions in Lesseyton (at the 10 % significance level). This could possibly be explained by the more pronounced gap between the income and employment levels of the men and women in Lesseyton (see Table 5.3).

Table 5.6. Perceptions of vulnerability disaggregated by gender

Perceptions of vulnerability according to gender		Lesseyton (n=50)		Willowvale (n=50)	
		Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
Are women more vulnerable to shocks and stressors?	YES	40	60	39	51
	NO	55	30	60	48
Pearson's Chi-square		0.096		0.368	

A study carried out in India amongst rural farming communities in drought prone areas revealed that women (26 %) were more likely to report being more vulnerable to the effects of drought as compared to men (7 %) (Food and Agricultural Organisation (FAO), 2009). Women being the 'care-givers' typically remain at home looking after the children and elderly and are responsible for collecting water, working in their fields or gardens, collecting natural resources, and preparing food. Women are also more likely to have lower incomes, fewer assets, and less power over family finances and in decision making (Annecke, 2011).

5.2.4 Natural resource use and dependence amongst households interviewed

Households in Willowvale used more wild and cultivated resources in compared to households in Lesseyton (Figures 5.1 and 5.2). In Willowvale, 76 % of households interviewed had planted some form of crops; whereas this was lower in Lesseyton with 58 % (largely small gardens). The IDRC project's larger household survey (see Chapter 1) showed that 78 % of households in Willowvale and 51 % of households in Lesseyton owned a

field/garden. However, from the project’s larger household survey, only 42 % and 18 % of households respectively grew at least one crop (average of two seasons). This may suggest that more vulnerable households (targeted in this study) may be using cultivation as a livelihood strategy in the absence of other income sources and to increase food security.

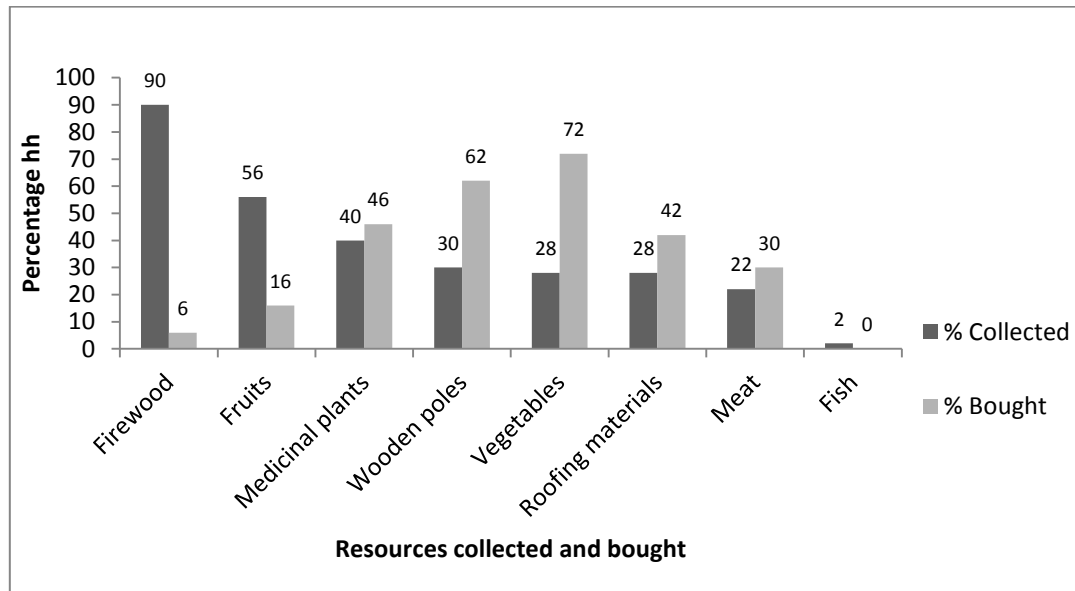


Figure 5.1. Comparison between percentages of resources collected and bought in Lesseyton (including both wild and cultivated resources harvested)

It is evident that the peri-urban setting of Lesseyton has a strong influence on the way and degree in which the households satisfy their basic dietary and household needs. Households in Willowvale, being more rural and located further away from a large urban centre, tend to rely more on natural resources (Barrett *et al.*, 2001; De Klerk, 2007; Shackleton *et al.*, 2001). The higher unemployment rate and lower amount earned on average in Willowvale (Table 5.2) contributes to households making more use of natural and cultivated resources (Figure 5.2).

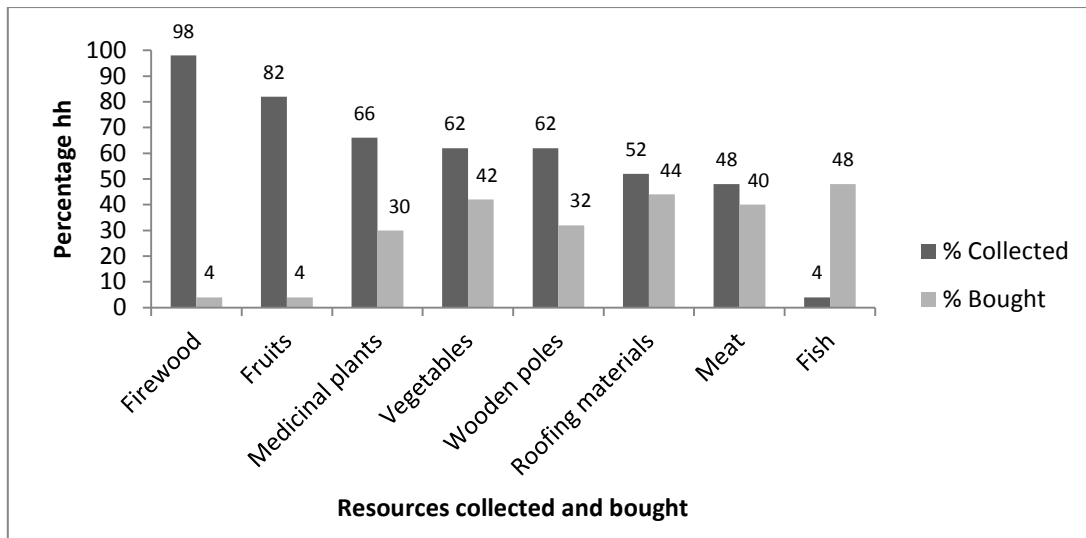


Figure 5.2. Comparison between the percentages of resources collected and bought in Willowvale (including both wild and cultivated resources harvested)

However, majority of households in both sites (within the last year) agreed that they relied more on purchased goods than the use of natural resources and that it had made their lives harder (Figure 5.3) primarily due to financial constraints. This reliance on purchased goods could be due to a combination of factors such as how the past drought impacted households’ ability to farm, the availability of natural resources, the lack of assets needed for farming, as well as cultural changes such as striving for a more ‘westernised’ lifestyle.

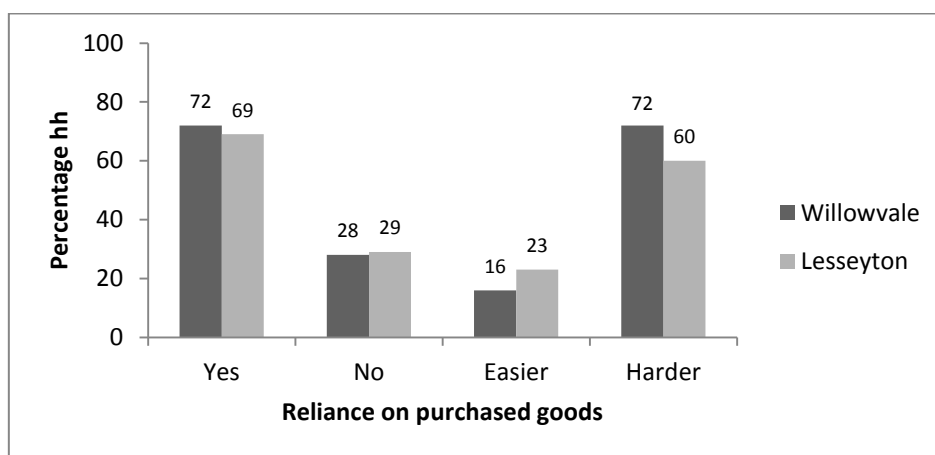


Figure 5.3. Comparison between the percentage of natural resource use and purchased goods in Lesseyton and Willowvale

In Willowvale, the inability to farm is a big concern for the community (Chapter 6, Figure 6.7, mental map from men’s workshop) as many people do not have the financial and physical capital to continue farming in a sustainable manner.

5.2.5 Food security amongst households interviewed

Respondents were asked to indicate the level of perceived food insecurity within their household. Respondents in Willowvale felt more food insecure in comparison to respondents in Lesseyton (Figure 5.4). The increased reliance on purchased goods in the last two years (Figure 5.3) as well as the higher percentage of unemployment and lower average monthly income (Table 5.2) in Willowvale offers an explanation for the variances between the sites. A study by Quinn *et al.* (2011) showed that eating less preferred foods was a popular strategy employed during times of hardship, which shows similarity to households in Lesseyton and Willowvale (Figure 5.4, eating a limited variety). The study also showed that the key stressors identified by households impacting food security were economic (increased prices), environmental (drought), and health or illness (Quinn *et al.*, 2011).

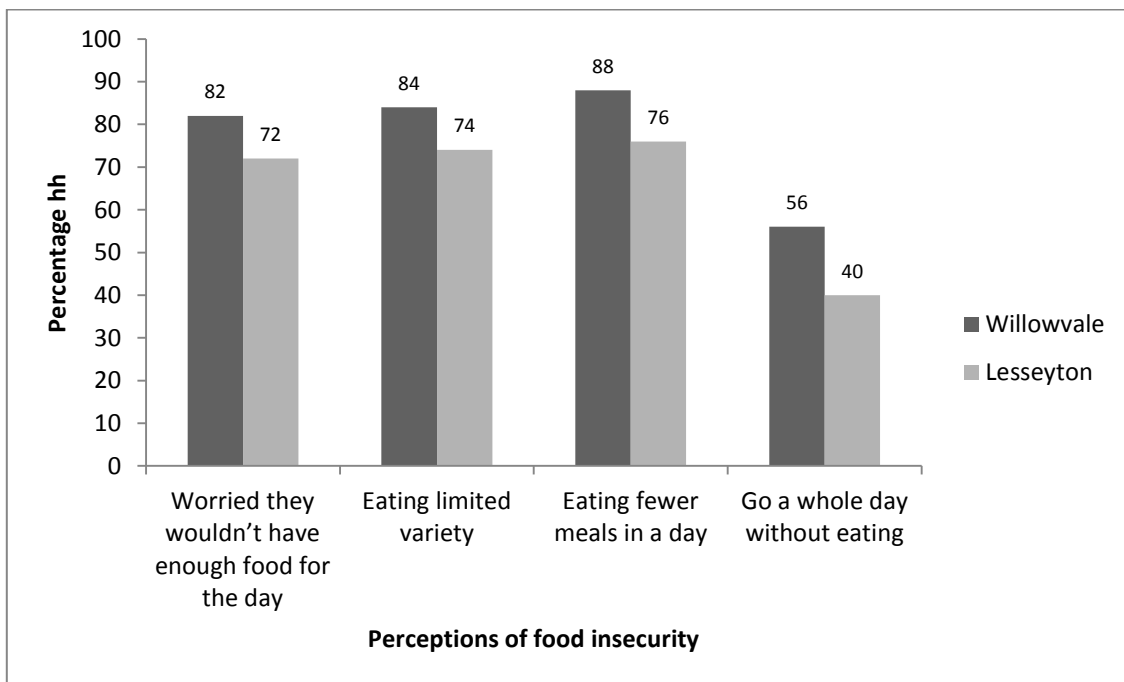


Figure 5.4. Comparison of food security responses between Lesseyton and Willowvale

5.2.6 Discussion: household vulnerability context

Vulnerability is not only shaped by present day shocks and stressors, but rather, it is influenced by a combination of current and pre-existing socio-economic, environmental,

structural, and political factors as highlighted in the conceptual framework in Chapter 2 (section 2.4). In thinking of complex socio-ecological systems, vulnerability is influenced by a host of cross-scale (both spatial and temporal) factors, and therefore it is important to consider how the past has and will continue to shape household's present and future vulnerability.

There has been a collection of events, throughout history, which has shaped present day vulnerability within South Africa (see Chapter 3, section 3.2.4). The legacy of apartheid is still evident in rural communities throughout South Africa, particularly within the former homeland areas (Beinart, 2012; Coovadia *et al.*, 2009; Guthrie, 2002; Perret, 2002). This is apparent in both Lesseyton and Willowvale.

The structure of interviewed households shows influences of the socio-economic effects of apartheid, particularly in Willowvale where working-age adult males are largely absent from the households. In a study by Makhuvha and Mballa (2010), a large absenteeism of male adults was found within both Lesseyton and Willowvale. The large percentage of single female headed households (section 5.2.1), particularly in Willowvale, can be explained by the large out-flow of the adult working population (discussed in Chapter 3, section 3.2.4), particularly males, to urban centres, as well as AIDS-related deaths. There was a noted trend of migration from the eastern, rural areas towards the more developed western half of South Africa (Makiwane and Chimere-Dan, 2010). Therefore, large out-flows were less common in Lesseyton. Today, many of the respondents who are employed work in the nearby urban centre, Queenstown. The high percentage of single female headed households coupled with the high percentage of unemployed females in both sites can explain the large dependency on social grants (see Table 5.1 and Table 5.3). The Commission for Gender Equality (2010) found that women make up a larger percentage of the unemployed and generally receive lower wages as a result of lower skills and education. The high rate of unemployment and lower skills and education amongst women has created a growing culture of dependency which some believe to be maladaptive (Vincent, 2006). Women in both sites perceived themselves to be more vulnerable to shocks and stressors in comparison with men (Table 5.6). This was largely attributed to the low levels of employment and income amongst the women and that they typically remain at home to care for children and elderly and work in the fields or gardens. The remnants of apartheid can also be seen in the low levels of education amongst the adult generation (Table 5.1, section 5.2.1), especially the elderly, as many were not afforded the opportunity for education or left school at a very young age

(Stadler, 2012). A study done by Perret (2002) in former Transkei showed similar socio-economic traits within households' structure. It was found that households generally accommodated six persons and were headed by pensioners. Many of the adults were absent and a third of the households were headed by single females (Perret, 2002).

The use and sale of natural and cultivated resources has been noted to be an important livelihood strategy used within rural communities (De Klerk, 2007; Dovie, 2001; Paumgarten, 2005; Paumgarten and Shackleton, 2011; Takasaki *et al.*, 2010; Twine and Hunter, 2009) (see Chapter 2, section 2.3.5.1). Households in different geographical locations with contrasting biophysical and socio-economic environments can have marked differences in the livelihood strategies available to them. Households in Willowvale had a higher dependency on wild and cultivated natural resources in comparison to households in Lesseyton (Figures 5.1 and 5.2). Natural resources are more readily available in Willowvale and a higher percentage of households have small gardens and fields from which they are able to use resources to supplement their dietary and household needs. Also, there is a far larger area available for cultivation to households in Willowvale. However, respondents in Willowvale perceived themselves to be more food insecure in comparison to respondents in Lesseyton. Stadler (2012) showed the same result based on scores derived from weighted responses. Many studies have emphasised how the rural poor who rely on climate sensitive sectors, such as agriculture, will be heavily impacted by climate related shocks and stressors, especially those households who have limited financial and physical assets, and poor access to basic services (Davies *et al.*, 2009; Devereux, 2002; Drimie and Casale, 2009; McDowell *et al.*, 2010).

Despite the more evident use of natural and cultivated resources in Willowvale, there has been a decreasing trend in farming (Shackleton, 2012), particularly in Lesseyton, where gardens and fields were more scarce. The decreasing trend in agrarian-dominated livelihoods and increasing reliance on off-farm income has been observed in other studies throughout the country (Andrew *et al.*, 2003; Aliber and Hart, 2009; De Klerk, 2007; Hebinck and van Averbeke, 2007; Mabhena, 2012; Stadler, 2012; Quinn *et al.*, 2011). Stadler (2012) found that farming for food in Lesseyton had largely stopped (as showed in section 5.2.4). This can be explained by, as previously discussed (Chapter 3, section 3.5.1), the densely laid out structure of Lesseyton, resulting in fewer households having small gardens and fields, and the higher reliance on off-farm income among respondents. Lesseyton also has a drier climate and has experienced several dry years.

Both Lesseyton and Willowvale still have high rates of unemployment (Table 5.2). In the context of climate change and HIV/AIDS, the impacts of combined shocks and stressors can be amplified in the presence of unequal gender relations and conditions of poverty (UNEP and UNAIDS, 2008), both of which are evident in the two study sites. The women in both sites perceived themselves to be more vulnerable to shocks and stressors than the men (Table 5.5 and Table 5.6). The resultant financial constraints from unemployment coupled with a culture of dependency on social grants (especially amongst the women), a decreasing trend in farming, an increasing reliance on purchased goods, and consequently a high perception of food insecurity (Figure 5.4) has created a vulnerable context and weak adaptive capacity amongst these especially vulnerable households within Lesseyton and Willowvale.

5.3 Local understandings of vulnerability

5.3.1 SLG workshop

There are numerous definitions of vulnerability found throughout the literature as explained in Chapter 2. Building on these definitions, participants of the SLG workshop were asked to discuss their understandings of vulnerability and list what they believe ‘being vulnerable’ means (Table 5.7) and what contributes to their vulnerability.

Table 5.7. Local understandings of vulnerability which emerged from discussions at the SLG workshop

Local understandings of vulnerability	
Lesseyton	Willowvale
<ul style="list-style-type: none"> • Dependency on others 	<ul style="list-style-type: none"> • Unemployment and poverty
<ul style="list-style-type: none"> • Lack of skills 	<ul style="list-style-type: none"> • Lack of education and no skills
<ul style="list-style-type: none"> • No parental care 	<ul style="list-style-type: none"> • No parental care
<ul style="list-style-type: none"> • Drought (livestock death and crop disease) 	<ul style="list-style-type: none"> • Climate change
<ul style="list-style-type: none"> • Relying on remittances and other unreliable income sources 	<ul style="list-style-type: none"> • Substance abuse
<ul style="list-style-type: none"> • Breadwinner dies 	<ul style="list-style-type: none"> • HIV/AIDS and infidelity
<ul style="list-style-type: none"> • Crime 	<ul style="list-style-type: none"> • Rape and crime

The members from Lesseyton understood ‘vulnerability’ to mean being too dependent on someone else, lack of guidance and parental care for the youth, drought which causes livestock death and crop failure, relying on unreliable sources of income such as remittances, and having the main breadwinner in the household die. There were similarities in the understandings of vulnerability between the two sites; in addition to the attributes of vulnerability listed in Lesseyton, participants in Willowvale mentioned climate change, substance abuse, unemployment and poverty, as well as HIV/AIDS and infidelity.

5.3.2 Personal narratives of vulnerability and quotes from the life history interviews

Life history interviews have the potential to reveal how personal narratives are embedded in the wider socio-economic, environmental and political context. More specifically, personal narratives may reveal key themes within the broader vulnerability context (Haynes, 2010). Table 5.8 provides a few quotes emphasizing the different areas of vulnerability revealed in the household interviews (also see Appendix 1). Many of these echo the areas of vulnerability identified in the SLG workshop. There was a large amount of dependency on others (family members’ income or grants). HH86 in Table 5.8 provides a good example of how a household may struggle once a household member or breadwinner dies. As shown previously (Table 5.1), the average level of education amongst the respondents was fairly low. This was also mentioned throughout the life history interviews (HH42, HH22) as many respondents were taken out of school due to the inability of their parents to afford further costs associated with schooling and for assistance with household chores. Crime was mentioned by the respondents to affect their farming activities (undermining respondents asset base) (HH81) and was largely centered on the youth (HH41). Climate-related shocks and stressors increased the need and reliance on purchased goods (increasing financial stress) amongst the respondents (HH38, HH56, HH66, HH79), and respondents mentioned an increasing trend in the occurrence of infectious diseases within the communities (HH41, HH25) as well as the discerning stigma attached to HIV/AIDS (HH66). Many of the narratives corroborate the sense of women being more vulnerable in terms of unemployment and being dependent on other’s income, lack of education and skills (see Chapter 5), and crime (see Chapter 6, section 6.4).

Table 5.8. Personal narratives of vulnerability categorized into sub-themes

Households	Theme: Vulnerability
	Dependency on others
Lesseyton HH34 Female (age: 70)	I was not working when I had children. I had to beg from neighbours and those around me to help feed my children. People would see me coming and whisper to each other saying “there she comes”. They knew I was coming to ask for something. I would quarrel with my husband and leave him and go home. He loved women and spent his money on them. That was why we quarrelled. He would give me only R20.00 but I had children to feed and clothe. There was nothing I could do. I couldn’t leave him. I did not have a job and I had no income. There were children to take care of. I had to do with the little that he gave us. It was really bad; I used do hard labour like filling in the dongas when the roads have.
Lesseyton HH12 Female (age: 68)	There are six people living in this house. Me, my two daughters, my brother and my grandchildren. We assist each other with domestic chores. No one is employed. We live on the pension that I get (old age pension). Two children are schooling. The pension I get is not enough. I have to feed, clothe and provide for my children’s school needs.
Willowvale HH86 Female (age: 52)	I was living with my mother-in-law who was blind. She was getting a social grant from the government which assisted us to get food and other necessities. She then passed away. Without her social grant we struggled even more. Still my husband couldn’t get permanent employment. He got a job as a casual in the construction industry in Saldanna (CT). He would send us whatever he could afford R300 or R400 per month. Time went by and my husband returned home as he was ill. He passed away 3 years back. Things got a little bit better when I received a social grant for the younger children. Children attend school, they need uniform, shoes and books; all must come from the child social grant.
Willowvale HH56 Female (age: 67)	It is much harder now. There is no employment for the youth. They depend on my pension for survival. Everything they want, they expect me to provide.
Lack of education	
Lesseyton HH42 Male (age: 42)	My parents struggled so I did not get an education. They could not afford to buy us clothes and shoes, so we left school when we were still doing Sub B. It is different with our children now that I am a parent. I manage to pay for my children’s education.
Lesseyton HH22 Female (age: 52)	I went to school up to Std. 6. My parents lost their jobs and I could not continue with my schooling, I dropped out.
Crime	
Lesseyton HH38 Male (age: 42)	We got a phone call on a Saturday at about 12 midnight to say Grandma was being attacked by thugs. They stabbed her 4 times. Grandma stayed with a 14 year old girl. They ran away with the girl. We searched for the girl and when we arrived we found the girl dead; they

	had raped her and broke her neck. We are disappointed in the police in the way the case was handled. They were imprisoned for only two months and were released. In fact the case was dismissed. Justice had failed us.
Willowvale HH81 Male (age: not known)	Crime is rife. I cannot leave my chickens in the fowl run. When it is bed time, I fetch the chickens and they sleep with us in the house. There are livestock thieves and also cars get stolen.
Lesseyton HH41 Male (age: 60)	Since young people are jobless they spend their time drinking and committing crime. If they could get jobs things would be better. They would have something keeping them busy. Also if the taverns could close early while it is still daylight.
Climate related shocks and stressors	
Lesseyton HH38 Male (age: 42)	We are struggling, there is no proper housing. When it is raining this house leaks.
Willowvale HH56 Female (age: 67)	Pesticides and cattle feed is very expensive, we cannot afford it and therefore our livestock die.
Willowvale HH66 Female (age: 65)	Harder, for everything you need you must have money. In the old times there was a good harvest. You could have something to eat even if you did not have money.
Willowvale HH79 Female (age: 80)	Starvation is the problem now; since there is no produce in the fields anymore. One must have money to survive. Money is everything these days.
	We don't have the cattle to plough the fields. You must have money to be able to plough; to hire the tractors that are used today for ploughing.
Health related shocks and stressors	
Lesseyton HH 41 Male (age: 60)	Then it was only headaches and stomach-ache, nothing major. Today we hear of diseases that are not curable like HIV. There was no HIV when I arrived here but today HIV is all over the place. People are dying from it.
Lesseyton HH 25 Male (age: 25)	TB and HIV are very common now. It was not like that when I grew up.
Willowvale HH 56 Female (age: 67)	People got help from herbalists and they got cured. Today most people go to medical doctors but there are a few who still use herbalists. The rate of HIV is high. There are people with HIV in the community.
Willowvale HH 66 Female (age: 65)	No support from the community. People do not want to associate with it. They bad-mouth people with HIV.
Lesseyton HH 15 Male (age: 65)	Now I live alone in my home. This year things are tough for me. I did not plough my garden due to illness. I was diagnosed with high blood pressure and diabetes. I cannot afford to pay my accounts. My income is spent on medication and transport to the health centres. I am worried that I fail to pay my burial subscription due to ends not meeting. I also worry about not having money to build a house for myself.

5.3.3 Discussion of local perspectives of vulnerability

In asking individuals, within rural communities, what makes them vulnerable; one would expect to see listed events of heightened stress (short-term and long-term) and situations which weaken individual or household adaptive capacity. As explained in Chapter 2 (section 2.3) the attributes of vulnerability listed by the participants can be separated into shocks and stressors. Drought, the death of a breadwinner, and rape and crime were mentioned as unexpected events of heightened stress. The longer term stressors mentioned included HIV/AIDS, poverty, unemployment, and climate change. The participants understanding of vulnerability is consistent with findings within the literature emphasising how shocks are conceptualised as short-term perturbations often stemming from longer-term stressors (Casale *et al.*, 2007; Fussel, 2007; King, 2011).

The three components of vulnerability, as explained by the IPCC (2001), can be related to the participants understanding of vulnerability. Crime, substance abuse and lack of parental care, and infidelity can be linked to the ‘sensitivity’ component of vulnerability as it increases the risk and degree to which people will be exposed to related threats. For example, an individual or household who relies solely on one income source, such as a pension grant or remittances, is very exposed and sensitive to shocks, such as the pension holder dying or remittances not been sent, therefore weakening their adaptive capacity. An example of this is shown in Table 5.8 (Lesseyton HH34) of a woman who is reliant on her husband for money; however she seldom received enough money from him to look after the children, which forced her to beg and do physically demanding labour. Several of these understandings or attributes of vulnerability identified in the workshop, such as the lack of education and skills, and unemployment and poverty, can create a weak adaptive capacity to respond to shocks and stressors and may force people into coping strategies that are maladaptive, such as transactional sex (see Chapter 6, section 6.4).

Much of the life history interview conversations held around vulnerability were around the issues of dependency, unemployment, and the resultant financial inability to purchase goods and services. This was very evident when it came to farming and education (Table 5.8; Appendix 1). The inability to buy feed, cattle, seeds, medicine for livestock or pesticides has negatively affected a household’s harvest and livestock farming. More and more households are slowly moving away from farming and have therefore become more dependent on buying goods from the shops (Figure 5.3; Shackleton, 2012; De Klerk, 2007). However, as shown in

Figure 5.3, majority of respondents in both sites believed that the increasing reliance on purchased goods has made their lives more difficult as it has placed increased financial stress on the household. Not having crops to fall back on during times of financial hardship leaves households vulnerable and more food insecure, as perceived by respondents in both sites (see Figure 5.4). Other reasons, such as ill health and crime, have contributed to respondents not being able to work in their gardens or fields (Table 5.8).

A few of the life history interviews showed how it was common for parents to take their children out of school because of the inability to afford uniforms and school fees, or for assistance with household chores. A study by Timmermans (2004) found that many households in the nearby Dwesa-Cwebe area could not afford the associated cost of education. Other reasons found for children not attending school were distance, illness and assisting with farm work (Timmermans, 2004). Households are afforded the opportunity to ask for free schooling; however there is often a social stigma attached to this act as households do not want to be seen by their neighbours as poor or struggling. The lack of education has left people without the skills needed to find employment. The youth also mentioned the poor quality of education (see Chapter 6, section 6.4.2). Unemployment and therefore the inability to farm successfully have left many people completely or largely dependent on government grants or someone else's income.

Crime was mentioned frequently, in both sites, throughout the life history interviews, and was identified as a contributor to participant's vulnerability during the SLG workshop (Table 5.7). Many respondents spoke of how unemployment and youth related crimes are common within their communities. Crime was shown to have large impacts on farming in both sites, particularly in Lesseyton, where the low amount of households farming was largely attributed theft of livestock and fences (Stadler, 2012). The elderly expressively disapproved of the youth and held them responsible for most acts of crime. Workshops held in Willowvale (see Chapter 6, section 6.4.1) showed similar results. A likely connection can be made to the high occurrences of youth related crimes and the lack of parental care within households, as discussed by participants during the SLG workshop (section 5.3.1) Also, the absence of a parent/parents within a household can impact emotionally on a child, and may increase the likelihood of children (primarily boys) becoming involved in crime (Chapter 3, section 3.2.4; Coovadia *et al.*, 2009). In addition, aids orphans are a reality in many rural communities, leaving children to head households.

Overall, the issue of unemployment, lack of skills and education, crime (especially amongst the youth), ill health and the inability to farm emerged as the main concerns people had during the life history interviews. This reiterates the main characteristics which emerged from the local understandings of vulnerability (section 5.3). The survey data (particularly the discussion in section 5.2.6), the local understandings of vulnerability, and respondents' personal narratives of vulnerability highlight the inherent complexity involved in understanding household vulnerability in the context of complex socio-ecological systems.

5.4 Conclusion

This chapter was guided by the research question of what makes communities, households and individuals vulnerable from a local perspective. It was found that there were a host of cross-scale shocks and stressors influencing the vulnerability context of Lesseyton and Willowvale (section 5.2). The legacy of apartheid is still evident within the two sites. The high rates of unemployment (particularly among the women), high dependency on social grants, migration (and the resultant influences on household structure), low levels of education, and poor service delivery within the two sites was reflective of this.

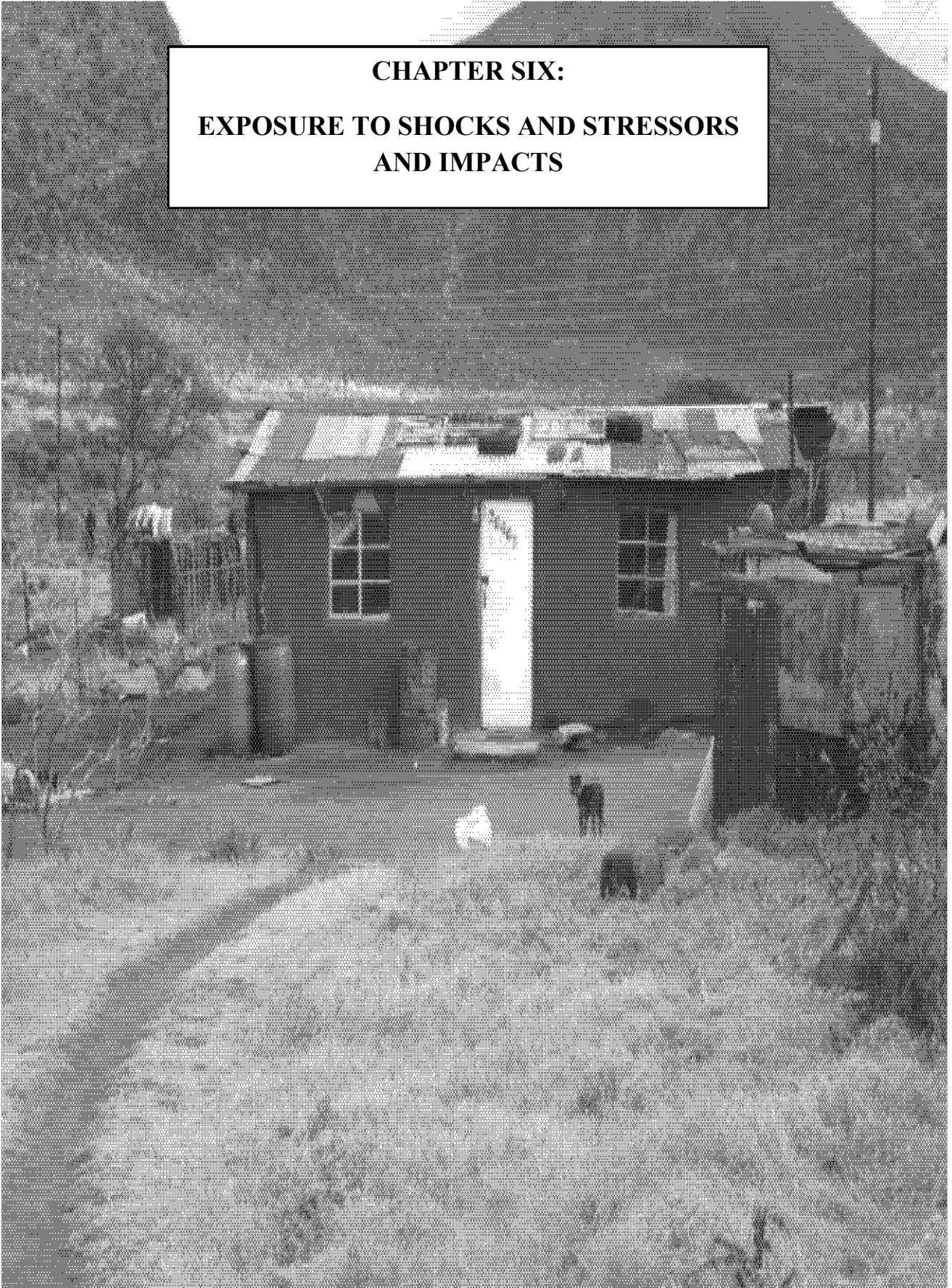
The relatively high dependency on natural and cultivated resources (particularly in Willowvale) is common within rural communities; however the decreasing trend in farming within both sites has contributed to household food insecurity. As a result, households rely more on purchased goods which has placed higher financial stress upon households.

Households understanding of vulnerability incorporated events of heightened stress and situations which weakened individual or household adaptive capacity (Table 5.7). Being dependent upon another person's income, having a lack of skills or education, unemployment, exposure to climate-related shocks and stressors, substance abuse, crime, and a lack of parental care (implications on the youth's behaviour) were believed to contribute to participants' vulnerability. The life history interviews (Table 5.8) reiterated what was found in the survey data and SLG workshop. Respondents spoke of the lack of education, unemployment and the resultant dependency on social grants or others' incomes. Issues of crime largely centred on the youth. Ill health and the inability to farm also emerged as concerns amongst the respondents.

Within the context of climate change adaptation, particularly when dealing with exposure to multiple shocks and stressors, it has been stressed that understanding the past, especially

within rural-poor communities, is a valuable tool in assessing response strategies, based on past coping and adaptation strategies (Adger *et al.*, 2003; Vincent, 2006). Household adaptive capacity is a result of complex interactions of multiple shocks and stressors at various scales. This is evident within the two study sites and has created a weak adaptive capacity and vulnerable context within Lesseyton and Willowvale.

**CHAPTER SIX:
EXPOSURE TO SHOCKS AND STRESSORS
AND IMPACTS**



6.1 Introduction

This chapter, Chapter 6, presents the shocks and stressors which have impacted households and how these have interacted and compounded the existing vulnerability context (A in the conceptual framework of this study, Figure 2.2, Chapter 2). The results and discussion within this chapter are based upon the following research questions:

- What are the key shocks that vulnerable households have faced over the last two years?
- What are some of the longer-term changes or stressors households have experienced?
- How do these shocks and stressors interact and how have they impacted vulnerable households?

Three sources of data were again used to provide the results of this chapter, namely the survey data (framed within the last two years) which identifies the general, climatic and health related shocks and stressors to which households had been exposed to, mental maps of interactions between community identified stressors, problem tree analysis and problem identification tables (developed with different social groups) drawn up from the PLA workshops held in both Lesseyton and Willowvale, and the life history interviews. Throughout this chapter (and Chapters 5 and 7), the use of different methods not only revealed different results but also proved useful in triangulating the findings.

6.2 Exposure to shocks and stressors

6.2.1 Survey results

Respondents were asked to state, from a predetermined list of 22 items (with the possibility of respondents adding additional shocks or stressors to the list), which shocks and stressors they had experienced in the past two years. A list of the top general shocks and stressors experienced (Figure 6.1) show climate-related shocks to be a strong focus amongst the households in both sites, especially drought, strong winds, and water shortages. Rainfall variability was believed to be quite common in both sites where periods of drought followed by floods and heavy rainfall were believed to be an important manifestation of this (Makhuvha and Mballa, 2010), especially in Willowvale (Figure 6.1). This finding is substantiated by the future climate predictions of more intense rainfall events in between longer dry spells, and increased rainfall and flooding along the coastal belt (Peterson and

Holness, 2011). Livestock disease and crop failure were also common shocks experienced in both sites, which can be linked to the issue of drought and water shortages.

Fires were experienced more in Willowvale than in Lesseyton (Figure 6.1 and Table 6.2). Grasslands make up a large percentage of the vegetation cover throughout the former Transkei and fires are commonly used to stimulate early summer grass production in the communal areas which helps maintain the grassland state along the coastal regions (De Klerk, 2007; Palmer and Ainslie, 2005; Shackleton, 1991). However, more dry conditions could intensify these fires and potentially cause household damage and asset loss.

Shocks of human illness and death were not regularly mentioned in comparison to climatic and financial shocks, but were higher in Lesseyton. However, financial shocks, particularly the cost of funerals (an indirect measure of death) which can put households under a lot of financial stress, were more common in Willowvale. The higher monthly incomes earned in Lesseyton (see Chapter 5, Table 5.2) could offer an explanation as to why financial shocks were not considered as important by respondents in Lesseyton. The shock of not receiving a grant/pension/remittance was similar in both sites. This reasserts what participants in the SLG workshop (held in Willowvale) mentioned as a contributor to vulnerability (Table 5.7, unreliable income sources). Other less common shocks experienced by the respondents were the loss of a pension (Lesseyton 16 %, Willowvale 12 %), the death of a breadwinner (Lesseyton 31 %, Willowvale 28 %), having to look after an orphan (Lesseyton 36 %, Willowvale 26 %), and the loss of assets (Lesseyton 32 %, Willowvale 28 %).

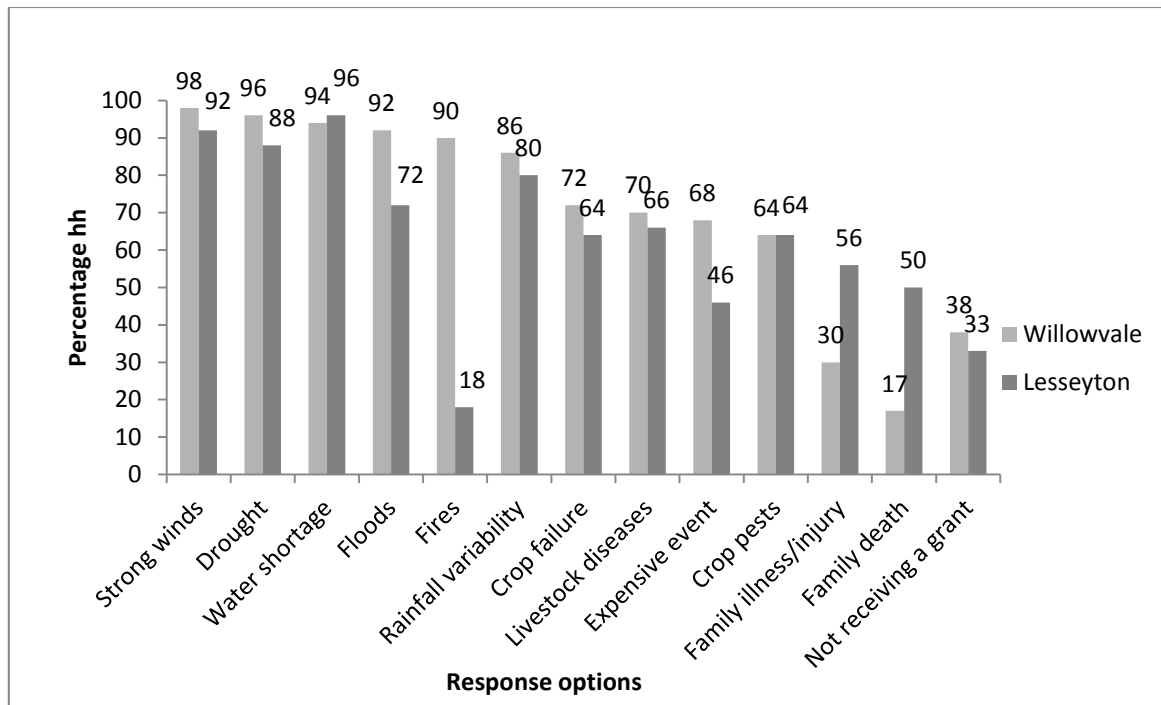


Figure 6.1. Top general shocks and stressors experienced in Lesseyton and Willowvale

The average number of shocks experienced by each household in both sites was almost equal with Willowvale experiencing 12 (SD±3.67) and Lesseyton experiencing 11 (SD±4.26). It was interesting to note that female respondents in both sites agreed to having experienced (on average) more shocks in comparison to the men (Lesseyton: men 11.6 % and women 14.5 %; Willowvale: men 12.7 % and women 12.2%). This number differed between the two sites, and interestingly, respondents in the peri-urban site (Lesseyton) perceived more shocks and stressors.

Disaggregating the data by gender showed interesting differences in gendered perspectives between and within the study sites (Table 6.1). There was a greater occurrence of family illness or injury (9 in Table 6.1) experienced by the men in both sites, with this being significantly higher in Willowvale. Significantly more women had experienced family death (11) and the loss of a breadwinner (12) in Willowvale. Women within rural communities typically rely more on men to be the breadwinners within a household which could possibly explain this difference. Significantly more men in Willowvale had experienced an expensive event (17). In Lesseyton, significantly more women had taken in orphans than men (19), but the opposite was found in Willowvale. However, overall, it was more pronounced in Willowvale. Although not significantly different, livestock disease and death (8) was acknowledged more by men in both sites. Men typically play a more prominent role in the

keeping of livestock, and therefore they would be more aware of the general health and productivity of their livestock (Manona, 2005). Significantly more men than women mentioned rainfall variability as a stressor than women.

Interestingly, the significantly different experiences of shocks and stressors between men and women seemed to be dependent on whether the shocks and stressors were idiosyncratic or common (see Chapter 2, section 2.3.1). Common shocks, such as drought, floods, fires, strong winds, and crop failure (Table 6.1), generally affect all individuals resulting in similar experiences. Idiosyncratic shocks, such as family death or looking after orphans, are more personal as they impact on the individual.

Table 6.1. Disaggregation of the shocks and stressors by gender and significant differences using Pearson’s Chi-square tests at 10 %, 5 %, and 1 % significance levels (shaded blocks)

Common shocks and stressors	Lesseyton (n=50)		Willowvale (n=50)	
	Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
1. Drought	92	82	100	96
P-value (Chi-square)	0.279		0.332	
2. Floods	77	65	95	92
P-value (Chi-square)	0.324		0.600	
3. Fires	18	17	95	88
P-value (Chi-square)	0.918		0.337	
4. Strong winds	96	87	100	100
P-value (Chi-square)	0.225		1	
5. Water shortages	96	95	95	96
P-value (Chi-square)	0.908		0.954	
6. Crop pests	26	65	75	57

Common shocks and stressors	Lesseyton (n=50)		Willowvale (n=50)	
	Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
P-value (Chi-square)	0.908		0.197	
7. Crop failure	63	65	70	73
P-value (Chi-square)	0.869		0.860	
8. Livestock disease/death	74	43	79	65
P-value (Chi-square)	0.192		0.278	
9. Family illness/injury	63	48	79	46
P-value (Chi-square)	0.283		0.016	
10. Breadwinner illness/injury	44	47	33	19
P-value (Chi-square)	0.811		0.256	
11. Family death	48	52	25	46
P-value (Chi-square)	0.777		0.119	
12. Breadwinner death	37	30	16	38
P-value (Chi-square)	0.623		0.086	
13. Loss of assets	37	34	25	30
P-value (Chi-square)	0.869		0.650	
14. Loss of job	40	30	41	42
P-value (Chi-square)	0.449		0.963	
15. Loss of pension	22	17	12	11
P-value (Chi-square)	0.670		0.917	
16. Did not receive grant/pension/remittance	26	30	45	34

Common shocks and stressors	Lesseyton (n=50)		Willowvale (n=50)	
	Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
P-value (Chi-square)	0.723		0.419	
17. Expensive event	44	47	83	57
P-value (Chi-square)	0.811		0.048	
18. Theft	22	34	33	34
P-value (Chi-square)	0.324		0.924	
19. Look after orphans	29	56	37	19
P-value (Chi-square)	0.055		0.151	
20. Rainfall variability	77	86	95	80
P-value (Chi-square)	0.670		0.101	
21. Loss of soil fertility	44	34	45	50
P-value (Chi-square)	0.487		0.768	
22. Loss of grazing land	29	30	37	38
P-value (Chi-square)	0.951		0.614	

Respondents were asked to rank which shocks and stressors they had experienced (Figure 6.1) were the hardest to recover from (Table 6.2). Expensive events, and illness/injury and death within a household ranked fairly low in comparison to climate-related shocks and stressors. Once again the impact of fires was noted as more significant in Willowvale than in Lesseyton. Livestock disease and crop pests were also ranked higher in Willowvale which can be explained by the higher percentage of households involved in livestock and farming in Willowvale (Stadler, 2012).

Table 6.2. Top general shocks and stressors ranked as hardest shocks to recover from in Lesseyton and Willowvale

Hardest shocks and stressors to recover from	Lesseyton % (n=50)	Willowvale % (n=50)
Water shortages	68	52
Strong winds	34	36
Drought	26	26
Floods	22	10
Crop failure	22	6
Death of a family member	14	4
Death of main breadwinner	14	10
Livestock disease	12	22
Expensive event	8	16
Fires	2	42
Human illness/injury	0	22
Crop pests	0	12

6.2.2 Life history interviews

It was suggested, by respondents during the life history interviews, that the number of shocks and stressors and level of vulnerability within households is increasing (Table 6.3, Lesseyton HH22; Chapter 5, Table 5.8, Willowvale HH56, HH66). There was a perception among respondents in both sites that life has become increasingly difficult in comparison to ‘the old days’. This was also shown by Stadler (2012) and emerged from the youth’s workshops (see section 6.4.2). This was primarily linked to the increasing need for money to survive (see Table 6.3, HH56, HH66; Table 6.7, HH34) and the impact of climate related shocks and stressors on respondents’ ability to keep livestock and cultivate and harvest crops. The impacts of rainfall variability, strong winds, fires, and floods were mentioned as significant shocks and stressors experienced by respondents (Table 6.3 and 6.7). Health related shocks and stressors, such as a household member dying (Table 6.3, HH36) or having to look after a sick/disabled household member (Table 6.7, HH22), were also commonly mentioned by life history respondents. Many of the shocks and stressors which emerged from the personal narratives reiterate the top general shocks and stressors shown in Figure 6.1 above.

Table 6.3. Personal narratives emphasising the general shocks and stressors experienced among the life history respondents

Households	Theme: Types of shocks and stressors
Lesseyton HH22 Female (age: 52)	<u>Life was not that bad then.</u> My brother got a job in Johannesburg. Today life is very hard. Nothing comes easy. <u>It is very hard to survive these days.</u> Several days can go by sleeping on an empty stomach without anything to eat.
Lesseyton HH38 Male (age: 42)	When I was young, I had parents who provided for me but now I must fend for myself. Things are really hard for me. <u>There were droughts that resulted in cattle dying.</u> I have experienced a hailstorm that <u>uprooted trees and broke windows.</u> We are struggling, <u>there is no proper housing.</u> When it is raining this house leaks. I remember the <u>snow falling heavily</u> – we couldn't even go to school. We had to wait until the snow melted. <u>Thereafter we fell ill with flu.</u>
Willowvale HH66 Female (age: 65)	When the floods have stopped we re-build the houses. We start from scratch, make bricks, collect grass for thatching <u>and pay the people who assist us.</u>
Willowvale HH56 Female (age: 67)	We do not have well stocked shops in the community. <u>We go to Willowvale for groceries,</u> the local spaza shops are always out of stock. <u>It costs money to go to Willowvale.</u>
Willowvale HH66 Female (age: 65)	<u>Harder, for everything you need you must have money.</u> In the old times there was a good harvest. You could have something to eat even if you did not have money.
Willowvale HH81 Male (age: not known)	<u>I cannot plough my fields now that I do not have an income.</u> There were serious droughts when I grew up but even today there is drought. <u>It is November now but it feels like it is July.</u> The crops are <u>dying.</u> I am grateful for the social grant given to the small children.
Willowvale HH82 Female (age: 86)	Things were better than now. We farmed and got a good harvest. <u>Now the climate has changed;</u> now we are in November, but still no rains. How are we going to plough the fields without the rain?
Lesseyton HH36 Female (age: 77)	<u>Things changed for the worse when my husband died.</u> I could plough when he was still alive but now things have changed. He was employed so we managed to live a normal life and there was money to get the fields ploughed but not any longer that he is not here. Since the death of my husband I am not the same. It came as a shock and I cannot forget. It still bothers me to this day.
Lesseyton HH42 Male (age: 42)	<u>My husband's brother died of AIDS.</u> He died on a Saturday and we buried him the following Wednesday. He was not on burial scheme but we managed. My husband borrowed money from his employer and he had to pay it back. <u>While he was paying back his debt we struggled financially;</u> but he finally paid it off.
Lesseyton HH22 Female (age: 52)	<u>I live with my brother who is disabled.</u> I must look after him. My life is on stand still. He needs constant care.
Willowvale HH79	<u>My problem is my ill health; I can no longer do things I used to.</u> My

Male (age: 80)	husband too is unable to do things.
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6.2.3 Discussion: shocks and stressors experienced within the study sites

Climate related shocks and stressors emerged as the most experienced within the survey data (Figure 6.1). The Eastern Cape has been subject to drought in recent years (CHDM, 2010) which has influenced the results accordingly (see Chapter 3). Also, the survey framed the questions within the past two years. This two-year time frame revealed shocks household have been exposed to, whereas the mental maps (see section 6.4) and life history interviews seemed to reveal longer-term underlying stressors within the communities (refer to Chapter 2, section 2.3 for definitions). Participants of the PLA workshops (section 6.4) and life history respondents (Table 6.3 and 6.7) largely focused on socio-economic stressors within their communities, such as unemployment, poverty, poor service delivery, crime, HIV/AIDS, and lack of education. With this acknowledged, it is interesting to compare the results from the survey, PLA workshops and life history interviews to triangulate the data (see section 6.5).

The impacts of climate and health-related shocks and stressors are discussed in more detail in the following section (section 6.3).

6.3. Impacts of shocks and stressors

6.3.1 Survey results

6.3.1.1 Climate-related impacts

Respondents were asked to agree on which direct and indirect impacts they had experienced in the past two years due to climate-related shocks (Figure 6.2). The direct impacts which were most frequently mentioned in both Lesseyton and Willowvale were increased water stress, increased food insecurity, and damage to infrastructure (Figure 6.2). There was more of a contrast between the sites when it came to the indirect impacts of the climate-related shocks; prevented development, increased community tension, and spending more money were more common in Lesseyton, whilst the percentage of households whose wealth/poverty was affected as a result was similar in both sites (Figure 6.2). Development within these communities, such as the building of RDP houses, toilets and road repair (more so in Lesseyton), creates part-time employment which many of these household members rely on

for income. Climate-related shocks, such as water stress, strong winds, heavy rains and floods can impede this much needed development.

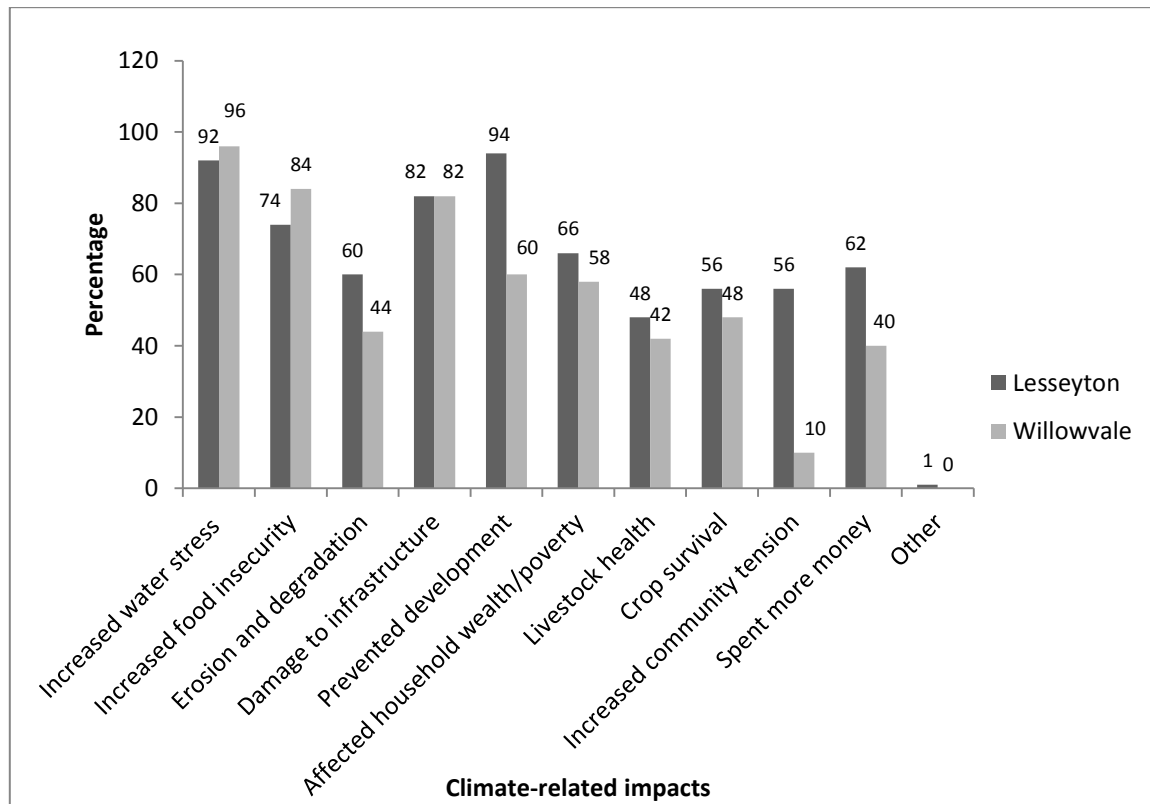


Figure 6.2. Climate-related impacts experienced in the past two years in Lesseyton and Willowvale

In order to determine which of these climatic impacts were the most significant, respondents were asked to rank which of these impacts were the hardest to recover from (Table 6.4). In Lesseyton, prevented development and water stress were the highest ranked impacts, whereas in Willowvale water stress and food insecurity were the highest. As mentioned above, public infrastructure development provides part-time employment, particularly in Lesseyton, and can explain why prevented development was ranked as a difficult shock to recover from. With fewer employment opportunities in Willowvale, households have less income to spend on satisfying dietary needs. With the increasing trend of relying more on purchased goods (Chapter 5, Figure 5.3) and the decreasing trend in farming (see Chapter 3 and Chapter 5; De Klerk, 2007; Shackleton, 2012; Stadler, 2012) and climate-related impacts, households are becoming increasingly food insecure. For those households who substitute their diet with cultivated and harvested resources, food security is further stressed by an inadequate supply of water, as shown in Pettengell (2010). Pettengell (2010) found, in response to such

situations, people have opted for short-term coping strategies, such as food aid, taking out loans, or eating less, in the hope that their situation will eventually improve. These short-term fixes can undermine well-being and do not offer long-term solutions (Pettengell, 2010).

Table 6.4. Climate-related impacts ranked as the hardest to recover from in Lesseyton and Willowvale

Hardest climate-related impacts to recover from	Lesseyton % (n=50)	Willowvale % (n=50)
Water stress	28	34
Prevented development	32	2
Food insecurity	6	24
Damaged infrastructure	8	12
Spent more money	2	10

6.3.1.2 Health-related impacts

Respondents in Willowvale had a much higher occurrence of household members being sick for longer than three months, being almost double that of Lesseyton (Table 6.5). Lesseyton, being a peri-urban rural community has easier access to health care facilities as well as a slightly younger demographic which could explain the lower percentage. However, more respondents in Lesseyton believed that having an ill member in the household made it harder to cope with other hardships. With a lower percentage of unemployment in Lesseyton, individuals may have to sacrifice work in order to look after an ill member, whereas in Willowvale it is more common for household members, especially the women, to be present at home throughout the day.

Table 6.5. Percentage of household members who have been sick for longer than three months, and percentage of households who believed it had made coping with other hardships more difficult

Sick longer than 3 months	Lesseyton % (n=50)	Willowvale % (n=50)
Yes	26	48
No	74	52
Harder to cope with other hardships		
Yes	56	32
No	26	66

Respondents were asked to state which contributions a sick/injured member of their household had made before they fell ill/became injured. Respondents were also asked to tick from a list which contributions they had lost due to losing a member of their household (Table 6.6).

Table 6.6. Percentage of contributions lost from ill/injured and deceased members of a household in Lesseyton and Willowvale

Lost contributions	LESSEYTON % (n=50)		WILLOWVALE % (n=50)	
	Ill/injured member	Deceased member	Ill/injured member	Deceased member
Sends remittances/wages/food	56	34	20	22
Works in the fields/garden	36	20	18	14
Works in the household	32	24	18	6
Collects natural resources	32	16	14	14
Pension/disability grant	16	20	12	10
Cares for livestock	14	6	8	10
Child grant	6	6	4	2
No financial contribution	0	4	10	2

The most common ‘lost contribution’ from an ill/injured or deceased member of the household in both sites was that of sending remittances, food or wages. Other contributions which involved physical labour in and around the household were lower. It has been mentioned that studies have shown (Sward and Conjoe, 2012; van der Berg *et al.*, 2002) how it is common for members of a household, often forced by the unavailability of jobs locally, to seek employment in larger urban areas far away from home. Migrant labour typically leaves the women or elderly at home to care for the children, and can offer one explanation as to why the labour in and around the household was less affected. There were very few ill/injured or deceased members that had made no financial contribution to the household at all (Table 6.6).

6.3.2 Life history interviews: climate and health-related impacts

Drought and climate variability have had large impacts on households’ ability to farm, and as a resultant, their reliance on purchased goods (see Chapter 5). Throughout the life history

interviews, the impacts of climate-related shocks and stressors on a households ability to farm was frequently mentioned (Table 6.7). Respondents mentioned how this has forced them to rely more on purchased goods (also see Chapter 5, Figure 5.3). The burden of having to care for an ill or disabled household member (Table 6.7, HH22), the loss of a main breadwinner (Table 6.7, HH15) and the effects of illness on household productivity (Table 6.7, HH56 and HH84) were frequent health-related impacts mentioned. Respondents also perceived a decreasing trend in health within the community in comparison to the past (Table 6.7, HH36, HH40).

Table 6.7. Personal narratives of climate and health-related impacts

Households	Theme: Impacts of shocks and stressors
	Climate related impacts
Lesseyton HH34 Female (age: 70)	There is no difference; drought is drought. It is the same situation; <u>farming is at standstill and we get all necessities from the shops – nothing from the garden. It is too costly. We do not always have the money to buy the things we need. Prices have gone up; you don't get all that you want.</u>
Willowvale HH83 Male (age: 51)	My main concern is death; livestock also die when the climate is not good. I hope to see good heavy rains in order to get fresh water for both people and livestock. That will also help us plough the fields. <u>Farming is at standstill because of the lack of rain. Even the taps have dried up we cannot get drinking water from them.</u>
Willowvale HH78 Female (age: 27)	Veld fires: Crops get destroyed and there's nothing that we can do; we starve. I wish the climate could be good so that we can plough our fields and get a good harvest. <u>We don't spend money when we have crops e.g. we don't buy vegetables and maize we get them from the garden.</u>
Lesseyton HH25 Male (age: 25)	I do have livestock and crops. <u>The grass dries and the crops die. There is no harvest. I have to buy vegetables from the shops. I do not have the money. There is no grass and there is no water for them.</u>
Willowvale HH56 Female (age: 67)	<u>Water supply is still a problem. The water taps are not close to the homes. We still battle to get water.</u> There was a veld fire at some stage. If left the community without homes, no grazing land and no gardens.
Households	Health related impacts
Lesseyton HH22 Female (age: 52)	Being on my own with no one to assist me. <u>Taking care of my disabled brother with no assistance from other family members.</u> I would have expected the family members who are males to assist me with bathing my brother but they are not. I wash him myself.

Lesseyton HH15 Male (age: 65)	Now I live alone in my home. This year things are tough for me. <u>I did not plough my garden due to illness.</u> I was diagnosed with high blood pressure and diabetes. I take treatment from the local clinic. The clinic once referred me to the chemist; they did not have certain medication. It is tough because you have to pay at the chemist while treatment is for free at the local clinic. Illnesses these days are incurable, unlike in the old days.
Willowvale HH56 Female (age: 67)	<u>Now I am old and do not have much energy in me.</u> Things are very tough.
Willowvale HH83 Male (age: 51)	People got sick from drinking water that was not good. Diarrhoea was common. But recently things are much better.
Lesseyton HH36 Female (age: 77)	In the past, the people were healthy and were fit and working. Funerals were not an everyday thing as it is the case now. <u>Every weekend there is a funeral, it has become the norm.</u> HIV & AIDS is rife. Some disclose their status and other do not.
Lesseyton HH40 Female (age: 77)	<u>Sickness is worse now.</u> There was no HIV and no asthma. People then would have a headache or stomach ache and would go to the doctor and get help.
Willowvale HH66 Female (age: 65)	No support from the community. People do not want to associate with it. <u>They bad-mouth people with HIV.</u>
Willowvale HH84 Male (age: 46)	<u>Due to ill health I left my job.</u> The doctors said it was epilepsy.
Lesseyton HH38 Male (age: 42)	Death is my main concern. My wish is that when I die, I could leave behind something for my children. I wish I could get a job so that I provide for my children so that they get an education and live a normal life even when I have passed on.
Lesseyton HH41 Male (age: 60)	My main concern is my health and my children's health. Who will take care of us when we are no longer healthy? If I die and leave my children behind, who will take care of them? Those are my concerns.

6.3.3 Discussion: implications of multiple shocks and stressors in the study sites

In many rural communities across southern Africa, natural resource use plays an important role in sustaining livelihoods either by supplementing household needs or by providing an income source (see Chapter 2, section 2.3.5.1; Hunter *et al.*, 2011; Shackleton and Shackleton, 2000). Climate-related shocks and stressors will have a direct impact on rural livelihoods by threatening the supply of food, ecosystem goods and services, and household income. As shown in Figure 6.1 (section 6.2.1) and in Table 6.3 and 6.7, climate-related shocks and stressors have had a large impact on household vulnerability, especially in Willowvale, resulting in increased reliance on purchased goods (Table 6.3, HH34, HH78, HH25), livestock death, crop failure, damage to physical capital, and increased food insecurity (see Chapter 5, Figure 5.4). Climate-related shocks and stressors were not the only factors influencing household's ability to farm: the lack of income played a large role in

preventing households from ploughing (see Table 6.3, HH81 and HH36) and affording other agricultural inputs such as cattle feed and seeds (see Chapter 5, Table 5.8). Households have stressed how everything costs money (see Table 6.3, HH56, HH66; Table 6.7, HH34). This was also stressed, in Chapter 5 (Figure 5.3), as the reason why relying on more purchased goods has made respondents' lives harder.

Health-related shocks and stressors (see Table 6.7), especially HIV/AIDS, can result in a combination of decreased income and productivity throughout the household (Gillepsie and Drimie, 2009). For example, the associated costs of death coupled with the reduced income and productivity from a household member having to quit a job (Table 6.3, HH84) or reducing the amount of time spent working in the garden (see Chapter 7, Table 7.7), can leave a household extremely exposed and sensitive to other financial shocks and food insecurity (Gillepsie and Drimie, 2009). A study by Quinn *et al.* (2011) showed that the additional costs of treatment and medicine had serious consequences for households dealing with health-related shocks. Climate variability can further exacerbate the impacts of health-related shocks and household food insecurity (see Table 6.3, HH82), as previously discussed.

The top general shocks and stressors experienced by respondents (Figure 6.1) have many direct and indirect impacts on households (Figure 6.2). Climate-related shocks and stressors have had an impact on household's ability to farm, which increases food insecurity. However at the same time, the decreasing trend in farming in both sites (see Chapter 5; Shackleton, 2012; Stadler, 2012), the increasing reliance on money (Table 6.3; Table 5.3), as well as the effects of decreased household productivity due to illness or death (see Chapter 7, Table 7.7) can also exacerbate household food insecurity and financial stress. This reiterates how households are seldom affected by a single shock or stressor, but rather, are faced with a combination of such, increasing the complexity involved in understanding household and community level vulnerability.

6.4 Interactions between multiple stressors

6.4.1 Mental maps and problem tree analysis

6.4.1.1 Lesseyton

Mental maps were drawn up in the workshops to illustrate the stressors and causes of vulnerability in each community. The mental maps revealed a complex network of causes, effects and interactions between stressors, spanning social, economic and environmental

systems. Therefore in order to prevent the discussion from becoming too arduous, not every cause and effect relationship will be discussed. This section and the following section (section 6.4.2) provide a description of what the participants said in each workshop. The interpretation of this follows in sections 6.4.3 and section 6.5.

There were many similarities between stressors and causes of vulnerability identified by the men and women in Lesseyton (Figure 6.3 and Figure 6.4.). Both the men and the women agreed that HIV/AIDS, crime, poverty, and water issues/drought were amongst the major stressors within their community. The men also had a strong focus on unemployment and school drop-outs.

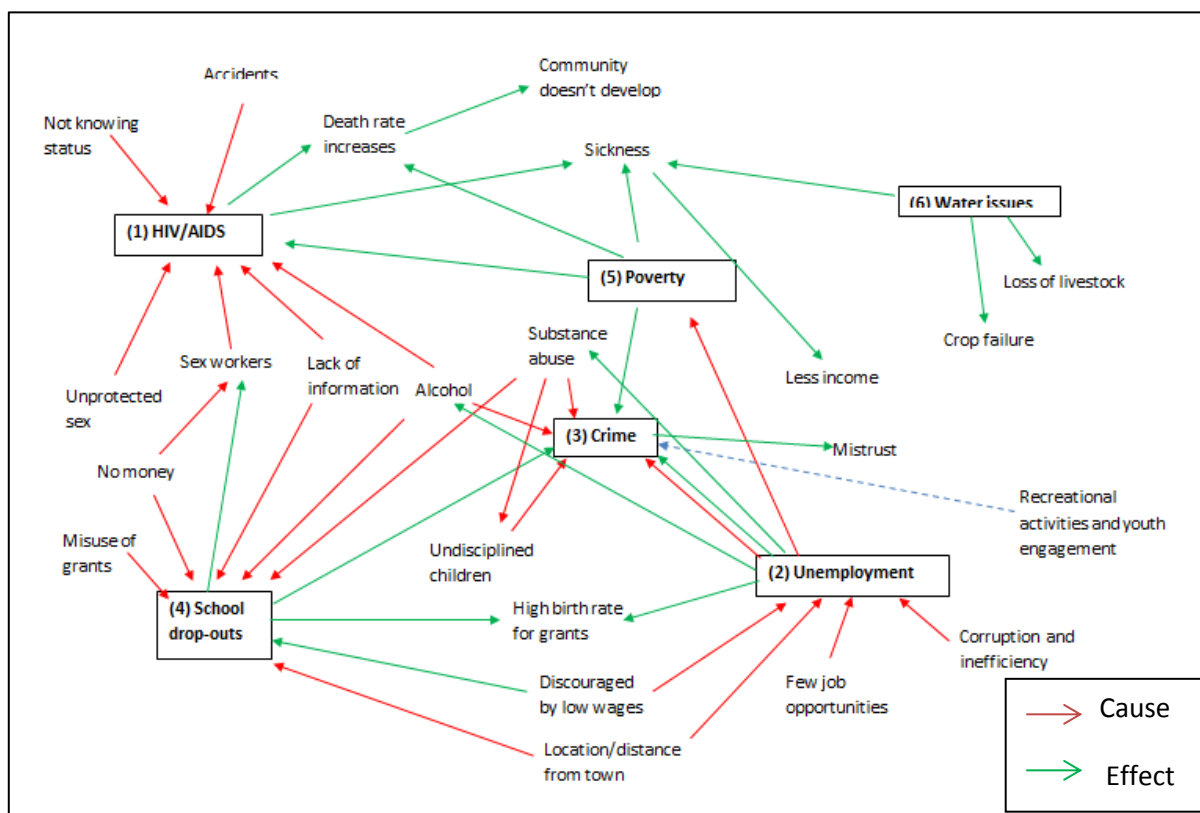


Figure 6.3. Mental map drawn up from the men’s workshop in Lesseyton illustrating the problems identified within their community as well as the causes, effects and interactions between them

From the men’s workshop (Figure 6.3.), it can be seen that there are strong interacting relationships between the issues of ‘crime’, ‘school drop-outs’, and ‘unemployment’ which seem to exacerbate the issues of poverty and HIV/AIDS. For example, low wages, location and distance, few job opportunities and corruption were highlighted as the causes of ‘unemployment’. Unemployment is a direct cause of crime and poverty, and through other

interacting relationships, contributes to various kinds of substance abuse, children dropping out of school, prostitution, high birth rates, and HIV/AIDS. The men’s strong focus on the issue of unemployment and the lack of jobs available in their area emphasized the cultural or societal role men play as the providers of the family (see Stadler, 2012). Without the two year time limit of the survey, the issue of unemployment was chosen, by the men, to be the core problem within their community, above issues of drought and other climate-related shocks. Water insecurity was a common stressor identified throughout all of the workshops; however the issues of unemployment and poverty were given more focus. Both the men and the women felt that water stress contributed to the loss of their livestock, crop failure, and sickness (malnutrition), which in turn is linked back to poverty as it contributed to the loss of income due to decreased productivity.

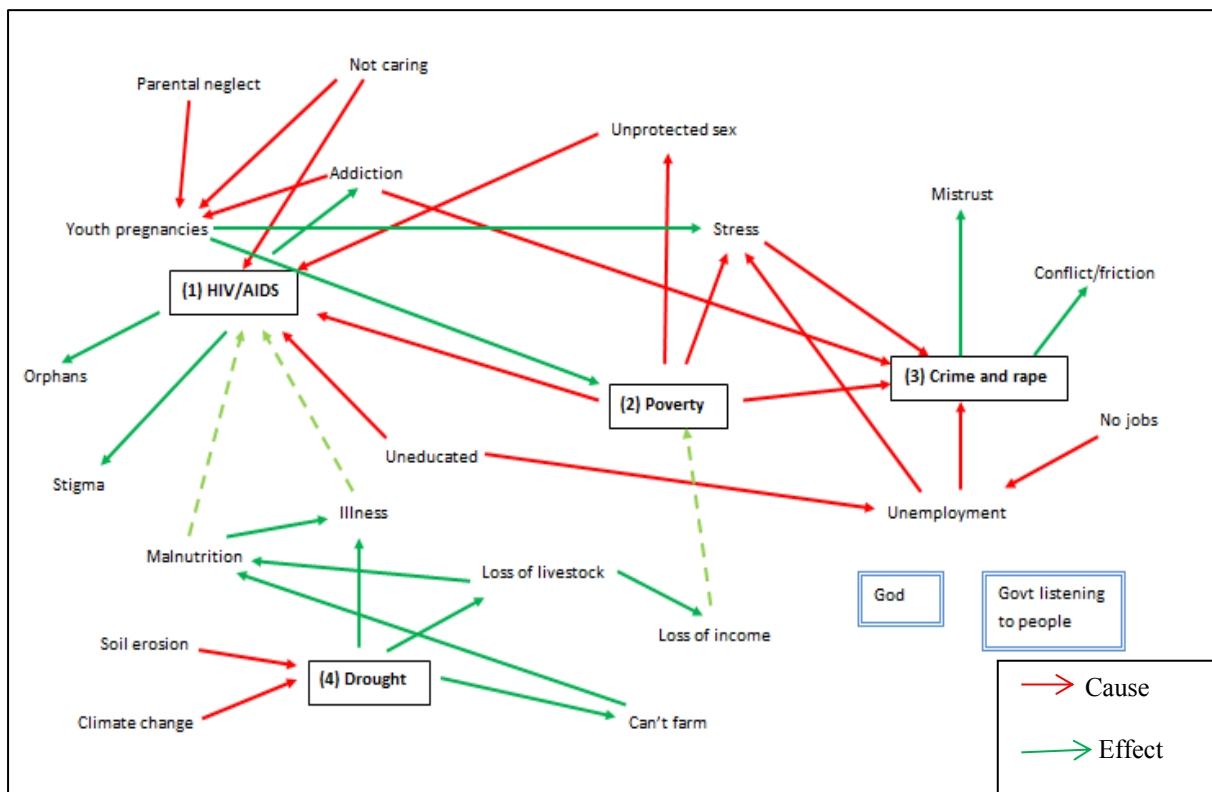


Figure 6.4. Mental map from women’s workshop in Lesseyton illustrating the main problems in their community as well as the causes, effects and interactions between them

From the women’s workshop (Figure 6.4.), there seemed to be strong interlinked relationships between the stressors of poverty, crime and rape, and HIV/AIDS. These three stressors have many of the same causes as identified by the men (Figure 6.3.). Another set of

relationships identified by the women, which reflects the gendered role of women in the family and in nurturing, were those of parental neglect, not caring, addiction, and teenage pregnancy which in turn increases stress and poverty. The women had a strong focus on issues surrounding the youth such as lack of jobs, crime, and teenage pregnancies as well as the many incidences of substance abuse by both adult men and the youth. The women believed that having strong faith in God was a solution to these problems as well as the government listening and responding to their problems. The men believed that creating opportunities for recreational activities and youth engagement initiatives which would help keep the children out of trouble after school hours could help address the issues of crime relating to the youth.

It is evident that each of these stressors cannot be examined in isolation to others within the community. Possible action against one may be erased by the interlinked effects and cycles of the other stressors identified. Both the men and women were asked to identify which of the stressors they thought to be the core source of vulnerability in their community and present this through the use of a problem tree analysis (Figure 6.5. and Figure 6.6.). As already mentioned, the men identified unemployment as they believed it to have the most impact on the other problems identified. Contrastingly, the women identified poverty as the core source of vulnerability in their community (Figure 6.6.) although both stressors converge and are interlinked.

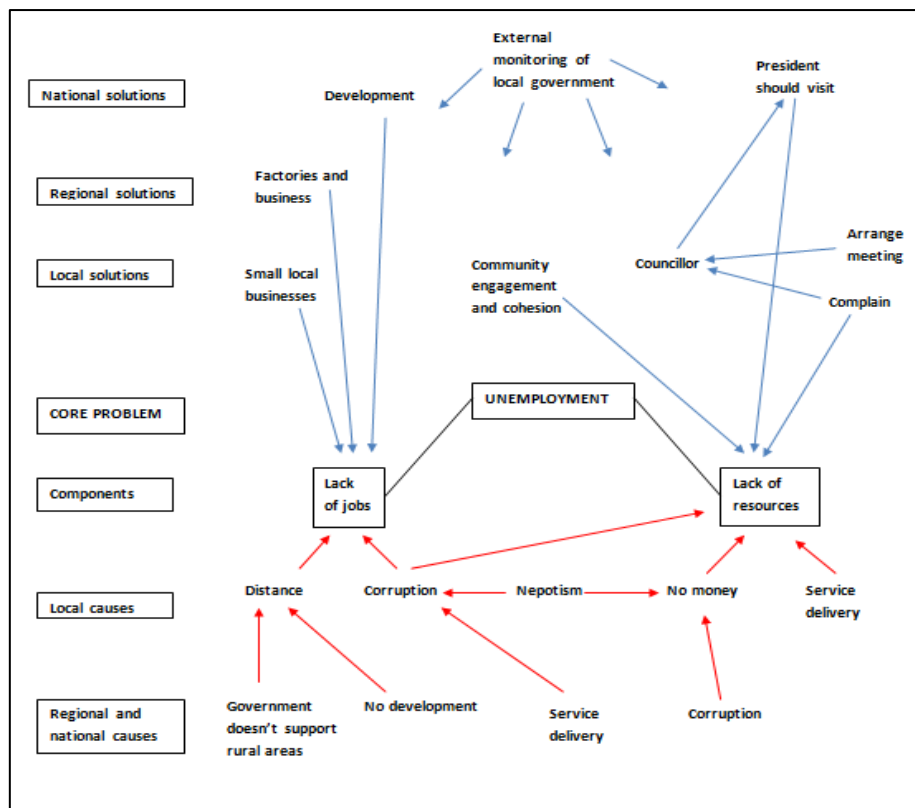


Figure 6.5. Problem tree analysis of the core problem identified from Figure 6.3 by the men in the Lesseyton workshop

The problem tree drawn up in the men’s workshop in Lesseyton covered much of the same cause and effect relationships as the mental maps. The men identified a lack of jobs and a lack of resources as components of unemployment (Figure 6.5). Lack of government support in these rural areas, no development, poor service delivery and corruption were put forward as the regional and national causes of local-level unemployment. Women in Lesseyton identified lack of education and having no income as components of poverty (Figure 6.6). Like for the metal map, there was a strong focus on issues of the youth amongst the women. Substance abuse and peer pressure (causes of unemployment put forward by the women), and prostitution, teenage pregnancies and a high need for dependence on others or grants (causes of a lack of income put forward by the women) were believed, by the women, to exacerbate poverty. The women believed that the youth depend too much on government grants (child grants) for income and resort to prostitution for money.

Similarly, the men and women believed corruption and nepotism play large roles (regional and national cause) in creating unemployment and poverty within their community. They believed that corruption and nepotism are critical problems which intensify the lack of jobs

and resources in the area (Figure 6.6). The women believed that all of the stressors identified have become worse in recent years mainly because of corruption, leaving the previously marginalised (see Chapter 3, section 3.2.4) further marginalised. One respondent in Willowvale said “*The so-called freedom is for the educated people. As for the uneducated, it has brought them nothing now that the ANC is in power it has not done anything for us*”.

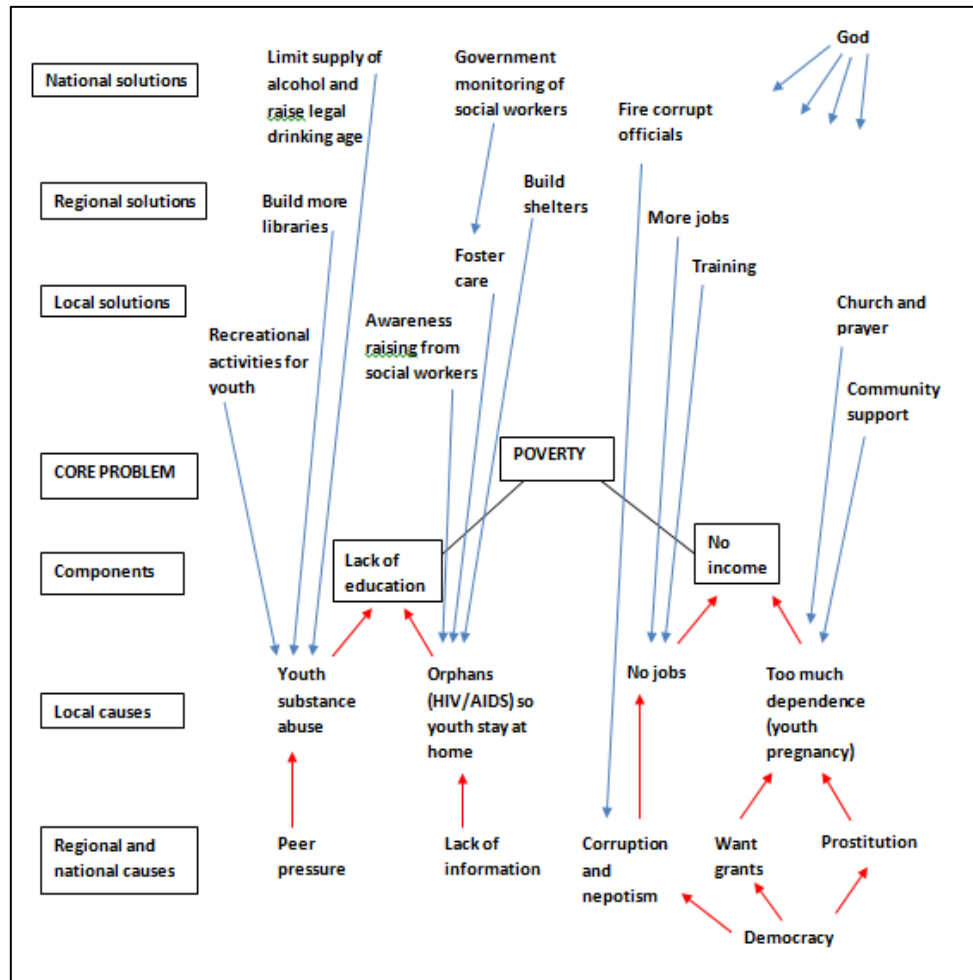


Figure 6.6. Problem tree analysis of the core source of vulnerability identified from Figure 6.4 by the women in the Lesseyton workshop

Possible solutions to the different causes of these core sources of vulnerability were also discussed. The men felt that local level businesses and factories would help reduce unemployment at the local and regional levels. Training and skills development was seen as an important component of addressing unemployment by the women. Both the men and women believed that there should be more external monitoring of government officials in order to reduce corruption and to ensure that adequate service delivery occurs. The women

identified hunger, alcohol abuse, and a lack of jobs as the causes. They believed it made their community unsafe, especially when walking/travelling home after grants had been paid, after soccer matches, or when collecting natural resources.

For the women, poverty seemed to be a central problem with many causes and effects (Figure 6.8). For example, they believed poverty to be caused by corruption, alcohol abuse, crime and not having any work. Poverty, in turn, was said to exacerbate the problems of crime, HIV/AIDS, and lack of education. Lack of education then increases the problem of unemployment which is a cause of poverty. The men believed that the lack of schools and colleges as well as having no recreational activities available have prevented skills development, deepening the problem of lack of education in their area. The women complained how social media has a strong negative influence on the youth in their community which contributes to substance abuse, crime and teenage pregnancies. They also mentioned how the local ‘taverns’ in the area allow alcohol to be sold on credit which has resulted in families monthly income being spent before food or other basic needs can be met.

The men in Willowvale were concerned about the inability to farm in their community which they believed to be a result of inadequate financial and physical assets. Drought and livestock diseases were identified problems in their communities; however they were not the focus of the discussions. They believed that the lack of jobs which inevitably causes little or no available money to buy assets (cattle or tractors), ticks, the lack of knowledge or information about improved farming techniques or assistance, and water scarcity due to having communal taps located far away, hinders farming in their community. The lack of farming affects locals’ ability to produce feed for their livestock and food for themselves, forcing them to purchase more from shops (see Chapter 5, Figure 5.3), and has decreased the amount of produce being sold to generate household income. All of this has caused income to decrease. Similarly, the women spoke about how livestock disease and livestock death has made it increasingly difficult for them to cultivate their fields. This is exacerbated by drought and having a lack of resources, such as tractors or ploughs, which then requires hard labour (De Klerk, 2007; Shackleton, 2012). With cultivation becoming harder and less productive, the poverty cycle is deepened (Pettengell, 2010).

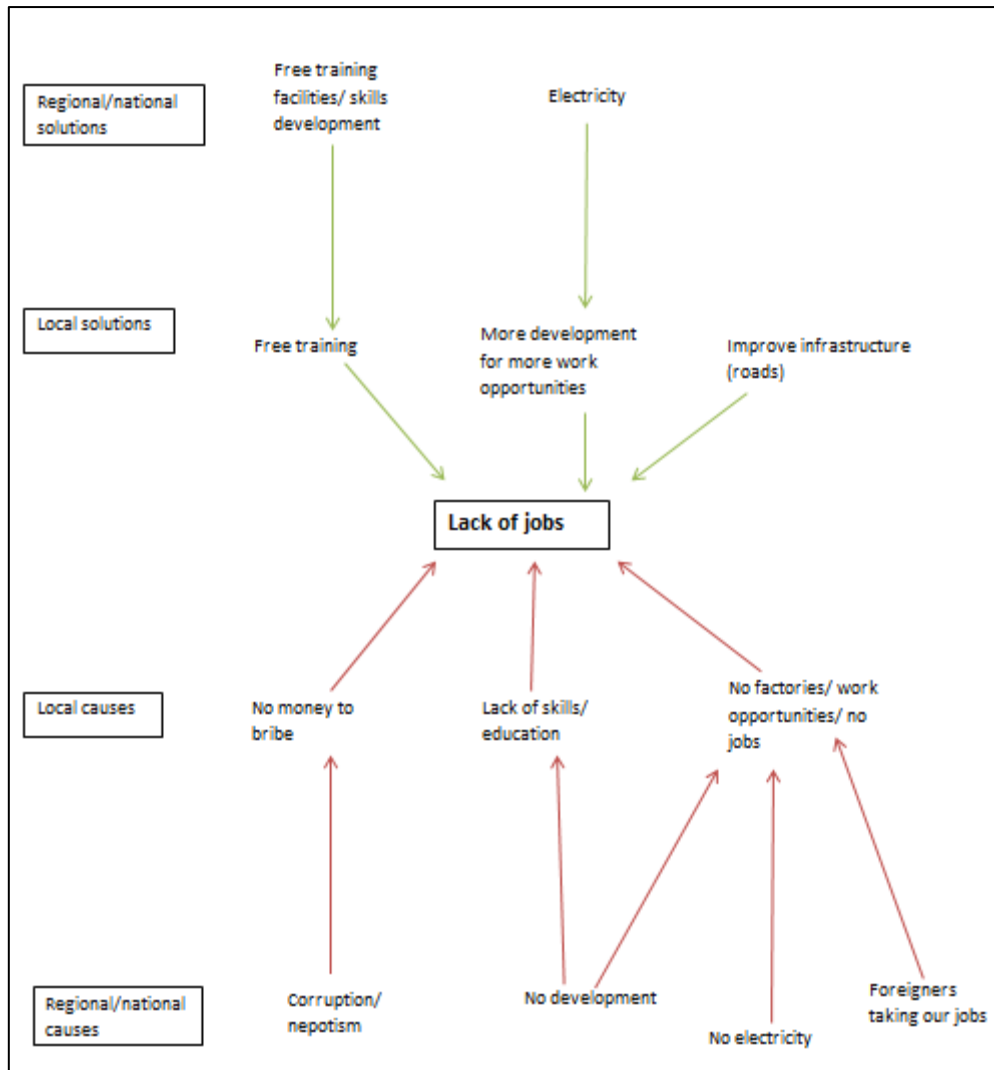


Figure 6.9. Problem tree analysis of the core problem identified from Figure 6.7. from the men’s workshop in Willowvale

Both the men and the women spoke of corruption/nepotism as one of the causes of unemployment in their community. A lack of development/investment, their location, having no electricity, and foreigners taking South Africans’ jobs at the regional or national level were some of the other causes of unemployment mentioned (Figure 6.9 and Figure 6.10). The men felt strongly about the provision of electricity and free training facilities as (regional and national) solutions to the problem of unemployment. This would promote skills development and work opportunities at the local level. Improved infrastructure, such as roads and the provision of basic services were also seen as a solution to the problem of unemployment.

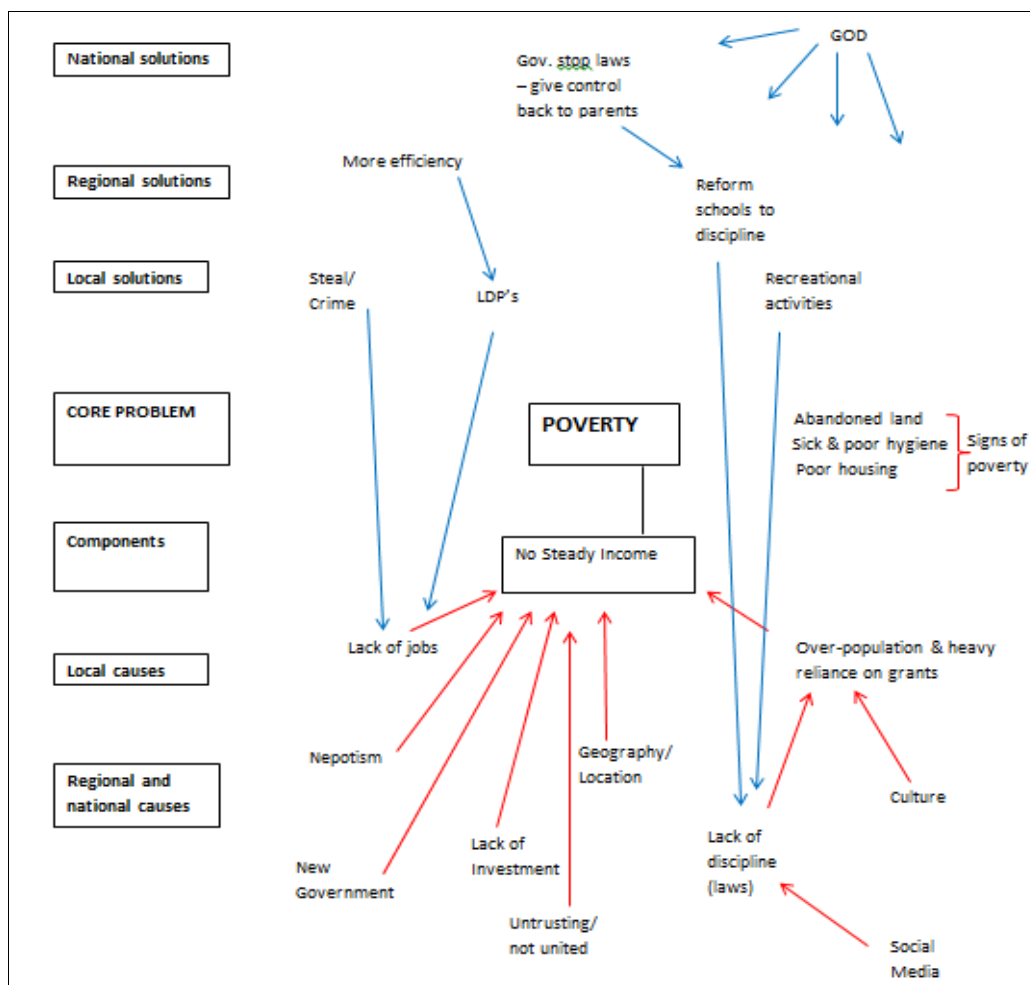


Figure 6.10. Problem tree analysis of the core problem identified from Figure 6.8 from the women’s workshop in Willowvale

The women felt that a growing population and people relying too heavily on social grants also caused a lack of a steady income (Figure 6.10). This was believed to be caused by having a lack of discipline (such as teenage pregnancies and the ease of qualifying for child grants), cultural influences and social media at the regional and national level.

The women also identified possible solution to these problems. In response to the issue of lack of jobs, the women felt that improved discipline and increased efficiency in the implementation of Local Development Programmes (LDPs) were possible solutions. While controversial, the women in the workshops felt that certain laws put in place against corporal punishment takes the control away from parents and teachers, allowing the youth to be more disobedient. They believed schools and parents should be allowed to discipline children in this manner and that there should be after-school recreational activities provided for the

youth. They believed this would help keep the youth out of trouble. The women also indicated a strong religious belief that God would provide a solution to their problems.

6.4.2 The past, present and future anticipated problems, and their associated causes and responses identified by the youth in both Lesseyton and Willowvale

In addition to the mental maps, workshops were held with the youth in both sites where they were asked to list and discuss past, present and anticipated future sources of vulnerability, as well as the causes and responses to these sources of vulnerability within each period (Table 6.8 and Table 6.9). In the context of complex socio-ecological systems, as discussed in Chapter 2 (section 2.1), it is important to consider the temporal dimensions present within a vulnerability context. Differences in gender and age can also give rise to different results, and therefore it is important to assess vulnerability from the perspective of the youth. Also, given that the youth were such an issue with the older generation, it was necessary to get the youth's perspective.

Table 6.8. The past, present and future anticipated problems, and their associated causes and possible responses as identified by the Grade 11 learners of Lesseyton high school

	Problems	Causes	Responses
Past	No electricity Not educated Low income	Service delivery Low education level = low income	Look for employment Sell livestock
Present	Not enough water Unemployment Health problems Crime – murder, rape Unhealthy environment (litter, animals) Substance abuse Lack of information – distance Teenage pregnancy	Lack of education Theft of taps Dumping in the bush - Unclear access rights to dumping site Drugs and alcohol - Lack of recreation - Peer pressure - Media Ignorance Unemployment	Jojo tanks Sell vegetables, sew clothes and other self-employment Community punish criminals Contraception Use school library People clean up area Conflict as responses not working

Future	The same problems as present, but worse	Youth abusing drugs and alcohol Youth setting bad example for peers Leaders are corrupt and selfish	Knowledge sharing <ul style="list-style-type: none"> - Guest speakers - Evening classes - Community library - Adults should start this Leaders should be more educated so they take issues seriously Recreational activities More police and police stations More community skills-based programmes Environmental regulations Elderly supervision for youth Employ more nurses Street committees
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The inequalities of apartheid (see Chapter 3 and Chapter 5) were evident in both sites when the youth spoke about the problems of the past, included having no rights, lack of electricity, lack of education and low incomes. In Lesseyton, the participants believed the causes of this were due to poor service delivery, and lack of education resulting in unemployment and low incomes. It was mentioned that this often forced people to sell their assets, such as livestock, or to try to find employment elsewhere. The participants also mentioned how children were often taken out of school to help with duties at home, creating the problem of low levels of education. This also emerged from the life history interviews (see Chapter 5, Table 5.5 and section 5.3.3). General poverty prevented people from affording transport and forced marriages were mentioned as a problem due to families desperately wanting financial gain.

Similarly, the youth in Willowvale (Table 6.9) expressed concern over inadequate school and recreational activities as well as under qualified and unmotivated teachers. They believed unemployment was still a major concern in their community due to lack of education. Recently, South Africa’s national education system has received a lot of negative media coverage, particularly regarding inadequate service delivery (textbooks) to schools throughout the country (News24, 2012). Corruption within their schools and their local municipality was blamed for the poor service delivery and poor schooling conditions. No electricity and poor service delivery in their community were said to prevent development. In Lesseyton, crime and violence, which are believed to be caused by poverty and substance abuse, were concerns. Health problems, such as HIV/AIDS, an unhealthy environment (due to dumping), crime, substance abuse (due to lack of recreational activities, peer pressure and

influential media), being uninformed (due to distance and poor communication channels) as well as teenage pregnancy (due to unemployment) were seen as the main stressors and vulnerabilities which the youth face today. Many of these stressors mentioned by the youth reiterate what emerged from the mental maps (see section 6.4.1).

The youth also spoke about the issue of water insecurity and how theft of taps was making the situation worse for their community (Lesseyton). In Willowvale, it was observed that people are forced to walk long distances to get water and there has been a decrease in the number of households that are farming. This reflects what other studies have shown (De Klerk, 2007; Shackleton, 2012) as well as substantiating the findings in Chapter 5. The youth in Lesseyton did not focus on the lack of farming within their community. Studies (Aliber and Hart, 2009; Moller, 2005) have noted a decline in the perceived value of farming amongst the youth in other urban areas within the Eastern Cape. The youth believed farming to be old fashioned and rather valued cash incomes and purchasing goods more (Moller, 2005), and can explain the on-going trend amongst the youth within the two study sites. The participants believed that a greater supply of water tanks to their community could help them cope with water insecurity and provide water for vegetable gardening.

Table 6.9. The problems and their causes and possible responses of the past, present, and future as identified by the Grade 11 learners of a high school in Willowvale

	Problems	Causes	Responses
Past	No education Transport Forced marriage No rights	Children working, doing domestic duties No money for transport Wanting money for marriages Apartheid	Electricity Stronger and more policing No bail for arrests – harsher consequences

Present	Inadequate school and recreational facilities, teachers No electricity Service delivery and roads Walk far for water Livestock theft Violence and crime Farming less People are judgmental Lack of information, e.g. for bursaries	Corruption in school - No money Corruption in municipality No water tanks and dams Poverty = theft Substance abuse - Lack of education	More trained/qualified teachers Government should provide agricultural support Government should regulate child grants
Future	Violence and crime No farming No proper schools Teenage pregnancy increase	Government failing to deliver Lack of discipline - Democracy No consequences to crime	

In the future, the youth in both Lesseyton and Willowvale believed that the problems they have been experiencing would only get worse. This reiterates the perceived trend amongst the adult respondents of life becoming increasingly difficult (see Table 6.2). The youth in both sites believed that the government has failed to deliver and that there should be greater consequences and enforcement for crimes committed. In Lesseyton, there was a strong focus on knowledge sharing in the form of guest speakers at their school, evening classes for students as well as community members, and a community library. The youth felt that the adults and teachers within their community should take responsibility for this to help improve their community, and that there should be more elderly supervision over children. In response to unemployment, they felt that households should try finding different means of self-employment by farming more to sell vegetables, or sewing clothes.

Prostitution was unfortunately mentioned as a response to unemployment in Lesseyton, as it is seen as an easy way for young women to make money. This has serious implications for HIV/AIDS, as mentioned in section 6.4.1.1. The youth in Lesseyton felt that training and skills development programmes were important to help deal with unemployment and leaders should be more educated and less corrupt. More police stations, patrols and street committees were felt necessary in their community to help reduce crime as well as to enforce environmental regulations. In Willowvale, the youth felt that having electricity, stronger

policing, more trained teachers, and the government providing better agricultural support and regulating child grants would help address the problems identified.

6.4.3 Discussion: contrasts and similarities between the different groups within the two sites and comparison with the literature

There were many similarities and differences mentioned amongst the men, women and youth throughout the PLA workshops. These have been grouped below (section 6.4.3.1 to section 6.4.3.5) into the key themes which emerged from the workshops.

6.4.3.1 Central causes of vulnerability

The PLA workshops highlighted socio-economic and environmental stressors that have affected the two communities. Both the women in Lesseyton and Willowvale saw poverty to be the main stressor within their communities, whilst the men in both sites identified unemployment as the main stressor. Within the youth's workshop, it was believed that the inequalities of apartheid have played a large role in shaping the communities' vulnerability context (section 6.4.2; see Chapter 3 and Chapter 5). The youth in both sites identified unemployment as a significant problem within their communities. Throughout the men's workshops, a strong emphasis was placed on the lack of employment and the resultant effects of this, especially amongst the younger men. As mentioned in section 6.4.1, this reflects the cultural or societal role men play within a household.

In both Lesseyton and Willowvale, the women had a strong focus on youth related issues in contrast to the men. Within rural communities, women typically remain at home and look after their children and undertake household chores (see Chapter 5, sections 5.2.3 and 5.2.6; Davies *et al.*, 2009; De Klerk, 2007). Women are seen as the 'care-givers' (see Table 5.5) and therefore can explain for the concern and emphasis placed on youth related issues. The women in Willowvale placed greater emphasis on the role of social media in negatively influencing the youth and changing cultural norms. This was less apparent in Lesseyton, and could be explained by the more traditional way of life in Willowvale. However, the youth in both sites spoke largely about youth related issues.

6.4.3.2 Social issues: concerns regarding the youths' behaviour, crime and substance abuse

Social issues were, particularly concerning the youth, a significant topic of focus in the PLA workshops. Both the men and women in Lesseyton and the women in Willowvale spoke of

how teenage pregnancy occurs deliberately to access child grants. These concerns were also raised within the youth's workshop (see Table 6.8). The youth in Willowvale believed that the government should regulate the grant system to address this issue. The debates around the grant system within South Africa are on-going, controversial, and contrasting (discussed further in Chapter 8, section 8.3.3): there are concerns that the system creates a culture of dependency and reduces employment seeking behaviour (Hassim, 2008; Nattrass, 2008). However, a study by Nobel *et al.* (2008) has countered this theory. The perception of the child grant as a 'perverse' incentive has been dismissed by MacLeod and Tracey (2010); however the fact that this exists has possible implications for discrimination towards young mothers (Stadler, 2012). The youth in Willowvale did perceive a number of community members to be judgemental (Table 6.9).

Crime was mentioned throughout all of the men and women's workshops as a significant stressor within the communities and that it was linked to unemployment, substance abuse and youth related issues, and the loss of assets (fencing, livestock, etc.). The youth in both sites associated crime with poverty, unemployment, substance abuse, the lack of recreational activities, and peer pressure and social media, whilst the women believed that a lack of discipline amongst the youth was the problem. In Willowvale, both the men and the women stressed how crime has impacted their ability to cultivate as assets, such as farming tools and inputs, and livestock theft occurs frequently. Women in Willowvale also mentioned how it is unsafe for them to travel/walk far distances to collect resources. The youth in Lesseyton mentioned the occurrence of tap theft which leaves households even more water insecure. Theft was shown to be one of the main constraints to farming in a study by Perret (2002). The youth believed that there were no real consequences for crimes committed therefore creating an enabling environment. The issue of prostitution was more apparent in Lesseyton (mentioned by the men, women and youth). Prostitution was seen as a response to unemployment by the youth in Lesseyton. Transactional sex within marginalised communities is becoming more apparent amongst women as a means of deriving income (Hunter, 2007; Hunter, 2010; Stadler, 2012). Prostitution has severe implications for HIV/AIDS, especially as women are seen to have fewer rights in negotiating condom use (Scambler and Paoli, 2008).

6.4.3.3 Environmental issues: drought, water insecurity, the lack of farming, and food insecurity

Drought and water insecurity were mentioned throughout all of the workshops; however the men and, particularly the women in Willowvale, related it mostly to how it had impacted their ability to farm. This can be explained by the higher occurrence of farming within Willowvale than in Lesseyton (see Chapter 5, Stadler, 2012). Women in rural communities are the primary agriculturalists and users of natural resources in South Africa (Aggarwal *et al.*, 2001; Commission for Gender Equality, 2010; Ruiters and Wildschutt, 2010). This can explain why the women in Willowvale placed greater emphasis on the drivers impacting cultivation and farming compared to the men. The youth also mentioned the issue of water insecurity and how this forces people, particularly in Willowvale, to fetch water from afar. The youth also mentioned they had noticed a decreasing trend in farming, as shown by De Klerk (2007), Shackleton (2012), Stadler (2012) and the findings in Chapter 5. The lack of interest in farming amongst the youth and the failure to transfer intergenerational values has been noted to have implications for sustainable community development through the decline in food security (Moller, 2005) and the use of cultivated resources as a possible safety-net (Aliber and Hart, 2009). The general decline in farming within rural communities of South Africa can also be attributed to migrant labour and the decline in the amount of household labour due to children attending school (see Chapter 3; Andrew and Fox, 2004; Stadler, 2012).

Women in both Lesseyton and Willowvale linked food insecurity to ill health. However, this association was not made by the men (the men in Willowvale linked hunger to crime, but not to ill health). This reflects the role women play in the preparation of food within the household (Drimie and Gillespie, 2009). However, overall, food insecurity was not seen as a dominant contributor to both sites' vulnerability context, but rather it was attributed to unemployment, violence, crime, and corruption. The youth in Willowvale however did not associate food insecurity to ill health.

6.4.3.4 Lack of services: electricity and the impacts on health

In Willowvale, both the men and women frequently mentioned the lack of electricity as a stressor within their community. The youth in Willowvale also identified the lack of electricity as a stressor and linked it to poor service delivery. The men stressed how the lack of electricity has limited employment opportunities and has prevented development within

their community. Also, the men and youth in Willowvale mentioned that the lack of roads and the poor condition of the existing roads makes it difficult to access public services such as clinics. The women placed more emphasis on how their resultant reliance on paraffin and firewood causes respiratory illnesses, and forces them to walk long distances to collect firewood. The different focus amongst the men and women once again reflects the different roles men and women have within households. Studies have shown that the role women play in preparing and cooking food, the strenuous effort involved in the collection of firewood, and the associated inhalation of wood smoke or paraffin inhalation, has been a burden faced by many rural women. This contributes to their vulnerability as well as increased health-related costs (van Horen and Eberhard, 1995; Wan *et al.*, 2011).

6.4.3.5. Participant suggestions to address stressors

In thinking of possible solutions to the stressors identified, both the women in Lesseyton and Willowvale held a strong religious belief that God would provide a solution to their problems. This was not mentioned by the men or the youth. Studies have shown that religion can unify a community under a set of customs and institutions, which has the possibility of affecting individual and household adaptive capacity depending on which customs and practices are promoted through the church (Armstrong, 1991; Lansing, 1993; Richerson and Newson, 2008; Wilson, 2002). In this case, religion may promote maladaptive practices in that the women seem to be waiting for solutions instead of undertaking proactive measures against the stressors and vulnerabilities identified.

In both sites, the issue of nepotism and corruption were frequently discussed as drivers of vulnerability, especially the lack of jobs. The youth in both sites perceived the future to get worse as they believed the present day stressors would just intensify. They associated this to youth related issues such as substance abuse and crime as well as corruption within their schools (Willowvale) and in government. Both men in Lesseyton and Willowvale stressed the need for increased development within their communities. The women and youth in both sites emphasized the need for recreational activities to address the issues related to the youth. The youth also suggested increased elderly supervision for the youth, community libraries, evening classes as well as guest speakers at schools to increase learner enthusiasm, and increased policing. Training and skills development facilities were also mentioned as possible solutions to the lack of education within the communities by all groups.

Many of the peripheral causes (or drivers) identified by respondents are not commonly found in the literature as dominant drivers of vulnerability (Stadler, 2012); however they do play a role in shaping a household's vulnerability context. The issue of ticks and livestock disease (Hebinck and van Averbeke, 2007), peer pressure and the influence of social media (Campbell and MacPhail, 2002), and substance abuse (London, 2009) are features of vulnerability which have been found in other studies.

6.5 Conclusion

This chapter set out to identify the key short-term shocks and longer-term stressors that vulnerable households have been exposed to, and, through the use of PLA field methods, how these shocks and stressors interact and impact on vulnerable households within the two study sites. The results (as well as Chapter 5) clearly highlighted how multiple shocks and stressors can interact across several scales in complex ways. The results have also demonstrated how households in different locations and with different gender compositions and income levels can be vulnerable to shocks and stressors in different ways. Also, different social groups can have different ways of perceiving vulnerability and differences in the ways in which they respond to it.

The survey data revealed climate-related shocks and stressors to be the dominant shocks experienced by respondents in both sites (particularly water insecurity), however, the PLA workshops (mental maps and youth workshops) revealed longer term stressors, such as unemployment, crime, lack of education, and youth related issues, as the dominant focus amongst participants, which were also discussed as part of the vulnerability context (see Chapter 5). The different methods employed within this research revealed different insights into vulnerability. This reiterates the importance of employing a mixed methodology (as discussed in Chapter 4) in determining the underlying shocks and stressors affecting household vulnerability.

Many similarities were found amongst the women, men and the youth regarding stressors identified. However, the age gap between the men and women and the youth created different ways in which stressors were viewed. For example, the older generation heavily criticised the youth for being destructive and undisciplined and being involved in acts of crime. The youth however, mentioned that there was a lack of elderly supervision which has contributed to the lack of discipline amongst the youth and poor commitment to education and a lack of extra-curricular activities. The absence of parental figures, largely due to migration or death, within

a household can have various emotional effects on a child, as discussed in Chapter 3 (section 3.2.4). A study by Case and Ardington (2006) found that maternal death impacted the likelihood of a child enrolling and completing school, as well as his/her performance in school. This divergence in views amongst the older generation and the youth stresses the importance of including all social groups when assessing vulnerability.

The inclusion of broader spatial and temporal scales (as discussed in Chapter 5) across socio-ecological systems emphasises how vulnerability can emerge beyond the control of the household itself. A heavy emphasis was placed on the government to solve the impacts of shocks and stressors identified by the respondents. When asked about how people in the community themselves could take action against these problems, there were very few positive responses from the participants and the discussion often referred back to how the government should do more for them. The youth did offer more solutions than the older generation, however overall, a sense of helplessness and a weak adaptive capacity was apparent. This culture of dependency amongst households may impede adaptation (Vincent, 2006). However, the government was also heavily criticised for the lack of advocacy and for high levels of corruption. It appears that rural communities plagued by poverty, such as Lesseyton and Willowvale, do not have the capacity to create large-scale changes without the assistance of the state. The longer-term stressors identified by the respondents have crippling effects on households' ability to respond to shorter-term shocks. Without the needed support from government, households are left exposed and particularly sensitive to future shocks and stressors.

In the context of climate change, existing shocks and stressors can be expected to intensify and increase individuals' exposure to a host of new combinations of risks (Ziervogel and Zermoglio, 2009). This will place a considerable amount of additional stress on socio-ecological systems and may therefore increase the complexity of interactions and feedback mechanisms (Leary *et al.*, 2008), which in turn may have further consequences for understanding and predicting the already complex systems behaviour (see Chapter 2, section 2.1). Therefore, there is a pressing need to move towards anticipatory adaptation as opposed to reactive coping strategies (see Chapter 7), and will require an increase in information dissemination concerning future climate change scenarios. Preparedness is vital in increasing human adaptive capacity, especially within communities, such as Lesseyton and Willowvale, where a weak adaptive capacity exists.

**CHAPTER SEVEN:
HOUSEHOLD RESPONSES TO SHOCKS
AND STRESSORS AND BARRIERS**



7.1 Introduction

This chapter, Chapter 7, focuses on coping and adaptation (D and E in the conceptual framework of this study, Figure 2.2, Chapter 2) by considering households' responses to the shocks and stressors presented in Chapter 6. It also explores the factors and barriers that may prevent households from coping and adapting to such shocks and stressors. The results and discussion within this chapter are based upon the following overarching research questions:

- How do vulnerable households respond to the identified shocks and stressors?

This can be broken down into two specific questions:

- What changes have the respondents made to their livelihood strategies in response to identified shocks and stressors?
- What factors inhibit or facilitate the ability of households to adopt certain response strategies?

This analysis presented in this chapter used two sources of data. The survey provided data on the most common coping and adaptive responses made by households including more specific responses to issues of health and food insecurity. The use of natural and cultivated resources as a safety-net is also considered (see Chapter 8, section 8.2). Important barriers to responding to shocks and stressors were also identified. This is followed by personal narratives from the life history interviews of respondents to shocks and stressors including the constraints and difficulties respondents experienced.

7.2 Common responses to shocks

7.2.1 Survey results

Respondents were asked to indicate, from a choice of 17 options (created from background research of the literature and existing studies, as mentioned in Chapter 4, section 4.2.1.2), the responses they had made to the shocks and stressors identified in Chapter 6 (Figure 6.1). The most common response in both sites was to seek assistance from family or relatives (Figure 7.1), especially in Lesseyton, whilst seeking assistance from neighbours and community organisations was less common. Other studies have also shown the importance of transfers within families (Cox and Fafchamps, 2008; Fafchamps and Lund, 2003) and that such

transfers function as a risk sharing mechanism (Cox *et al.*, 2006; Fafchamps and Lund, 2003; Miller and Paulson, 1999).

In Lesseyton, reducing expenditure and seeking casual employment locally were the next most common responses, whereas in Willowvale it was harvesting more natural resources and walking further to collect natural resources. This can be explained by the more rural nature of Willowvale, in contrast to the peri-urban nature of Lesseyton. Wild natural resources can offer a cheap alternative to purchased goods during times of economic hardship (Twine and Hunter, 2009). However, in both study sites effects of drought have reduced the reliability of using natural and cultivated resources as a safety-net, and forced households to rely more on purchased goods (as seen in Chapter 5, Figure 5.3; Chapter 6).

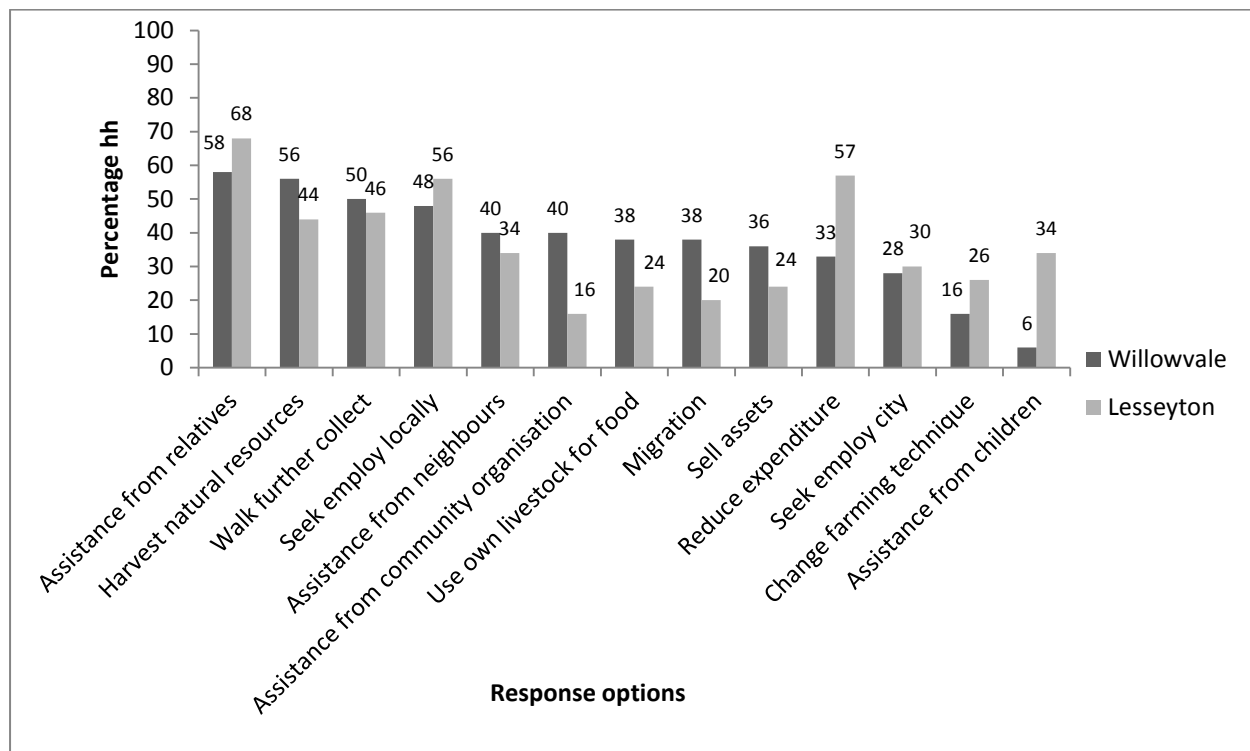


Figure 7.1. Comparison of the top general responses to shocks in Lesseyton and Willowvale

The responses of supplementing the diet through the slaughter of livestock, migration and selling assets were less frequently selected in Lesseyton than in Willowvale. Again, with Lesseyton being peri-urban, there is less need to migrate further away for jobs. Also, being less rural, the ownership (Stadler, 2012) and slaughtering of livestock to supplement respondents’ diets is less common than in Willowvale. During the men’s workshop in Lesseyton, the option of selling assets as a response to a shock was not favoured at all. The

men saw this as losing what they had worked hard for, and from an outsider's perspective, it seemed as if they were concerned how the sale of such assets would affect their social status. Overall, there was a wide range of responses used.

Disaggregating the common responses by gender showed interesting differences amongst the men and women in both sites (Table 7.1). Seeking employment within the cities (2 in Table 7.1) was more common amongst the men in both sites, with it being significantly higher in Lesseyton. Respondents, particularly in Lesseyton (close proximity to Queenstown), may have confused 'seeking employment in the city' as 'migration'. It is noted that there may be a potential overlap amongst responses. Reducing consumption (3) was more common amongst the men in both locations, particularly in Lesseyton, where the difference between men and women was statistically significant. There were significantly more women in Lesseyton reporting that they sought assistance from children (10) for domestic help (younger than 18) as a response. However, in Willowvale, this was not a common response used.

Slaughtering livestock to supplement diet (12) was more common amongst men in both sites, with it being significantly different between men and women in Lesseyton. There were significantly more women in Willowvale walking further to collect natural resources (13) as a response. It was more common amongst the men to change farming practices (14) as a response, with there being a significant difference between the men and women in Lesseyton. There were significantly more men in Lesseyton reporting that they sold assets (6) as a response, while this was the opposite in Willowvale (although not statistically significant). Interestingly, selling natural resources (5) was more common amongst the men in Lesseyton, although not statistically significant. The typical gendered roles within a household seem to be not as prominent within Lesseyton, possibly a consequence of being in close proximity to an urban centre and a high reliance on formal employment (see Chapter 5).

Table 7.1. Disaggregation of responses to shocks and stressors presented in Chapter 6 by gender and significant differences using Pearson’s Chi-square tests at 10 %, 5 %, and 1 % significance levels (shaded blocks)

Responses	Lesseyton (n=50)		Willowvale (n=50)	
	Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
1. Seek employment locally	55	60	52	40
P-value (Chi-square)	0.821		0.490	
2. Seek employment in the city	40	17	30	26
P-value (Chi-square)	0.059		0.786	
3. Reduce consumption	81	56	30	22
P-value (Chi-square)	0.030		0.560	
4. Reduce expenditure	51	39	34	40
P-value (Chi-square)	0.303		0.590	
5. Sell natural resources	29	17	4	7
P-value (Chi-square)	0.277		0.626	
6. Sell assets	33	17	26	40
P-value (Chi-square)	0.173		0.234	
7. Seek assistance from relatives	66	73	60	51
P-value (Chi-square)	0.717		0.620	
8. Seek assistance from neighbours	37	30	53	33
P-value (Chi-square)	0.556		0.215	
9. Seek assistance from community organisation	22	13	30	44

Responses	Lesseyton (n=50)		Willowvale (n=50)	
	Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
P-value (Chi-square)	0.365		0.260	
10. Seek assistance from children (younger than 18)	14	56	8	3
P-value (Chi-square)	0.003		0.480	
11. Harvest more natural resources	44	43	56	55
P-value (Chi-square)	0.851		0.934	
12. Slaughter own livestock for food	33	13	43	33
P-value (Chi-square)	0.080		0.525	
13. Walk further to collect natural resources	55	39	65	33
P-value (Chi-square)	0.195		0.032	
14. Change farming technique	33	17	17	14
P-value (Chi-square)	0.173		0.850	
15. Loan	26	13	8	3
P-value (Chi-square)	0.229		0.480	
16. Spend savings	22	26	34	33
P-value (Chi-square)	0.807		0.990	
17. Migration	18	21	39	37
P-value (Chi-square)	0.828		0.962	

Respondents were asked whether they believed income diversification was an important risk aversion strategy. Respondents in Lesseyton all recognised the importance of income

diversification for risk aversion, whilst all but one respondent in Willowvale agreed it was important. However, when asked whether or not they had tried to diversify their income (Table 7.2), positive responses were quite low with 32 % and 18 % of respondents in Lesseyton and Willowvale respectively saying yes. The low percentages can be a result of the limited opportunities in both sites, especially in Willowvale (as discussed in Chapter 5 and Chapter 6).

Table 7.2. Responses to income diversification and Pearson’s Chi-square tests at the 10 % significance level (shaded blocks)

Income diversification	Lesseyton % (n=50)		Willowvale % (n=50)	
Believe income diversification is important	100		98	
Actual diversification	32		18	
Disaggregated by gender	Male (n=27)	Female (n=23)	Male (n=23)	Female (n=27)
Actual diversification	40	21	21	14
Pearson’s Chi-square	0.151		0.525	
Proactive measures taken	33	52	34	29
	0.172		0.724	

Disaggregating the data by gender revealed that there was no significant differences between male and female income diversification in both sites, however there was a significant difference between male and female income diversification in Lesseyton.

Respondents in both sites were also asked whether they had taken any preventative (proactive measures) against likely future shocks and stressors (Lesseyton: 42 % said yes, Willowvale: 38 % said yes). The Pearson’s Chi-square tests showed no significant differences between male and female proactive adaptation, however, there was a marked difference between male and female proactive adaptation in Lesseyton (just missing the 90 % level of confidence). The low percentage of proactive adaptation amongst respondents can possibly be related to the lack of knowledge about the future impacts of likely shocks and stressors, such as climate change (see Chapter 7, Table 7.10).

7.2.2 Life history interviews

Throughout the life history interviews, personal narratives from the respondents revealed many responses made towards shocks and stressors (Table 7.3). Seeking casual labour within their communities was a common response strategy made towards unemployment and the resultant lack of income (Table 7.3, HH38, HH83). Respondents mentioned how they are forced to ‘beg’ from their neighbours and family as a means of coping without an income (see Table 7.3, Table 7.6). Various forms of borrowing emerged as a common response strategy amongst respondents. This included buying goods on credit (HH66) and borrowing from neighbours and relatives for assistance (HH42 and HH91). This emphasises the importance of social networks within a community (discussed further in 7.3.2; see Stadler, 2012). However, respondents did mention how it was not always easy to get assistance from neighbours as they could be unreliable and judgemental (see Table 7.6). Other responses which emerged from the life history interviews (and reiterate the findings of the survey data, Figure 7.1) included the use of respondents’ savings (HH56), migration (HH40), selling of livestock (HH78), and walking further to collect resources (HH41 and HH42).

Table 7.3. Personal narratives of responding to shocks and stressors

Households	Theme: Responding to shocks and stressors
Lesseyton HH38 Male (age: 42)	It is me and my wife now and we are both unemployed. <u>We do odd jobs in the community to earn an income.</u> We do not get a grant because we do not have a child.
Lesseyton HH12 Female (age: 68)	Things are very difficult for me. I only have one income. My parents were two (father and mother) and thus they got income for two. <u>I always fall short in my budget and I borrow money to cover for the shortfall.</u>
Lesseyton HH38 Male (age: 42)	<u>I ask people for help. I am a beggar.</u> One time the furniture shop came to reposes the furniture as I was behind with my instalments. My mother-in-law gave us the money. I have not paid since. I am afraid they will come for the furniture again. When I was growing up people helped each other. My mother would go and ask for the necessities from the neighbours. When things were right for her, she would pay them back, but these days things are tough. <u>There is not much help you can get from people who are not related to you.</u>
Willowvale HH56 Female (age: 67)	There was a veld fire at some stage. If left the community without homes, no grazing land and no gardens. It took a long time. We had almost lost hope. We were starving, all our crops were destroyed. While waiting for the help from the government, <u>we had to use our savings to survive.</u>
Willowvale HH83 Male (age: 51)	Things are not what they used to be. I asked my older brother for everything I needed. But now I have to fend for myself. I cannot get

	employment. Even casual jobs are scarce. <u>I do odd jobs for the people in order to get an income.</u> But the pay that I get from the odd jobs is too little.
Lesseyton HH40 Female (age: 77)	I left her with my sister and went to look for a job.
Willowvale HH78 Female (age: 27)	<u>I have sold some of my livestock</u> so that I can buy necessities from the shops since there is no produce from the fields and garden.
Lesseyton HH41 Male (age: 60)	I have to walk long distances to go and draw water.
Lesseyton HH42 Male (age: 42)	It is different now; we get assistance from the municipality; water trucks deliver water to the village and we fill containers so that we don't run short of water soon. We battle when the water truck does not arrive. <u>Those who have a bakkie assist us and load our containers and look for fountains that have not dried up.</u>
Lesseyton HH25 Male (age: 25)	<u>In case of floods, I make a trench to allow the water to flow away from the house.</u>
Willowvale HH66 Female (age: 65)	<u>We are starving because we cannot get a good harvest.</u> I use my pension to buy basics from the shop. There are shops that you go to and get what you want then you pay them back on your pay day.
Willowvale HH91 Male (age: 51)	<u>I borrow money from my relatives;</u> they do give when in a position to.

7.2.3 Discussion: coping, adaptation or maladaptation

Response strategies used within households draw on a diverse range of resources or assets (Adger and Vincent 2005; Quinn *et al.*, 2011). Using the eight fundamental human adaptation processes from Thornton and Manasfi (2010) (Chapter 2) to frame this discussion, the use of exchanges (seeking assistance from family, relatives, and neighbours, and sharing labour and resources for farming (see section 7.3) seemed to be the most common response used within both sites to shocks and stressors. The different geographical and socio-economic context of Lesseyton and Willowvale revealed different response strategies. In Lesseyton, respondents were more able to reduce expenditure and seek casual employment locally as there are more employment opportunities available (see Chapter 5). In Willowvale, however, a greater reliance was placed on the use of natural and cultivated resources as a response strategy to shocks and stressors. Also, seeking assistance from family and neighbours (see section 7.3), selling of assets (mainly livestock) and the slaughtering of livestock specifically to supplement dietary requirements were more common in Willowvale. The sale of natural resources was not a common response amongst respondents, particularly in Willowvale (as shown in Table 7.1) which may be reflective of the lack of markets available. This discussion corroborates the findings of Quinn *et al.* (2011) which showed how households choose

different response strategies based on their own priorities, available assets and the context they find themselves in.

Short-term response strategies, such as reducing expenditure (Figure 7.1) and reducing consumption during hard times (Chapter 5, Figure 5.4) can help temporally relieve stress, however they do not offer long-term solutions and can result in asset depletion and increased vulnerability (Quinn *et al.*, 2011). Migration (another human adaptation process noted by Thornton and Manasfi (2010)) is another example of a response strategy which has the potential to generate greater vulnerability, as discussed in Chapter 2 (section 2.3.4.2). A study by Djoudi and Brockhaus (2011) showed that male migration has increased women's workload in the short-term, however it does provide an enabling environment for increased leadership and decision making in the household. As shown in Chapter 5 (past and present vulnerability context) and Chapter 6 (multiple shocks and stressors affecting the households), a household's vulnerability context is influenced by a range of multiple external (such as climatic shocks) and internal (cognitive and institutional) factors. In rural communities, such as Lesseyton and Willowvale, these factors will limit the amount of resources and assets available to households, therefore weakening their adaptive capacity (Quinn *et al.*, 2011). This is evident through the effects drought, income and health-related shocks and stressors have had on the households' ability to farm and rely on natural and cultivated resources as a safety-net (Chapter 5; Chapter 6; section 7.5).

Longer-term adaptation strategies, such as livelihood diversification (as discussed in Chapter 2; Thornton and Manasfi, 2010) can decrease household vulnerability through the spreading of risk. Households in both sites agreed that income diversification was important (Table 7.2); however there was not much evidence of households proactively trying to diversify their income sources. Diversification can however cause maladaptation if strategies are unsuitable, unproductive, or increase exposure to shocks and stressors (Smit *et al.*, 2000; Quinn *et al.*, 2011) such as in the case of women in Lesseyton resorting to prostitution to increase their income (Chapter 6). Dropping out of school, as discussed in Chapter 6, is a form of maladaptation as individuals do not acquire the knowledge and skills needed for formal employment. In addition, the reliance on purchased goods and the lack of farming (as mentioned in Chapter 5 and Chapter 6) could be a maladaptation as food prices increase. Food prices increased significantly during the 2007/08 food crisis, and continued to rise, reaching record levels in 2011 (actionaid, 2011). The United Nations Food and Agricultural Organisation (FAO) reported that the severe deterioration of maize crop prospects in the

United States of America (USA) has increased global food prices by 23 %, which South Africa has not escaped (Business Day, 2012). Statistics SA stated that the average household spent 14.5 % of its monthly income on food in 2005/06. By 2008/09, this had increased to 19.3 %, which has had the largest impact on poor households and will continue to disproportionately impact the poor as inflation increases (Business day, 2012). Maladaptations, such as those mentioned above, may serve short-term goals, however they could result in future costs to society (Bryan *et al.*, 2009; Smithers and Smit, 1997) and therefore it is important to anticipate and prepare for future change (Bryan *et al.*, 2009).

Throughout the life history interviews (Table 7.3), short-term response strategies such as seeking financial assistance from relatives and neighbours, seeking casual employment, selling livestock, and buying goods on credit do not provide long-lasting solutions to vulnerability. The apparent lack of households proactively trying to adopt long-term adaptation strategies in response to shocks and stressors experienced has serious consequences for future vulnerability in the context of climate change and HIV/AIDS.

7.3 The role of community and social capital and social safety-nets in responding to shocks and stressors

7.3.1 Survey results

To understand the role of social capital in responding to shocks and stressors, respondents were asked a number of questions regarding community life and support (Table 7.4). Respondents in both Lesseyton and Willowvale believed that it would be easy for them to receive assistance within their community in response to a shock. Lesseyton had a higher percentage of respondents involved in community support groups (42 %) than Willowvale (28 %). The results were similar between the two study sites when asking respondents a number a questions relating to HIV/AIDS. More respondents in Willowvale felt that their community would be willing to help someone with HIV/AIDS. In Lesseyton, more respondents believed their community was educated about HIV/AIDS and that they could talk openly to their neighbours and community about this disease. Access to public facilities, such as clinics, schools and police stations, was seen as more of a problem in Willowvale, which was to be expected due to its rural nature and location.

Table 7.4. Respondents' views of community life and support

Community	Lesseyton % (n=50)	Willowvale % (n=50)
Easy to get help	72	72
Comm. willingness to help HIV	70	82
HIV education	62	54
Talk about HIV	60	40
Member comm. support group	42	28
Lack of access to public facilities	42	60

Community support seemed to be a common safety-net for households as the majority of respondents in both sites had given some form of assistance to their neighbours and relatives in the form of financial, time or labour, or food assistance (Table 7.5). The most common impacts assisting neighbours and relatives had on households was that it caused some food or money shortages after assistance had been given and that it was often difficult for households to get their loans paid back. However, many respondents said that helping others in their community made them feel good about themselves. Reciprocity is an important aspect of social capital, as households who have previously assisted others feel more comfortable asking those households for assistance in the future (De Vos *et al.*, 2003; see discussion in section 7.3.3). Reciprocity and trust between households can increase the reliability of support in response to shocks and stressors (Stadler, 2012) and has been shown to decrease household food insecurity (Simatele, 2012).

Table 7.5. Different forms of assistance given by respondents to others in their community

Given assistance	Lesseyton % (n=50)	Willowvale % (n=50)
Financial	52	16
Time/labour	6	32
Food	22	26
No	40	38
Examples of its impact on the household:		
Caused some food or money shortages afterwards, hard to get the money back, makes you feel good		

7.3.2 Life history interviews

The use of social and community capital was very apparent throughout the personal narratives of responding to shocks and stressors (Table 7.6). Many respondents mentioned how they had asked their relatives or neighbours for assistance during times of hardship (HH34, HH25, HH42, HH91). However, there were mixed views about the reliability of social capital (which contradicts the high reliance placed on social capital which emerged from the survey (Figure 7.1)): some responses were positive (HH34, HH38) and others were negative (HH81, HH41, HH25). One respondent in Lesseyton spoke about how everyone in the community already has their own problems; therefore she is reluctant to ask for help from neighbours as she does not want to burden them further.

Table 7.6. Personal narratives mentioning the role of social and community capital in responding to shocks and stressors

Households	Theme: Role of social and community capital in responding to shocks and stressors
Lesseyton HH34 Female (age: 70)	Yes, <u>everyone was willing to assist</u> . Neighbours and relatives assisted with whatever they could afford from financial assistance to perishables. They were very helpful.
Willowvale HH81 Male (age: not known)	<u>People in the community are unreliable</u> . You cannot count on them.
Lesseyton HH41 Male (age: 60)	It is not easy; <u>very few people are willing to assist</u> . People only care for themselves. If someone assists you with anything, <u>they expect you to pay back</u> . They do not give for free.
Lesseyton HH25 Male (age: 25)	I seek help from my sisters. <u>The community does not help</u> . They gossip about other peoples' problems so I do not bother asking them for help.
Lesseyton HH38 Male (age: 42)	<u>People help each other in the rural areas</u> . My parents would go to the neighbours and ask for help. They would give them a bowl of mealie meal or maize; depending on what she asked for. Then she would return whatever she borrowed when conditions were favourable.
Lesseyton HH42 Male (age: 42)	<u>I go to my neighbours, relatives and the people around me for assistance</u> .
Lesseyton HH40 Female (age: 77)	I get old age pension. <u>My sister and my children support me</u> . When I fall short of anything I phone them.
Willowvale HH83 Male (age: 51)	<u>I do all sorts of odd jobs to cope with hardships and I also contact my relatives and those close to me for help</u> . Also my brother's wife gets a social grant so she's able to pay back whatever she has borrowed from the neighbours; unlike when I grew up when we depended on her husband's income only.

Willowvale HH91 Male (age: 51)	<u>I borrow money from my relatives</u> ; they do give when in a position to.
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7.3.3 Discussion: the importance of social capital

Social capital and informal risk sharing is an important strategy amongst poor communities, especially for idiosyncratic shocks, where cash and in kind transfers (e.g. food) and labour sharing (exchanges and pooling) act as important safety-nets for impacted households (Takasaki, 2010; Thornton and Manasfi, 2010). Throughout both the survey data and life history interviews, the use of social and community capital proved to be the most frequently reported response strategy employed by respondents (Figure 7.1; Table 7.3, Table 7.6). Quinn *et al.* (2011) found that households may choose to use a specific strategy in response to multiple shocks and stressors. Although social capital has been cited as valuable in facilitating adaptation (Adger, 2003; Jones, 2010; Pelling and High, 2005; Agrawal, 2008), the high reliance on social and community capital amongst respondents may have implications for the development and implementation of new response strategies. Transformation, revitalisation and innovation are crucial processes of human adaptation (as discussed in Chapter 2) and are necessary for ensuring long-term adaptation to climate change and HIV/AIDS. Therefore, rural communities, such as Lesseyton and Willowvale, need to move beyond relying solely on short-term coping strategies which provide only temporary fixes.

The conceptualisation of social capital comprises not only the physical dimension (group memberships and networks known as structural capital) but also the cognitive dimension (trust, reciprocity and solidarity, formal and informal rules) (Pronyk *et al.*, 2004; Adler and Kwon, 2002). A study by Stadler (2012) shows how important the cognitive dimension (reciprocity) of social capital is. Reciprocity emerged as a factor influencing households' willingness to seek assistance from relatives and neighbours (Stadler, 2012). The mixed reviews from the life history interviews regarding the reliability of social and community capital (Table 7.6) can possibly be explained by the strength of internal (bonding) and external (bridging) ties formed within the respondents' communities (Adler and Kwon, 2002; Bodin and Crona, 2009). Social capital is not finite (discussed further in section 7.4.3), and as exposure to stressors increases, more and more people will be unable to help others, as shown in section 7.2.3 above. In the context of climate change, there will be increasing pressure on

the different dimensions of social capital, possibly reducing the reliability of the role of social capital in response to shocks and stressors. Social support networks, group membership and interactions (which define the structural dimension of social capital), along with the quality and diversity of households' social interactions (explained by Stadler, 2012) can influence the reliability and effectiveness of social and community capital as a response strategy to shocks and stressors.

Stadler (2012) found that households in Willowvale were generally more trusting; however there was lower structural social capital possibly owing to Willowvale's lower incomes and employment rates. This reasserts how household adaptive capacity is dependent on available resources and assets which in turn is shaped by a host of multiple shocks and stressors (Chapter 6) and pre-existing socio-economic, environmental, and political factors (Chapter 5), reaffirming the complex nature of vulnerability.

7.4 Responding to health-related shocks and stressors

7.4.1 Survey results

To understand the impacts of health-related shocks and stressors, respondents were asked if caring for an ill or disabled member in their household has caused them to have to reduce other activities in their lives, which can have longer-term negative impacts on the household (Table 7.7). More respondents in Willowvale believed that caring for an ill or disabled household member did not have a large effect on their household (54 %). Lesseyton and Willowvale were fairly similar with regards to having to reduce the amount of housework they did and doing less work in their field/garden. However, caring for an ill or disabled household member had a larger effect on the respondents' employment in Lesseyton, as 24 % had to quit their job whilst 14 % did so in Willowvale. This reasserts the socio-economic differences between the two sites: the higher unemployment ratio in Willowvale will result in more household members being present and therefore fewer jobs being sacrificed as a result of caring for the ill or disabled household member.

Table 7.7. Responses made as a result of having to care for an ill/injured household member in Lesseyton and Willowvale

Responses: Caring for ill/injured member	Lesseyton % (n=50)	Willowvale % (n=50)
Do less housework	30	22
Did not have a big affect	26	54
Quit job	24	14
Work less in the garden/field	12	16
Other	0	2

Respondents were also asked to also indicate how they responded (Table 7.8) to the lost contributions from illness or death shown in Chapter 6 (Table 6.6) by stating which of the 17 responses (as mentioned in section 7.2.1) applied to them. The most common response in Lesseyton and Willowvale was seeking assistance from family or relatives (80 % and 52 % respectively). This reasserts how the use of social and community capital is a common response strategy amongst respondents (see Figure 7.1, section 7.3). Harvesting or collecting more natural resources was also important in both sites; however it was surprisingly lower in Willowvale.

Assistance from neighbours (as opposed to family) was frequently mentioned in both sites, with Willowvale also regarding assistance from a community organisation within its top five responses. Respondents in both Willowvale and Lesseyton regarded seeking employment locally as an important strategy, whilst seeking employment in the city was common amongst respondents in Lesseyton.

Table 7.8. Responses made as a result of the lost contributions experienced from an ill/injured or deceased household member in Lesseyton and Willowvale

Responses: Lost contributions	Lesseyton % (n=50)	Willowvale % (n=50)
Assistance from family or relatives	80	52
Harvest more natural resources	70	42
Reduce consumption	66	12
Walk/travel further to collect natural resources	48	30
Seek employment in city	46	24
Assistance from neighbours	46	46
Seek employment locally	40	46
Sell natural resources	36	18
Assistance from community organisation	30	40
Change farming technique	30	4
Reduce expenditure	28	24
Assistance from children	26	18
Sell assets	24	20
Use own livestock for food	20	22
Spend savings	18	18
Migration	18	34
Loan from credit provider	14	2

Interestingly, more respondents in Lesseyton seemed willing to change their farming technique, and sell natural resources than respondents in Willowvale (see Table 7.1). With Willowvale being more rural and resource abundant, one would expect households to capitalise on the use of natural and cultivated resources during times of stress (see Chapter 5, Figures 5.1 and 5.2.). Migration was more common in Willowvale (as shown in Table 7.1), which was to be expected with the fewer employment opportunities available.

7.4.2 Life history interviews

In addition to the reliance on social and community capital in response to health-related shocks and stressors (Table 7.9, HH56), many respondents mentioned the use of free local clinics within their communities (HH56, HH15) as a means of responding to illness. However respondents, particularly in Willowvale, mentioned how the cost of transport prevents them from accessing the local clinic (see barriers to adaptation, section 7.6). Some respondents relied on a burial scheme to assist with the associated costs of death within a household

(HH36), however those respondents who did not subscribe to a burial scheme mentioned how they sold some of their livestock to cover the associated costs (HH66).

Table 7.9. Personal narratives of responding to health-related shocks and stressors

Households	Theme: Health related responses
Lesseyton HH36 Female (age: 77)	So he was buried, <u>fortunately we were subscribing to a burial scheme.</u> Since the death of my husband I am not the same. It came as a shock and I cannot forget. It still bothers me to this day.
Willowvale HH66 Female (age: 65)	It was a difficult death in the family when my daughter-in-law died. I <u>sold some of my cattle to prepare for the funeral.</u>
	We do not belong to a burial scheme. <u>We would use of the old age pension to carry out the funeral.</u>
	<u>No support from the community. People do not want to associate with it. They bad-mouth people with HIV.</u>
Willowvale HH56 Female (age: 67)	Social grants are needed. When one is sick we need for hire a mode of transport to go to the clinic or hospital. <u>Without support from the government we do not have the money to hire transport.</u>
	We get medication from town for our livestock. <u>We seek help from family for a death in the family.</u>
	People got help from herbalists and they got cured. Today most people go to medical doctors but there are a few who still use herbalists. The rate of HIV is high. There are people with HIV in the community.
Lesseyton HH22 Female (age: 52)	I live with my brother who is disabled. I must look after him. <u>My life is on stand still.</u> He needs constant care.
Lesseyton HH15 Male (age: 65)	My <u>income is spent on medication and transport to the health centres.</u> I am worried that I fail to pay my burial subscription due to ends not meeting.
Willowvale HH84 Male (age: 46)	<u>Today people depend on medication; it was not like that when we were growing up. In the old times people were very strong, their resistance to illness was very high; they didn't get sick easily like we do now.</u>

Other interesting comments made were that community members were unsupportive, especially towards an individual suffering from HIV/AIDS. This reasserts the social stigma attached to the disease, as explained in Chapter 2 (section 2.3.4.2). As discussed in section 7.3.3, social networks are important for coping and adaptation however it may not always be simple. Over reliance on an individual, mistrust, and social stigmas (as shown in Table 7.9, HH66) may prevent households assisting others. The reliance placed on social grants was reiterated by a respondent's use of a social grant to help cover the associated costs of death (HH66). In Willowvale, one respondent was forced to quit his job in response to his illness (HH84) (see Table 7.9).

7.4.3 Discussion: coping and adaptation in the context of health-related shocks and stressors

It is widely understood that health-related shocks and stressors, particularly HIV/AIDS, have large effects on household livelihood security (Ziervogel and Drimie, 2008). In addition, other shocks and stressors can compound impacts at the household level and reduce households' ability to respond to the additional stress and illness (O'Brien *et al.*, 2009). For example, HIV/AIDS and other illnesses can have a host of impacts on a household, such as a decrease in labour and income (Table 7.9, HH84) and increased health-related costs (HH15, HH56). Also, the needs of individuals suffering from HIV/AIDS are not static but change with time and progression of the disease (Ziervogel and Drimie, 2008). The 'AIDS Timeline' developed by Ziervogel and Drimie (2008) allows for different intervention strategies to be adopted by different target groups for the different stages of the HIV/AIDS timeline (from prevention to infection, infection to illness, and illness to death) and enables a better understanding of how the needs of the target groups evolve with the progression of the disease. This is an important consideration in the context of multiple shocks and stressors as it can better support households that are trying to secure their livelihoods despite the array of shocks and stressors they face (Ziervogel and Drimie, 2008).

From the survey data, it was evident that health-related shocks and stressors impacted on household productivity and income through the reduction in household chores and quitting a job in order to care for an ill or disabled member (Table 7.7), particularly in Lesseyton (as explained in section 7.2.3). This reduction in income can result in decreased expenditure on food increasing household food insecurity, which in turn can exacerbate the effects of HIV/AIDS and other health-related shocks and stressors (Gillepsie and Drimie, 2009). These impacts can further be impacted by longer-term stressors of climate variability and water insecurity as well as poor governance (as mentioned by participants in Chapter 6) (Godfray *et al.*, 2010; O'Brien *et al.*, 2009; Shackleton and Shackleton, 2012).

Rural areas with insufficient basic services and health-care are likely to be more sensitive to the combined shocks and stressors of health-related impacts (Coovadia *et al.*, 2009), which reaffirms the discussion in section 7.4 and the findings of Quinn *et al.* (2011). The majority of the population within South Africa, particularly within rural impoverished communities, still rely on an inefficient and over-burdened health system, as in the case of Lesseyton and Willowvale (Table 7.8). Without the financial means to afford private health-care, respondents are limited to these poor services.

The limited resource endowments and poor service delivery within these communities coupled with the low income levels may explain the high reliance on social and community capital in response to shocks and stressors. As explained in section 7.3, the use of social capital has proved to be an invaluable response strategy, however with rural communities becoming increasingly vulnerable to future impacts of climate variability and illnesses (HIV/AIDS in particular), the effectiveness and reliability of the use of social and community capital may be reduced. An example of this is shown by Drimie and Casale (2009) in the way in which HIV/AIDS potentially erodes social capital through the loss of social cohesion, trust and the over-utilisation of social support networks (which is evident in the two communities, see Table 5.7, HH34 and Chapter 6, Figure 6.4). Other ways in which social capital may be eroded is through stigma (as seen in Table 7.8, HH66), weakened institutions, violence and crime (de Sherbinin *et al.*, 2008; Moser, 2005)

7.5 Responding to farming and food security-related shocks and stressors

7.5.1 Survey results

To understand the responses to climate-related shocks and stressors, respondents were asked to indicate (from list) any changes they had made towards their arable practices (see Chapter 5, section 5.2.4 for percentage of households growing crops and gardening in each site) in response to climate-related shocks and stressors experienced within the last two years (see Chapter 6, Figure 6.2). The use of social capital, once again, proved to be an important response strategy as sharing labour and exchanging resources amongst one another were the most common changes made by respondents (Figure 7.2). The use of labour sharing and exchanges are fundamental elements of human adaptation processes noted by Thornton and Manasfi (2010) (see Chapter 2, Table 2.1).

In Willowvale, more people decreased the size of their gardens in response to increased water insecurity, whereas in Lesseyton increasing and decreasing the size of their gardens got an almost equal response. Both sites were similar when changing the types of crops they had planted and using new farming methods. There was some evidence of diversification, mainly in Lesseyton, through crop diversification. The use of rationing was evident in both sites where respondents reduced the amount of fertilisers and pesticides used to save money. The increased use of rainwater tanks in Lesseyton can be explained by the higher income levels and better service delivery compared to Willowvale.

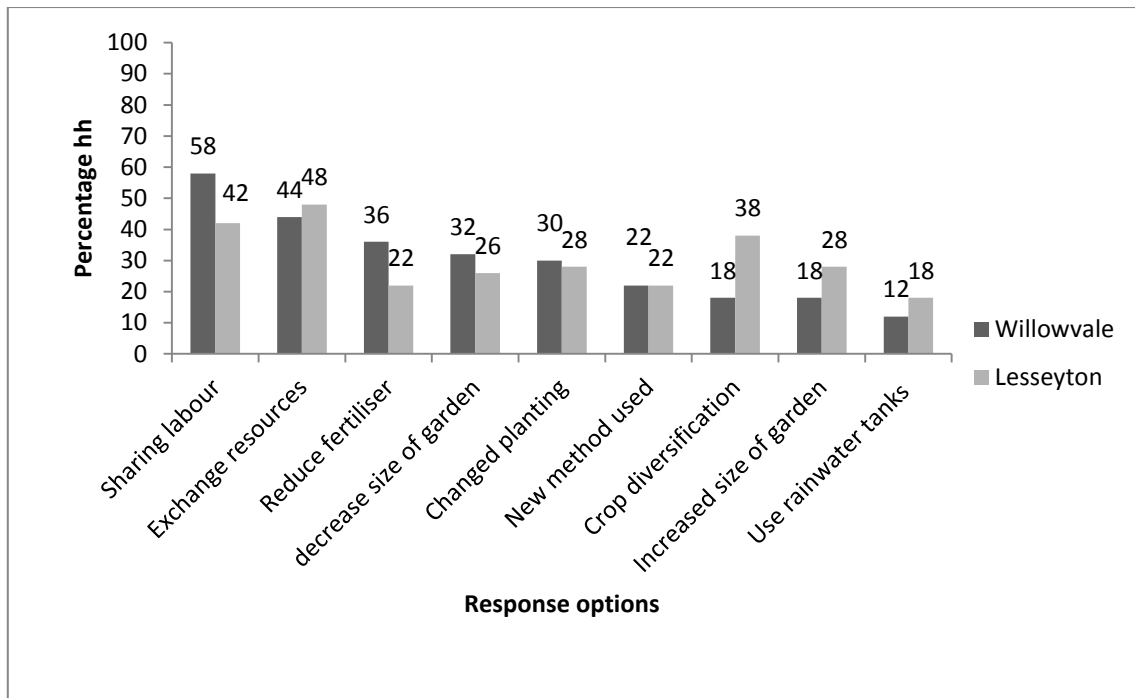


Figure 7.2. Changes made towards respondents' farming methods in the past two years as a result of hardship

7.5.2 Life history interviews

In response to shocks and stressors (climate-related in particular), respondents mentioned a variety of strategies used (Table 7.10). Purchasing more goods from shops due to poor harvests (see Chapter 5, Figure 5.3; HH25), walking or travelling further to collect water (Table 7.9, HH56, HH66), and relying on family or neighbours for assistance (HH42) were common response strategies used. There were a few interesting comments made during the life history interviews (see Appendix 1). Some respondents in both sites believed that there was nothing that could be done in response to livestock disease/death, crop failure, crop pests and rainfall variability, especially in Willowvale (Table 7.10, HH79, HH83), as they believed they had no control over the climate and therefore had to accept associated impacts. This raises concern over the lack of knowledge of adaptation in the context of climate change. However, some respondents in Lesseyton seemed to be slightly more adaptive in that they had tried to change their farming practices in response to rainfall variability, crop failure and crop pests, whereas in Willowvale, seeking assistance was done more often.

Table 7.10. Insights and quotes from personal narratives of issues relating to food insecurity and farming

Households	Theme: Responding to farming and food security-related shocks and stressors
Lesseyton HH25 Male (age: 25)	I do have livestock and crops. <u>The grass dries and the crops die. There is no harvest. I have to buy vegetables from the shops. I do not have the money. There is no grass and there is no water for them.</u> I search in the mountains for water springs and draw water for domestic use. <u>I have to buy vegetables from the shops.</u>
Willowvale HH56 Female (age: 67)	The government has provided the community with communal taps but <u>sometimes they dry up and one is forced to go to the river to fetch water. These places are no longer safe, they are spots for criminals.</u>
Willowvale HH66 Female (age: 65)	We are <u>starving because we cannot get a good harvest. I use my pension to buy basics from the shop.</u> When taps are dry, we fetch water from the river. Crops do not grow well without water. <u>It is hard to fetch water from the river to use for watering. The river is far.</u>
Lesseyton HH42 Male (age: 42)	It is different now; we get assistance from the municipality; water trucks deliver water to the village and we fill containers so that we don't run short of water soon. <u>We battle when the water truck does not arrive. Those who have a bakkie assist us and load our containers and look for fountains that have not dried up.</u> When there is drought, I would plant a small area as there would be no water to water the plants. If I don't have money to buy pesticides, <u>I would use cold ash from the fire as pesticide.</u>
Willowvale HH83 Male (age: 51)	<u>We water the crops in the small gardens; but there's nothing we can do to help the crops in the fields, we just watch them die. You can never water the fields.</u>
Willowvale HH79 Male (age: 80)	<u>There is nothing I can do, I will have to just watch them die.</u>
Lesseyton HH36 Female (age: 77)	This year – yes we did experience drought. Livestock died. <u>Those who have money buy feed for their stock.</u>

7.5.3 Discussion: coping and adaptation in response to farming and food security-related shocks and stressors

Studies have shown that in response to short-term environmental variability, rapid coping strategies are employed by individuals and households (Hug and Reid, 2004; Thomas *et al.*, 2005). In both study sites, there was evidence of households making small adjustments to their farming practices in response to changes in climatic factors (Figure 7.2). There was some evidence of households adapting by spreading risk in the form of crop diversification

and searching for alternative water sources (Table 7.10, HH25, HH42). Also, the use of existing family or friendship networks was common amongst households. A study by Thomas *et al.* (2005) distinguishes response strategies made by small-scale rural farmers into coping and longer-term adaptation. Changes made to farming practices were largely seen as coping strategies (such as reducing fertiliser use (Figure 7.2)), whereas commercialisation of livelihoods (such as a new business, gardening projects, or switching to hardier breeds or varieties), diversifying livelihoods and creating new networks (structural social capital) were seen as adaptation (Thomas *et al.*, 2005). Thomas *et al.* (2005) also showed that households' immediate response to dry spells was to reduce investment or even to stop cropping, as households believed it to be too risky. This trend was evident in Lesseyton and Willowvale, as shown by the increased reliance on purchased goods (Chapter 5, Figure 5.3).

Climate change and variability is altering the productivity of natural and cultivated resources. This has (and will increasingly continue to have) implications for resource dependent communities (Marshall *et al.*, 2012). Studies have shown that implementing incremental changes or short-term reactive coping strategies may not be sufficient, and rather, there is a need to consider innovative and transformative strategies (as discussed in Chapter 2; Gunderson and Holling, 2002; Park *et al.*, 2012; Rickards and Howden, 2012), such as perennial crops, especially in the context of climate change and HIV/AIDS. The dominant use of short-term reactive coping strategies and the apparent lack of proactive strategies adopted amongst respondents have severe consequences for future household vulnerability within Lesseyton and Willowvale.

7.6 Barriers to adaptation

7.6.1. Survey results

To understand the barriers to responding households have faced, respondents in Lesseyton and Willowvale were asked to identify (from a predetermined list of 13 barriers created in the same manner as previous mentioned lists (see section 4.2.1.2; section 7.2.1)) what barriers have prevented them from coping and adapting effectively. Respondents in both sites identified similar barriers to coping and adaptation (Table 7.11) in response to the shocks and stressors mentioned in Chapter 6. Although the availability of transport was less of a concern, the majority of the respondents in both sites (92 % Lesseyton; 94 % Willowvale) complained about how having to pay for transport prevents them from coping with certain hardships as many are not able to afford these costs at all times, and are not able to walk the long distances

to clinics and shops (see Chapter 5, Table 5.8, HH15). Transport being too expensive and having no savings is an effect of having little or no income due to unemployment (Chapter 5).

Low awareness of the likely impacts of climate change and how to prepare for such changes is a serious challenge for adaptation (Productivity Commission, 2012) and is one of the human and informational barriers illustrated by Jones (2010) (Chapter 2, Figure 2.2). This issue was acknowledged in both sites by respondents to be an important barrier as it has implications for their cultivation and food security (Table 7.11). Rural communities, such as these, are limited in their access to such information as well as in their capacity (understanding and financial) to make and implement appropriate decisions based on the climate change predictions (Productivity Commission, 2012).

A lack of public facilities is the result of poor service delivery and development in the area. Interestingly, this was ranked higher in Lesseyton (86 %) as a barrier than in Willowvale (76 %), even though Willowvale lacks infrastructure. Respondents in Willowvale expressed concern over the lack of income earning opportunities in their community and believed that the absence of electricity was one of the main reasons for this (Chapter 6, Figure 6.7 and 6.8). As a result of this, households have limited to no savings available to them.

Land degradation and soil erosion were seen as a greater barrier in Lesseyton whilst a decrease in the availability of natural resources was more of a barrier in Willowvale. Community tension, loss of cohesion and lack of support from community members were ranked considerably higher in Lesseyton compared to Willowvale. This is supported by the findings of Stadler (2012) which showed Willowvale to have higher social cohesion, trust and reciprocity amongst households relative to Lesseyton.

Table 7.11. Barriers to coping with shocks and stressors in Lesseyton and Willowvale

Barriers to coping	Lesseyton (% yes) (n=50)	Willowvale (% yes) (n=50)
Transport too expensive	92	94
Lack of public facilities	86	76
Not knowing future CC predictions	82	84
No savings	80	88
Erosion	80	64
No loan	70	62
Lack of information	66	56
Community tension	60	24
No transport	56	22
Lack of support from community	50	32
Decrease Natural Resources	50	76
Ill/injured or disabled	40	58
Lack of support from family/friends	36	40

Respondents in Willowvale regarded being ill or disabled as a greater barrier in comparison to respondents in Lesseyton. One possible reason for this is that there are fewer health-care facilities in Willowvale and with villages being more spread out across the landscape (see Chapter 3), travel costs will be more of a concern forcing some respondents to walk great distances (as mentioned in Table 5.8)..

Disaggregating the data by gender showed that women were more concerned about the lack of support from the community compared to men (Table 7.12), with significantly more women reporting this in Willowvale (10 in Table 7.12). Women in Willowvale tend to rely more on social capital and are more dependent on social networks within the community (see Stadler, 2012). A study by Osbahr (2008) in Mozambique showed that women were more dependent on family gifts and friendship networks, whilst the men were more reliant on the sale of their labour. Community tension (8) emerged as a common barrier in Willowvale, with significantly more men mentioning this. Women in both sites regarded having no savings (4) as more of a barrier compared to men, especially in Lesseyton where there was a significant difference between men and women. Interestingly, the lack of public facilities (2) was mentioned by most respondents as a barrier in both sites, with marked differences between men and women in Willowvale, with fewer men seeing this as a barrier. Women in Willowvale saw a decrease in the availability of natural resources (11) to be more of a barrier than the men; however this was the opposite in Lesseyton, with there being more men seeing

this as a barrier. Since women tend to be the primary agriculturalists and users of natural resources (Aggarwal *et al.*, 2001; Commission for Gender Equality, 2010'; Ruiters and Wildschutt, 2010), one would expect a higher concern amongst the women regarding the availability of natural resources, however, this did not apply in Lesseyton.

Table 7.12. Disaggregation of data by gender showing the differences in the ranking of barriers and significant differences using Pearson's Chi-square tests at 10 %, 5 %, and 1 % significance levels (shaded blocks)

Barrier type	Lesseyton (n=50)		Willowvale (n=50)	
	Male % (n=27)	Female % (n=23)	Male % (n=23)	Female % (n=27)
1. Transport too expensive	88	95	95	92
P-value (Chi-square)	0.380		0.650	
2. Lack of public facilities	81	91	69	81
P-value (Chi-square)	0.183		0.325	
3. Not knowing the future impacts of climate change predictions	77	86	91	77
P-value (Chi-square)	0.256		0.193	
4. No savings	70	91	82	92
P-value (Chi-square)	0.065		0.279	
5. Erosion	85	73	65	62
P-value (Chi-square)	0.273		0.869	
6. No loan	66	74	82	51
P-value (Chi-square)	0.577		0.109	
7. Lack of information	74	56	52	59
P-value (Chi-square)	0.297		0.615	

8. Community tension	55	65	34	14
P-value (Chi-square)	0.487		0.099	
9. No transport	55	56	21	22
P-value (Chi-square)	0.945		0.967	
10. Lack of support from the community	29	43	17	44
P-value (Chi-square)	0.395		0.041	
11. Decrease in the availability of natural resources	59	39	69	81
P-value (Chi-square)	0.156		0.325	
12. Ill/injure yourself	33	47	60	55
P-value (Chi-square)	0.297		0.704	
13. Lack of support from family and friends	29	43	43	37
P-value (Chi-square)	0.309		0.643	

7.6.2. Life history interviews

Throughout the life history interviews, respondents from Lesseyton and Willowvale spoke about what has prevented them from responding to shocks and stressors (Table 7.13). The issue of unemployment (HH25), lack of income (HH84, HH81, HH25), lack of education (HH25), poor health (HH79), drought and poor harvests (HH25), and crime (especially amongst the youth) (HH41) were recurring topics of conversations amongst the respondents when speaking about barriers to coping and adaptation. Respondents in Willowvale felt that the absence of electricity prevented development and income-earning opportunities in their community. Drought and the supply of water from the municipality were also seen as barriers which limited respondents' use of natural and cultivated resources. In the conceptual framework of this study (Chapter 2, Figure 2.2) barriers, such as those identified by the respondents, have the potential to impede coping and adaptation or result in ineffective or

maladaptive responses which feedback into increased vulnerability. Many of the barriers identified within the life history interviews reiterate the barriers identified in the survey data (Figure 7.11) and reflect the sources of vulnerability identified in the PLA workshops (see Chapter 6, section 6.4; discussion in section 7.6.3.1).

Table 7.13. Personal narratives of barriers which have prevented respondents from coping and adapting to shocks and stressors

Households	Theme: Barriers to coping and adaptation
HH84	<u>Not getting enough money is the barrier.</u> I have dreams and wishes but due to financial constraints I cannot fulfil.
HH81	<u>I cannot plough my fields now that I do not have an income.</u> Things will be much better when I finally get the old age pension. <u>Lack of income is the barrier.</u>
HH79	<u>My problem is my ill health; I can no longer do things I used to.</u> My husband too is an invalid.
HH25	Drought – If I had a job I would buy feed for my livestock. Cattle die of hunger and crops die. There is no water for them. <u>I do not have money to buy pesticides.</u>
	<u>Unemployment.</u> It worries me that I cannot do the things I want to do, that I could die not having achieved anything due to unemployment. I wish I could build a house for my family. This one is too small.
	<u>Water supply is the main concern.</u> The taps have been locked; they say the dam is not clean. They will unlock the taps after the dam has been cleaned. The authorities have supplied us with Jojo tanks, but we cannot use that water for the crops. It is for domestic use only.
HH41	<u>Education</u> – the authorities need to build more schools closer to the community and there needs to be free education – no school fees, everything supplied free to the learners. Projects – such as community gardens. The authorities should supply everything and assist the community in these projects. They should work hand in hand with the community.
	<u>To see a stop to the drinking spree. Since young people are jobless they spend their time drinking and committing crime.</u> If they could get jobs things would be better. They would have something keeping them busy. Also if the taverns could close early while it is still daylight.

7.6.3 Discussion: categorising and comparing barriers

7.6.3.1 Overlap of shocks, stressors and barriers

Many of the barriers presented within this section have also been identified by the respondents as shocks and stressors (see Chapter 6). This shows that shocks and stressors can be thought of as barriers from a community perspective, and that it is not so easy to separate shocks, stressors and barriers from one another on the ground. The definition of a barrier (see Chapter 2, section 2.3.6; Jones, 2010; Productivity Commission, 2012) comprises of some form of prevention or limitation to using resources effectively in responding to shocks and stressors. For example, many of the shocks and stressors identified by the respondents, such as drought and illness, present a barrier to their productivity (ability to farm and use resources effectively). Studies of climate change adaptation amongst small-scale farmers in Kenya (Bryan *et al.*, 2011), and Ethiopia and South Africa (Bryan *et al.*, in 2009) showed similar barriers to adaptation. These included financial, biophysical (water insecurity), institutional and physical, and informational barriers. Other barriers found by Roncoli *et al.* (2010) were poor soil quality, poor roads (this is particularly apparent in Willowvale), pests and diseases, and corruption. Corruption also emerged as a stressor within the PLA workshops (see Chapter 6, section 6.4) and reiterates the potential overlap that may exist between barriers and stressors.

It is important to consider how a variety of barriers interact at different scales and how they may impact on different social groups (Shackleton, 2012). The inherent complexity in understanding barriers the impacts they have on different social groups is in itself a barrier to future research, and emphasizes the complex nature of understanding vulnerability within socio-ecological systems.

7.6.3.2 Combination of barriers

Barriers have the potential to overlap, interact and reinforce one another (Shackleton, 2012). From the discussion around limits and barriers to adaptation by Jones (2010), it is evident that a household will seldom be affected by just type of barrier category (Figure 2.2 in Chapter 2), but rather experience a combination of barriers that prevent them from coping and adapting effectively (Productivity Commission, 2012). The literature identifies an array of barriers which impedes adaptation, namely accessibility to climate change information (Roncoli *et al.*,

2010), socio-economic context and position of households (Ziervogel *et al.*, 2006), and the policy and institutional environment (Agarwal, 2008; Eakin, 2005).

In this study, climatic shocks, such as drought, present a natural barrier to the people of Lesseyton and Willowvale. Lesseyton had been worse hit by water shortages which had an impact on some of the households' ability to cultivate crops. Respondents who owned livestock (particularly in Lesseyton) complained about the lack of grazing due to the impacts of drought.

Human and informational barriers, such as lack of knowledge (as seen in Table 7.11 and 7.12), financial resources and assistance needed to facilitate adaptation also play large roles in both Lesseyton and Willowvale. A study by Mandleni and Anim (2011) showed similar barriers to adaptation (see Table 7.11). It was found that majority of farmers interviewed had not responded to climate change due to a lack of information, particularly regarding climate change (see Table 7.11 and 7.12), and a lack of financial and physical capital such as agricultural inputs and property (Mandleni and Anim, 2011). The lack of basic services, infrastructure, and lack of physical capital and assets needed for farming (also stressors identified in Chapter 6) is a good example of how barriers can prevent a community from utilizing their resources to promote adaptation and improve the well-being of the community (Productivity Commission, 2012).

Financial barriers were frequently mentioned as barriers in both sites. In Willowvale, the lack of income was especially felt with regards to farming and cultivation as many respondents mentioned how they could not afford feed or medicine for their livestock (resulting in incidences of death or forcing households to sell their livestock), and pesticides and seeds to replant their gardens/fields, forcing respondents to buy majority of their food from the shops instead (see Chapter 5). Not being able to afford cattle or the hiring of a tractor has prevented households from being able to plough their fields, and water shortages have exacerbated the poor harvests. A study by Bryan *et al.* (2009) showed that lack of access to credit or money was the main barrier identified by farmers in South Africa. Without a good harvest to rely on for food or income generation, people are forced to migrate in search of employment. However prolonged migration may not be the most appropriate form of adaptation and may exacerbate existing vulnerabilities such as the large dependency on government grants (Jones, 2010; United Nations Development Programme (UNDP), 2009). Households limited financial resources and capacity to facilitate adaptation places high dependency upon the

government. However, the low levels of awareness and knowledge and capacity amongst the local governments themselves have forced the households in Lesseyton and Willowvale to continue relying on short-term reactive and maladaptive response strategies.

Social barriers, such as psychological, behavioural and institutional processes, will also play a large role in influencing how respondents respond to shocks and stressors (see Chapter 2, Table 2.2; Agrawal, 2008; Agrawal *et al.*, 2009; Jones, 2010; Jones, 2011). Roncoli *et al.* (2010) showed that participatory exercises highlighted the importance participants placed on improving human and organisational capacity, and training within their communities, suggesting that these are currently social barriers. This also emerged from the PLA workshops held in Lesseyton and Willowvale (see Chapter 6, section 6.4). Additional social and political barriers found by Roncoli *et al.* (2010), which were also highlighted by respondents in Lesseyton and Willowvale, included theft, crime, insecurity, violence and conflict and governance issues such as corruption and poor quality of services.

In addition to the informational barriers previously mentioned, traditional and cultural norms, such as the reliance placed on restrictive traditional or religious means of responding to shocks and stressors, which was seen by the women's reliance in God to solve their problems (Chapter 6, section 6.4.1), and the limited authority given to women within a household, as well as the institutional inequalities that may exist between certain social groups (Jones, 2010), can impede adaptation and have the potential to become maladaptive.

7.7 Conclusion

This aim of this chapter was to explore the ways in which vulnerable households respond to the identified shocks and stressors (presented in Chapter 6). The data showed that the use of social and community capital proved to be an important response strategy and safety-net for coping with stressors and shocks. In both Lesseyton and Willowvale, seeking assistance from family, relatives or neighbours was the most common strategy (see Chapter 8, section 8.2.3). The peri-urban setting of Lesseyton had a clear influence on how households responded to shocks and stressors in comparison to households in Willowvale, such as how caring for an ill/injured member had a larger impact on the respondents employment in Lesseyton, or how migration was a more common response strategy in Willowvale.

There were very few responses that were anticipatory or proactive in nature, which suggests that there is little planned long-term adaptation occurring but rather more reactive short-term

coping strategies are being used. Unemployment and having no income seemed to be the primary barriers households were facing, and stemming from this were other barriers such as crime and the inability to farm or cultivate crops. The lack of knowledge, physical and financial resources, and the assistance needed to facilitate adaptation are critical issues that need to be addressed in these communities in order for adaptation to occur in a manner that improves the respondents' adaptive capacity and well-being in the future.

**CHAPTER EIGHT:
CONCLUSION AND RESEARCH
IMPLICATIONS**



8.1. Overview

The way in which vulnerability is conceptualised typically involves an external dimension of exposure to stress combined with an internal dimension incorporating an individual's, household's, or community's adaptive capacity to respond to such stress (see Chapter 2, section 2.3.2; Chambers, 1989). Multiple shocks and stressors affect a household in a variety of ways (see Chapter 6), and in the context of climate change and HIV/AIDS, these impacts can be further exacerbated, which will have severe implications for household vulnerability. Effective adaptation to shocks and stressors will require an enabling environment with available assets and resources as well as institutional capacity (O'Brien *et al.*, 2009). Households choose different response strategies based on their own priorities and available assets which in turn are influenced by their socio-economic, structural, political and environmental context (O'Brien *et al.*, 2009; Quinn *et al.*, 2011). Households will also face considerable barriers to adaptation (see Chapter 7, section 7.6). All of the above reasserts the complexity involved in vulnerability assessments.

The overall aim of this dissertation was to assess the responses of targeted vulnerable rural households to multiple shocks and stressors, including climate change and HIV/AIDS (see Chapter 1, section 1.2). The study first attempted to understand the pre-existing vulnerability context in the two study sites by incorporating assessments of the current status quo as shaped by South Africa's history of apartheid (Chapter 5). This initial investigation applied insights from Ospina and Heeks (2012), Chambers (1989) and the IPCC (2001), and was embedded within the contextual framework developed for this study (Chapter 2, Figure 2.2). This was followed by an assessment of the shocks and stressors that vulnerable rural households have been exposed to and how multiple shocks and stressors have impacted the households (Chapter 6). Household response strategies (to the shocks and stressors identified in Chapter 6) were also assessed, including the use of various safety-nets which is discussed further in the following section of this chapter. This study also considered what has limited vulnerable households from coping and adapting effectively (Chapter 7, section 7.3).

Several research methodologies were employed to gather data (see Chapter 4), namely a household survey, workshops using PLA exercises, and life history interviews, which were shaped according to the research aim and objectives. The combination of qualitative and quantitative research methodologies proved vital in that they generated insights which would not have been possible by employing any single research methodology.

In summary, it was evident that the past inequalities of apartheid can still be seen within the two study sites. The resultant vulnerability context of the two sites largely influenced households' ability to respond to shocks and stressors, acting as barriers (see Chapter 5 and Chapter 7). In addition, vulnerability within the two sites was context specific as the different geographical locations had contrasting biophysical and socio-economic environments which created differences in livelihood strategies used (such as the differences in employment and income levels between the two sites). Unemployment emerged as the over-riding issue in both study sites and from this, emerged the majority of existing household vulnerabilities. It was evident that little planned or autonomous long-term adaptation was occurring within either site, as most household response strategies used are reactive and short-term in nature (coping strategies). People are looking towards the government to address some of the issues as very few respondents indicated that they knew how to be proactive and improve their own situation. Also, the high reliance on social grants and the implication of this raises concerns over the effectiveness and possible maladaptive nature of social grants within the context of adaptation (see following section 8.3.3) (Moser, 2005). The findings and concerns which emerged from this study are discussed further in the following sections.

8.2. The use of safety-nets: natural and cultivated resources, social protection, and social capital

8.2.1 Natural and cultivated resources

The provision of natural capital provides rural poor with an array of goods and services which can play a large role in poverty reduction (OECD, 2008). Many studies have noted the use and sale of natural and cultivated resources to be an important livelihood strategy and safety-net used by rural poor communities (De Klerk, 2007; Dovie, 2001; Paumgarten and Shackleton, 2011; Takasaki *et al.*, 2010; Twine and Hunter, 2009). It was evident within the study sites, and particularly in Willowvale, that households made use of natural and cultivated resources (Chapter 5, Figures 5.1 and 5.2). In Chapter 7, households mentioned collecting and harvesting more natural resources and walking further to collect natural resources (Figure 7.1; Table 7.8) as a response strategy to shocks and stressors shown in Chapter 6. In some cases, households slaughtered their own livestock to supplement their dietary requirements in times of hardship.

In some cases, households supplemented their income and dietary requirements through the use and sale (however, not as common, see Table 7.1 in Chapter 7) of natural and cultivated resources, which also allowed households to spread risk across their different livelihood strategies (as shown by previously mentioned studies). Thus, it could be argued that natural and cultivated resources in Lesseyton and Willowvale have provided a safety-net for households.

However, the more extensive use of natural and cultivated resources as a safety-net within both study sites was hindered by a host of factors. Climate-related shocks and stressors, particularly climate variability and unpredictability, were said to be responsible for the decreasing trend in farming (Chapter 5, Table 5.8; Chapter 6, Table 6.7, section 6.4.3.3). Respondents, particularly in Willowvale, mentioned how drought and water insecurity has impacted their ability to farm. In addition to climate-related stressors, other socio-economic and personal influences also played a role in the decreasing trend of farming, namely migration and decline in household labour due to children attending school (section 6.4.3.3), lack of interest in farming amongst the youth (section 6.4.3.3) and striving for a more ‘westernised’ lifestyle (Chapter 5, section 5.2.4), as well as crime and theft of fences. However, the decreasing trend in farming and the resultant increased reliance on purchased goods (Chapter 5, Figure 5.3, Table 5.8, Table 6.3; Chapter 7, Table 7.3) can be maladaptive and has implications for food security, as discussed in Chapter 7 (section 7.2.3).

8.2.2 Social protection: grants

There is no doubt that social protection in the form of grants has helped alleviate poverty within rural communities to some extent. Studies have highlighted the positive benefits that social protection extends to households (Barrett and McPeak, 2004; Davies *et al.*, 2008; Davies *et al.*, 2009; Guthrie, 2002; Ndlovu, 2012; ODI, 2011). In both study sites, there was a high dependency on social grants, particularly in Willowvale where pension and child grants comprised the majority of households’ income (see Chapter 5, Table 5.2, Table 5.8; Chapter 7, Tables 7.9 and 7.10). With unemployment rates being high (Chapter 5, Tables 5.2 and 5.3) in both Lesseyton and Willowvale, it is evident that social grants have played a large role in reducing poverty and increasing households’ income levels. The low levels of productivity, and the high levels of vulnerability (see Chapter 5) and dependency (old age, youth, illness, disability) amongst households in both study sites emphasizes the critical function social protection provides as a safety-net.

However, it has been suggested, by respondents of this study and by other studies (Devereux and Sebates-Wheeler, 2004; Ndlovu, 2012; World Bank, 1994) that social protection, particularly the social grant system, can encourage maladaptive behavior. The concerns and implications related to social grants were discussed in Chapter 7 (section 7.3.3) and are further discussed in section 8.3.3.

8.2.3 Social capital

Social and community capital has played a large role within Lesseyton and Willowvale with regards to coping and adaptation (see Chapter 7.3). Throughout the survey data (Chapter 7, Figure 7.1) and personal narratives of respondents (Table 7.6), seeking assistance from family and neighbours emerged as the most common responses to shocks and stressors identified in Chapter 6. The assistance, although largely financial, also came in the form of time and labour, and food (see Table 7.5). In particular, respondents sought assistance from family or neighbours in response to health-related shocks and stressors (Tables 7.8 and 7.9), and made use of labour sharing and exchanges in response to climate, farming, and food security-related shocks and stressors (Figure 7.2). Reciprocity influenced respondents' willingness to provide assistance to family or neighbours. There were mixed views regarding the reliability of social and community capital, which was attributed to the strength of households' structural social capital (Chapter 7, section 7.3.2).

Households' vulnerability context (Chapter 5) and the barriers respondents have experienced have prevented households from independently coping and adapting via other means, such as through the use of financial capital. This has forced households to rely on social and community capital which has provided a safety-net function for the most vulnerable households within Lesseyton and Willowvale.

8.3 The complexity of vulnerability: factors influencing household adaptive capacity

As discussed in Chapter 2, understanding and predicting the behavior of complex socio-ecological systems has been a noted challenge (CSIRO, 2011) as such systems are inherently complex, multiple, non-linear and cross-scaled with many critical feedbacks (Ostrom, 2007). This study, which was embedded within a complex socio-ecological systems paradigm, has shown the complex nature of vulnerability assessments. There were a host of contextual, structural, institutional, environmental, and personal factors which influenced vulnerability

context, household adaptive capacity, and responses to shocks and stressors within each study site. These are discussed further below.

8.3.1 The importance of context

This study has emphasized how vulnerability, in addition to present day shocks and stressors, can be influenced by past political and socio-economic factors (Chapter 3 and Chapter 5). The remnants of apartheid are still evident within the two communities and have had implications for household adaptive capacity. Low levels of education, unemployment and poor access to resources and service delivery have limited households' response options, forcing individuals to engage in ineffective short-term coping strategies and maladaptive practices. The different geographical and bio-physical environments across sites have also shaped households' exposure and sensitivity to an array of shocks and stressors and have determined what resources are available to households (Chapter 3). In the context of climate change, climate variability is having a large impact on resource dependent communities. Households in Willowvale use more natural and cultivated resources compared to Lesseyton, and therefore are more sensitive to climate-related impacts on natural and cultivated resources (Chapter 6). In addition to the bio-physical context, the high prevalence on HIV/AIDS in South Africa (Chapter 3) exposes individuals to greater risk.

South Africa's social protection system (as previously discussed in section 8.2.2) is another contextual factor which has had a profound influence on household vulnerability and the way in which households respond to shocks and stressors. However, the high dependence on social grants within both sites is a concern to adaptation and has been suggested to create disincentives for livelihood diversification (Chapter 5, see section 8.3.3).

On-going trends of deagrarianisation, reliance on consumerism, and the above mentioned dependence on social grants (Chapter 5 and Chapter 7) are narrowing households' livelihood options in the context of high unemployment and poor access to resources. This study has shown how the longer-term stressors of past inequalities have profoundly influenced present day household vulnerability and adaptive capacity. The presence of such limiting factors within each community suggests the need for improved action and institutional capacity amongst government and service providers.

8.3.2 Importance of employing a mixed methodology in the context of complex socio-ecological systems

As has been continually stressed, assessing household vulnerability in the context of multiple shocks and stressors is complex. The use of a mixed methodological approach can increase the range of causal factors (such as the drivers of vulnerability) identified within a study beyond what may be possible through the use of a single method (Sallu, 2007). This study has corroborated the importance of employing a mixed methodology in assessing the complex nature of vulnerability. The use of a survey, PLA workshops and life history interviews revealed an array of cross-scale shocks and stressors which have affected household vulnerability and adaptive capacity. In addition, the prior selection of the most vulnerable households ensured that the most pressing issues and challenges amongst households were explored.

The survey showed climate-related shocks and stressors to have been the most commonly experienced within both sites (Chapter 6, section 6.2.1). The findings from the survey were also largely centered on more immediate shocks, in comparison to the longer-term stressors identified by participants in the PLA workshops. Within these workshops, participants had a stronger focus on the larger socio-economic issues and challenges within their communities (Chapter 6, section 6.4). The life history interviews reiterated many of the findings from the survey and workshops, and provided local and personal accounts of the shocks and stressors experienced among the respondents. In addition, targeting different social groups, such as the men, women, and youth, allowed different perspectives and findings to emerge. This contributed to a more in-depth understanding of the drivers of change which influenced household vulnerability and adaptive capacity (Chapter 7).

Local-level studies, such as this, have great potential to contribute to appropriate and context-specific adaptation planning. The enforcement of the Betterment scheme can be used as an example of an inappropriate response strategy to local contexts and practices, influenced by 'expert' knowledge, resulting in long-lasting negative impacts (Hebinck and van Averbek, 2007). Local 'voices' are therefore a valuable source of information that should be increasingly used within local and national level planning for climate change adaptation.

8.3.3 Research implications for climate change adaptation within rural communities of South Africa

Households' abilities to remain productive under changing climatic conditions, especially drought, have decreased because of a combination of existing drivers, and because households' coping and adaptation strategies are ineffective or limited due to the combination of barriers they face, including poor access to resources and weak institutional capacity within the local municipalities (Quinn *et al.*, 2011). The results presented throughout this thesis re-assert that vulnerability is a complex combination of multiple forces and processes, and that it cannot be addressed without examining and having in-depth understanding of all the cross-scale multiple shocks and stressors at play (Drimie and Casale, 2009; Silva *et al.*, 2010; Quinn *et al.*, 2011).

Throughout the survey data, it is clear that the issue of water insecurity, rather than climate change itself, emerged as the dominant climate-related stress experienced. With future climate change projections expected to negatively impact the two study sites with increasing variability and temperatures (CSAG, 2012; Gbetibouo and Ringer, 2009), there was not much evidence of households proactively adapting, but rather reactively coping against shocks experienced. There are numerous drivers that have created such weak adaptation: the majority of the households are trapped in a perpetuating cycle of poverty, as there is a lack of development and too few opportunities for employment within the two study sites. As a result, not having much income has limited the households in being able to invest in capital or assets, such as education or farming equipment that will help improve their situation. The use of natural resources as a safety-net has been limited due to the impacts of water scarcity and an inability to farm. In addition to these drivers, farming households, especially in Willowvale, have expressed concern over communal taps which are often far away from their gardens and fields and makes farming increasingly difficult. Households have also expressed concern over the lack of support from the agricultural extension officers.

Maladaptive short-term coping strategies, such as having numerous household members depending on one social grant, are too often relied upon out of desperation, and although they may help relieve the stress of shocks in the short-term, they do not provide for the long-term well-being of individuals and households' future livelihoods. The ODI (2011) explains how too often grants are shared amongst household members instead of the nominal beneficiary benefiting solely from it. The impact of the grant is then diluted due to the numerous

dependencies on it (ODI, 2011). Such over-dependence can have severe consequences for the household as children get older or as an elderly member dies and the grants fall away (Quinn *et al.*, 2011).

The role of social protection (or public social safety-nets) is a controversial topic (Hoddinott, 2008) with many different views expressed appearing in the literature (as mentioned in Chapter 6, section 6.4.3.2). It has been argued by Hassim (2008) that the high amount of government spending on social protection is inadequate for transformation, especially amongst women. Instead, it is believed to only offer enough to cope with the state's poor service delivery and failure to adequately transform the poor's socio-economic position and bring about social justice (Hassim, 2008). Contrastingly, the 'squandering' of public resources has been mentioned as a common critique of the social protection system which is believed by some to create a disincentive to work and investment, and that it does not promote long-term development (Hoddinott, 2008). In this study, some respondents believed child grants encouraged young girls to fall pregnant to purposely qualify for the grant (see Chapter 6). Kepe and Tessaro (2012) mentioned how social welfare grants contributed to the decreasing trend in farming due to people losing interest in working in their fields. For this reason, Quinn *et al.* (2011) suggests that social grants should not be seen as a long-term adaptation strategy amongst rural poor.

However, despite the negative views and critiques of the social protection system, there have been many proposed benefits of social welfare (see Chapter 2, section 2.3.5.2; Davies *et al.*, 2009; Devereux, 2002; Hoddinott, 2008). Devereux (2002) mentioned that despite the critiques, the potential of safety-net transfers to raise the standard of living of the poor is generally under-acknowledged. In addition to cash transfers, studies have suggested ways in which the social protection system's effectiveness can be improved (Davies *et al.*, 2009; Macours *et al.*, 2012). Drawing on the different categories of adaptation benefits from social protection provided by Davies *et al.* (2009), as mentioned in Chapter 2 (section 2.3.5.2), the following question can be raised: how can social protection, and in particular, social grants move from simply being protective and preventive to increasing individual's and households' adaptive capacity through promotive and transformative approaches. In the context of climate change, the way in which this can be achieved, as suggested by Davies *et al.* (2009), is through 'adaptive social protection'. Adaptive social protection places emphasis on strengthening poor people's resilience and transforming livelihoods to adapt to the changing climate. It aims to understand the root causes of poverty whilst targeting the most vulnerable

to multiple shocks and stressors. It incorporates a rights-based approach and stresses the need to enhance the role of natural and social science research in the context of climate change. Adaptive social protection proposes a longer-term perspective for social protection policies which acknowledges the changing and unpredictable nature of shocks and stressors (Davies *et al.*, 2009). The characteristics of adaptive social protection can therefore provide important policy considerations, particularly in South Africa, where there is an inherent need to address the vestiges of apartheid policies (Taylor, 2002).

Informational barriers were also identified to play a role in the level of vulnerability within the households. People simply do not know what the future projections of climate change are for their area, or what changes they could make to their livelihoods to make them more resilient. Without such knowledge, households may have a low appreciation for the need to adapt (Productivity Commission, 2012). Poor communication and capacity between the different levels of government and between the government (especially at the local level) and these rural communities has created an environment full of uncertainty and lacking in advocacy.

As mentioned in Chapter 2 (section 2.3.4.1), increasing climate variability may render many incremental changes concerned with coping and adaptation insufficient, and rather, a process of transformation may be required for adequate future adaptation. The weak adaptive setting found within the two sites raises concern for future household well-being. Literature has shown that climate variability and extreme events are more influential in stimulating adaptive responses in comparison to longer-term stressors of climate change and that anticipatory responses are more likely to be undertaken by government, particularly at the national level (Berrang-Ford *et al.*, 2011). Whilst this may be true, this study has shown that there has been no evidence of planned adaptation by households or government in either site.

8.3 Policy implications

In thinking about the final, broader objective of this research of understanding what support households need in order to facilitate improved coping and adaptation in the future, there needs to be improved communication between local government and communities to allow for a greater understanding of the issues and stresses present within rural communities. Impoverished rural communities simply do not have the resources, access to credit, technology, level of organization, and skills needed to engage in anticipatory long-term adaptation (Shackleton, 2006). Therefore, the responsibility falls largely on the state.

However, local government needs increased human, informational, and financial capacity and a clear delegation of responsibilities in order for these communities to benefit from the implementation of support strategies. There is a need for increased education amongst local government concerning adaptation and the practical implications of it. Local government and practitioners should become familiar with working in cross-disciplinary teams and adopting principles of adaptive management. In a study by Picketts *et al.* (2012), planner's knowledge was one of the most significant barriers which contributed to a lack of adaptation planning at the local level across British Columbia, Canada. Politician and public knowledge were also amongst the key barriers

There is no quick fix for communities, such as Lesseyton and Willowvale, suffering from poverty. This research has provided findings that can be useful for policy makers in that it has highlighted the key issues that need to be addressed and therefore can guide local level planning accordingly. It has been suggested that individuals with low levels of education and those without any formal labour market experience are the two most difficult groups to assist in terms of poverty relief (May *et al.*, 1998). Self-employment and support for income generating activities has been suggested to be one of the best ways of helping such groups (May *et al.*, 1998). The longer-term stressors of unemployment and poverty need to be addressed in order to improve household adaptive capacity; however this will entail a lengthy process as weak institutional structures and capacity presents many challenges.

Additional efforts however can improve household capacity to respond to change. Starting from the ground up, the two communities desperately need more engagement with local government officials and extension officers who can help lead long-term community projects that will allow households to be more independent and self-sustaining. Knowledge and skills development workshops need to be held where these communities can be introduced to the principles of sustainable land-use systems and how to create a sustainable relationship between agriculture, harvesting natural resources and renewable sources of energy, and recycling of wastes. A study by Schindler and Wustemann (2005) showed how a rural village in India benefitted from various development projects implemented, including soil and water conservation schemes. These projects were supported by NGOs and several training and lecture sessions (combining traditional and scientific knowledge) were held on sustainable agriculture (Schindler and Wustemann, 2005). The results of the study showed a marked reduction in erosion and improved soil fertility, an increase in crop yield and biodiversity,

and an increase in income levels. From Schindler and Wustemann's (2005) study, it is evident that a sustainable land-use system can offer households stability, diversity and increased resilience against future shocks and stressors, and help address their issues of food and water insecurity. Additional studies have shown that rural households engaged in agriculture and food gardening are often less poor and more food secure, and that agricultural growth has contributed to poverty alleviation (Food and Agricultural Organisation (FAO), 2004; Irz *et al.*, 2001). A study by Machethe *et al.* (2004), in the Limpopo Province of South Africa, showed farming to be the most important source of income to 'rich' households, whilst pension was the most important income source for 'poor' households (see Machethe *et al.* (2004) for the way in which households were categorized as 'rich' and 'poor'), emphasizing the role agriculture plays in poverty reduction (Machethe *et al.*, 2004).

A sustainable land-use system can be an important natural safety-net for individuals and households coping against shocks and the future impacts of climate change as it will ensure that basic daily needs are met, increasing household food security. In addition, women, who have been identified as particularly vulnerable (Chapter 5), will largely benefit from such a system as studies have shown women to be the primary agriculturalists and users of natural and cultivated resources (Aggarwal *et al.*, 2001; Commission for Gender Equality, 2010; Ruiters and Wildschutt, 2010). With this noted, it may be necessary for households to reverse the current trend of replacing farming with increased consumerism. There needs to be a reinvigoration of home-based agriculture as part of a diversified livelihood portfolio, rather than large-scale commercial production, to enhance food security.

Adaptation strategies within rural communities must be embedded and supported by local government (O'Brien *et al.*, 2004). Once-off projects with inadequate funding and no long-term support will be unable to increase communities' capacity to adapt (O'Brien *et al.*, 2004, Thomas *et al.*, 2005). Kepe and Tessaro (2012) highlight the long history of attempts by government to implement food security projects in South Africa through agricultural development and supporting small-scale farmers. Examples of these quasi-private companies are AsigSA Eastern Cape and Ntinga, who typically offer inputs, advice and management to rural landowners, and expect a share of the harvests or payment in return. In addition, Kepe and Tessaro (2012) mentioned the mixed success of these projects due to many project participants withdrawing after a short period of time. Respondents, within two rural villages of the Eastern Cape, revealed that land reform, and more specifically having outsiders control and manage their land, was a major determinant in villagers' continued participation in food

security projects (Kepe and Tessaro, 2012). This information highlights the need to address land issues in South Africa where rights remain unclear, particularly regarding deals between the private sector or agencies and the interests of the rural poor (Kepe and Tessaro, 2012), to ensure rural inhabitants commitment to community projects.

As discussed above (section 8.3.3), adaptive social protection suggests ways in which South Africa's social protection system can become more robust in the context of climate change. The socio-economic context of South Africa has been shaped by historical disenfranchisement, creating an environment of poverty traps for the poor (Taylor, 2002). As mentioned in Chapter 2, multiple stressors of climate change and HIV/AIDS threaten the effectiveness of social protection initiatives; therefore it is important that South Africa's social protection system takes a longer-term perspective for social protection to include the changing nature of shocks and stressors in the context of climate change (Davies *et al.*, 2009).

8.4 The need for future research

Whilst this study has identified various findings of relevance to academic and governing bodies, especially within local government, there still remain uncertainties and areas which need further research.

With the inherent uncertainty of future climate change (IPPC, 2001; Shewmake, 2008), the ability to truly evaluate and monitor adaptation progress is limited and constrained by the absence of measurable indicators ((Burton and May, 2004; Gagnon-Lebrun and Agrawala, 2007). This has been suggested to possibly contribute to government's slow investment in adaptation interventions (Burton *et al.*, 2002; Pielke, 1998). This is a crucial issue that needs to be addressed. There needs to be greater investigation of what support strategies will be best suited for the different circumstances present within each rural community, and how they can be tailored to allow for context specific action against the issues present within each community (as noted as a research gap in Chapter 2, section 2.4). Studies such as these will give rise to a thorough understanding of what an effective process entails and can provide a step-by-step guide of how different support strategies can be implemented. These guidelines can be embedded within government planning at the appropriate level and form an integral part of Integrated Development Plans (IDPs) and other planning frameworks for future development.

There needs to be more research done on the role of the governments' social protection system in reducing vulnerability and enhancing adaptive capacity and resilience. Social grants have extended many positive benefits to households struggling with poverty, however at the same time, this research has shown that they can also be a source of vulnerability. Further research on the way in which grants are used within households could be enlightening. As discussed previously, thinking around adaptive social protection has not yet been taken up in South Africa, which presents an opportunity for increased research on how to effectively combine different social protection measures and, most importantly, progress to more a promotive, transformative, and adaptive social protection system. A study by Macours *et al.* (2012) showed how effective and successful it was to combine a conditional cash transfer with two interventions which promoted income diversification. This included skills development through vocational training and a productive investment grant to encourage investment in a nonagricultural self-employment activity (Macours *et al.*, 2012). The results from the study showed the two additional interventions helped increase and smooth consumption and income, and increased household income diversification through participation in nonagricultural activities. The study showed that productive transfers can improve household protection to shocks (Macours *et al.*, 2012). This emphasizes the importance of gathering further evidence from case studies and combining the lessons learned with the findings from additional research on how individuals and households respond to the changing climate.

Studies have shown the importance of local social safety-nets in building capacity, such as burial societies, women's groups, youth groups, food cooperatives, and stokvels (Irving, 2005; Ramphele, 1991; Triegaardt, 2005). Triegaardt (2005) suggests social protection policy should take into consideration the local and more traditional safety-nets by engaging with the poor to develop a more comprehensive social protection system. This is an area that will need further research.

8.5 Concluding remarks

The impacts of climate change have already been felt all over the world, and will continue to be felt due to our current and past emissions. This is particularly true for the rural communities of developing countries which are already plagued by poverty. This thesis has demonstrated the inherent complexity involved in understanding vulnerability and the apparent lack of long-term adaptation within both study sites.

Climate change adaptation needs to be a priority for all relevant areas of public policy. Greater research and effort must be made in tackling the uncertainties and knowledge gaps identified by this study. This needs to include raising awareness about climate change and possible adaptation strategies that are context specific, integrating this into sectorial planning, and most importantly, implementing and monitoring adaptation options. Increased capacity and on-going co-operation between government, agency and rural communities is vital in ensuring that climate change adaptation occurs on the ground, for the future well-being of rural livelihoods.

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APPENDIX 1

Quotes from the life history interviews

Table 1.1. Personal narratives of vulnerability in Lesseyton

Lesseyton Households	Theme: Vulnerability
HH34	<p>I am not employed; I do not have a job. I live on the grant that I get. I live with my grandchildren. Nobody is employed in this household. This other grandchild does not stay with me; he has just come to assist me with household chores.</p> <p>I was not working when I had children. I had to beg from neighbours and those around me to help feed my children. People would see me coming and whisper to each other saying “there she comes”. They knew I was coming to ask for something. I would quarrel with my husband and leave him and go home. He loved women and spent his money on them. That was why we quarrelled. He would give me only R20.00 but I had children to feed and clothe. There was nothing i could do. I couldn’t leave him. I did not have a job and I had no income. There were children to take care of. I had to do with the little that he gave us. It was really bad; I used do hard labour like filling in the dongas when the roads had. Things got better when my son got a job in the mines. He always sent me some money.</p>
HH36	<p>I live with three school children. I do household chores and cook for them. I assist the 14 year old boy with washing his school shirts. I am the only adult in the house. I get old age grant and child grant for the two children.</p>
HH36	<p>Things changed for the worse when my husband died. I could plough when he was still alive but now things have changed. He was employed so we managed to live a normal life and there was money to get the fields ploughed but not any longer that he is not here. Since the death of my husband I am not the same. It came as a shock and I cannot forget. It still bothers me to this day.</p>
HH38	<p>It is me and my wife now and we are both unemployed. We do odd jobs in the community to earn an income. We do not get a grant because we do not have a child.</p>
HH38	<p>When I was young, I had parents who provided for me but now I must fend for myself. Things are really hard for me. There were droughts that resulted in cattle dying. I have experienced a hailstorm that rooted up trees and broke windows.</p>
HH38	<p>I was once knocked over by a car and I broke a leg and arm. I went to Frere Hospital in East London but I did not get to be my old self again. Up to this day I still have this pain on my leg and arm.</p>
HH38	<p>We got a phone call on a Saturday at about 12 midnight to say Grandma was being attacked by thugs. They stabbed her 4 times. Grandma stayed with a 14 year old girl. They ran away with the girl. We searched for the girl and when we arrived we found the girl dead; they had raped her and broke her neck. We are disappointed in the police in the way the case was handled. They were imprisoned for only two months and were released. In</p>

Lesseyton Households	Theme: Vulnerability
	fact the case was dismissed. Justice had failed us.
HH38	We are struggling, there is no proper housing. When it is raining this house leaks.
HH38	I remember the snow falling heavily – we couldn't even go to school. We had to wait until the snow melted. Thereafter we fell ill with flu.
HH41	It was a quiet place when I first arrived here but now things have changed. There was no crime here and no murders.
HH41	I do not have a job. My husband does not have a permanent job and we have children to raise. It is hard.
HH41	Now that I am not employed, things are really difficult.
HH42	When I first came here there were no jobs, my husband had no job and we were struggling but now things have improved now
HH42	My parents struggled so I did not get an education. They could not afford to buy us clothes and shoes, so we left school when we were still doing Sub B. It is different with our children now that I am a parent. I manage to pay for my children's education.
HH42	My husband's brother died of AIDS. He died on a Saturday and we buried him the following Wednesday. He was not on burial scheme but we managed. My husband borrowed money from his employer and he had to pay it back. While he was paying back his debt we struggled financially; but he finally paid it off.
HH12	There are 6 people living in this house. Me, my 2 daughters, my brother and my grandchildren. We assist each other with domestic chores. No one is employed. We live on the pension that I get (old age pension). Two children are schooling.
HH12	We depended on my parents' pension (old age).
HH12	There is a family member who is mentally challenged. He is sweet though and is no threat to anyone. He does his own bit of house chores. The pension I get is not enough. I have to feed, clothe and provide for my children's school needs.
HH12	Things are very difficult for me. I only have one income. My parents were two (father and mother) and thus they got income for two. I always fall short in my budget and I borrow money to cover for the shortfall.
HH12	Things are now very tough since the parents have passed on. I have no partner to support me.
HH12	We live in fear because of crime. Crime is rife. A woman was raped and slaughtered in broad daylight. The case is being investigated by the authorities.
HH22	I went to school up to Std. 6. My parents lost their jobs and I could not continue with my schooling, I dropped out.
HH22	Life was not that bad then. My brother got a job in Johannesburg. Today life is very hard. Nothing comes easy. It is very hard to survive these days. Several days can go by sleeping on an empty stomach without anything to eat.

Lesseyton Households	Theme: Vulnerability
HH22	My parents died within a month. We suffered a lot after they died. I live with my brother who is disabled. I must look after him. My life is on stand still. He needs constant care. I cannot go where I want to. There is no one to relieve me or take turns with me to take care of him. He is on medication. When my parents died I did not get any help from the extended family. I carried the costs of their burial. Things are tough even now but I have got used to the situation.
HH22	Being on my own with no one to assist me. Taking care of my disabled brother with no assistance from other family members. I would have expected the family members who are males to assist me with bathing my brother but they are not. I wash him myself.
HH22	I do not have money to buy the things I need, not even the basics.
HH25	Unemployment. I struggle to buy seed to plant in my garden. No crops – no food.
HH40	My children were at a very young age when my husband left me. My last born was only four year months. I left her with my sister and went to look for a job. I got a job and I was earning R5.00 per month.
HH40	There was no rape and no crime at the farm. We have experienced crime for the first time when we moved to our plots. Things changed.
IHH40	In 2010 my cousins 14 year old was murdered and raped. The grandmother was stabbed. There were 7 of them who did this crime
HH40	It was easier when I was growing up. I think this hardship has something to do with the democracy
HH15	In those days, there were no ambulances to take sick people to hospital; we used wagons. The only means of transportation was the train. If you missed the train you would only go the next day.
HH15	Now I live alone in my home. This year things are tough for me. I did not plough my garden due to illness. I was diagnosed with high blood pressure and diabetes. I take treatment from the local clinic. The clinic once referred me to the chemist; they did not have certain medication. It is tough because you have to pay at the chemist while treatment is for free at the local clinic. Illnesses these days are incurable, unlike in the old days.
HH15	I cannot afford to pay my accounts. My income is spent on medication and transport to the health centres. I am worried that I fail to pay my burial subscription due to ends not meeting. I also worry about not having money to build a house for myself.

Table 1.2. Personal narratives of vulnerability in Willowvale

Willowvale Households	Theme: Vulnerability
HH56	Now I am old and do not have much energy in me. Things are very tough.
HH56	We do not have well stocked shops in the community. We go to Willowvale for groceries, the local spaza shops are always out of stock. It costs money to go to Willowvale.

Willowvale Households	Theme: Vulnerability
HH56	Water supply is still a problem. The water taps are not close to the homes. We still battle to get water. But sometimes they dry up and one is forced to go to the river to fetch water. These places are no longer safe; they are spots for criminals.
HH56	There was a veld fire at some stage. It left the community without homes, no grazing land and no gardens. It took a long time. We had almost lost hope. We were starving, all our crops were destroyed. While waiting for the help from the government, we had to use our savings to survive.
HH56	Life is much harder now. There is no employment for the youth. They depend on my pension for survival. Everything they want, they expect me to provide.
HH56	Pesticides and cattle feed is very expensive, we cannot afford it and therefore our livestock die
HH66	I grew up struggling and I am still struggling. My only son is in Cape Town and does not come home anymore. I grew up in this location. I live here with a school going child. I am not earning any income. Money is the problem. I depend on my grandmother's old age pension. No one provides for me.
HH66	Harder, for everything you need you must have money. In the old times there was a good harvest. You could have something to eat even if you did not have money.
HH66	Unemployment is the number one hardship. Lack of income as everything costs money. Without money you cannot do anything.
HH78	I have lost 3 members of the family. Things were hard, but I managed to bury them
HH78	It was long ago. My house was blown off by wind. There were people who came here and wrote our names down for the authorities to assist us. Nothing came out of that up to this day. We did not get any help; we never heard from the people again.
HH79	When I grew up things were better than they are now. My parents farmed; we never starved. Harvest was always good. There was maas, milk, meat. There was no unemployment. All the men in the village were working in the cities and sending money to their families in the village. Life was so good. Today there are no jobs. Even my sons in the cities do not have permanent jobs; they work as casuals. Today health is a problem. I am not as fit as I used to be; I used to hoe my field alone.
HH79	Starvation is the problem now; since there is no produce in the fields anymore. One must have money to survive. Money is everything these days.
HH83	My parents died when I was young. I grew up with my brother and his wife. I depend on them. My aunt (his wife) was a house wife not employed. My brother is the eldest. I was born in 1976. I left school at Std4. My brother worked in the mines and I lived here with my aunt (his wife). My brother looked after me and provided the things i needed until I reached manhood.

Willowvale Households	Theme: Vulnerability
HH83	Things are not what they used to be. My older brother for everything I needed. But now I have to fend for myself. I cannot get employment. Even casual jobs are scarce. I do odd jobs for the people in order to get an income. But the pay that I get from the odd jobs is too little.
HH83	My peers are married but I have no money for lobola; I do not have any livestock either. So it is difficult for me to get a wife. How will I provide for her when I have no income? I want to work and save for lobola but there are no jobs.
HH83	People got sick from drinking water that was not good. Diarrhoea was common. But recently things are much better
HH84	My parents passed on when I was still young; I think I was about 12/13 years old. I left school at Std. 7. I got a job in Vredendall (WC) in the Department of Water Affairs. I worked there for 16 years. Due to ill health I left the job.
HH84	Yes it has. When I grew up my family was farming. There was no crime and children were very disciplined; unlike today. Today education is a priority for everybody whereas when I grew up there were few people who believed in educating their children. Life is now more comfortable than it was when we grew up.
HH84	Not getting enough money is the barrier. I have dreams and wishes but due to financial constraints I cannot fulfil
HH86	Things didn't go smoothly for me as my husband was not working. We had seven children – 4 boys and 3 girls. He would go to the cities to look for employment but couldn't get any. I was struggling with children to feed and clothe.
HH86	I was living with my mother-in-law who was blind. She was getting a social grant from the government which assisted us to get food and other necessities. She then passed away. Without her social grant we struggled even more. Still my husband couldn't get permanent employment. He got a job as a casual in the construction industry in Saldanna (CT). He would send us whatever he could afford R300 or R400 per month. Time went by and my husband returned home as he was ill. He passed away 3 years back. Things got a little bit better when I received a social grant for the younger children. Children attend school, they need uniform, shoes and books; all must come from the child social grant.
HH86	No one is employed in the household. My children are still attending school. We still depend on the social grant.
HH86	I cannot afford to build a decent dwelling for my family due to financial constraints. And to raise children on the social grant only is very hard for me. It was better when my husband was still alive
HH91	I was married but my wife passed on in April. I have four children and a grandchild. On the passing on of my wife my in-laws took custody of the children. I worked in Johannesburg for a living for 10 years. I was retrenched after 10 years working. I then came home. I was offered a job by a lawyer who had a farm in East London. I didn't stay long in E.L., I

Willowvale Households	Theme: Vulnerability
	went to CT and worked together with my brother in law who was running a small business. After some time he was shot and he died. Then I came back home.
HH91	Now that I have my own family my eldest son is ready to go to the mountain; but I do not have the money to carry out the ritual
HH91	Not having money is the main problem; I don't get a social grant. It's difficult to do the things you want to do if you don't have money; everything costs money
HH81	I came back home. There are still monies due to me. I will go to Teba offices in Idutywa to register. I have 7 children. My daughter is in Port Elizabeth, my son is in Swellendam. Three are still in school, one in Grade R and the last born still a baby. I have 4 other children outside marriage. After staying at home for several years I decided to go back to Rustenburg to seek work. I did not have the bribe of R5 000.00 that you must pay to get a job, so I came back home and looked after my livestock. I plant my garden with my own hands.
HH81	The garden is too big to plant by hand. I need money to hire a tractor. This cattle kraal was made by me. I did not hire a tractor or anything to bring the poles home. I used my own hands. I did the same for the garden poles. I am in the process of plastering my home so that when heavy rains fall my dwellings will not collapse. At least my small children get a grant from the government so they do have food and clothes.
HH81	The so-called freedom is for the educated people. As for the uneducated, it has brought them nothing now that the ANC is in power it has not done anything for us.
HH81	Crime is rife. I cannot leave my chickens in the fowl run. When it is bed time, I fetch the chickens and they sleep with us in the house. There are livestock thieves and also cars get stolen.
HH81	There is no improvement, things are still bad. I cannot get a job, I cannot plant my land. I have not overcome any hardships.
HH81	People in the community are unreliable. You cannot count on them.
HH82	Things were better than now. We farmed and got a good harvest. Now the climate has changed; now we are in November, but still no rains. How are we going to plough the fields without the rain?
HH82	We couldn't go as far as high school like other children. We didn't blame our parents; they were trying their level best to provide for us
HH82	Lightening once struck in the household and we almost lost everything. But we are glad there was no life lost.
HH82	Today everything depends on money. You must have money to survive. There are no jobs; and we don't know where the money is going to come from. It was not like that in the old days. We depended on farming for survival.

Table 1.3. Personal narratives of unemployment in Lesseyton

Lesseyton Households	Theme: Unemployment
HH38	My parents were struggling to keep me at school. I left school in Standard 7. It is me and my wife now and we are both unemployed. We do odd jobs in the community to earn an income. We do not get a grant because we do not have a child.
HH38	If I had a job my worries would be less. I struggle because there are no jobs available although I have certificates. I trained to do plumbing work and I have the skill, but it is still difficult to get a job.
HH41	I do not have a job. My husband does not have a permanent job and we have children to raise. It is hard. I do all kinds of chores to earn an income.
HH42	My parents struggled so I did not get an education. They could not afford to buy us clothes and shoes, so we left school when we were still doing Sub B.
HH12	Things are very difficult for me. I only have one income. I always fall short in my budget and I borrow money to cover for the shortfall.
HH22	"I went to school up to Std. 6. My parents lost their jobs and I could not continue with my schooling, I dropped out." "Today life is very hard. Nothing comes easy. It is very hard to survive these days. Several days can go by sleeping on an empty stomach without anything to eat."
HH15	I cannot afford to pay my accounts. My income is spent on medication and transport to the health centres. I am worried that I fail to pay my burial subscription due to ends not meeting. I also worry about not having money to build a house for myself.

Table 1.4. Personal narratives of grant dependency in Lesseyton

Lesseyton Households	Theme: Grant Dependency
HH34	I am not employed; I do not have a job. I live on the grant that I get. I live with my grandchildren. Nobody is employed in this household. This other grandchild does not stay with me; he has just come to assist me with household chores.
HH34	I worry about how I am going to survive if the government could stop the old age grant. Also worry about what will happen to my children when I have passed on.
HH36	I live with three school children. I do household chores and cook for them. I assist the 14 year old boy with washing his school shirts. I am the only adult in the house. I get old age grant and child grant for the two children.
HH42	I wish I could get money as I now depend on the child grant.
HH12	There are 6 people living in this house. Me, my 2 daughters, my brother and my grandchildren. We assist each other with domestic chores. No one is employed. We live on the pension that I get (old age pension). Two children are schooling. The pension I get is not enough. I have to feed, clothe and provide for my children's school needs.

Lesseyton Households	Theme: Grant Dependency
HH22	I do not get a social grant. We depend on my brother's grant to live. My child dropped out of school in Standard 7. I do not have the means to pay for her schooling.
HH40	I get old age pension. My sister and my children support me. When I fall short of anything I phone them.

Table 1.5. Personal narratives of grant dependency in Willowvale

Willowvale Households	Theme: Grant Dependency
HH56	It is much harder now. There is no employment for the youth. They depend on my pension for survival. Everything they want, they expect me to provide.
HH66	Money is the problem. I depend on my grandmother's old age pension. We are starving because we cannot get a good harvest. I use my pension to buy basics from the shop. If my grandmother should pass on, I would have no one to support me as I depend on her old age pension for surviving. We do not belong to a burial scheme. We would use of the old age pension to carry out the funeral.
HH83	I do all sorts of odd jobs to cope with hardships and I also contact my relatives and those close to me for help. Also my brother's wife gets a social grant so she's able to pay back whatever she has borrowed from the neighbours; unlike when I grew up when we depended on her husband's income only.
HH86	She was getting a social grant from the government which assisted us to get food and other necessities. She then passed away. Without her social grant we struggled even more. Still my husband couldn't get permanent employment. He would send us whatever he could afford R300 or R400 per month. Time went by and my husband returned home as he was ill. He passed away 3 years back. Things got a little bit better when I received a social grant for the younger children. Children attend school, they need uniform, shoes and books; all must come from the child social grant.
HH86	It is still the same. No one is employed in the household. My children are still attending school. We still depend on the social grant.
HH86	I cannot afford to build a decent dwelling for my family due to financial constraints. And to raise children on the social grant only is very hard for me. It was better when my husband was still alive
HH91	Not having money is the main problem; I don't get a social grant. It's difficult to do the things you want to do if you don't have money; everything costs money
HH81	The garden is too big to plant by hand. I need money to hire a tractor. This cattle kraal was made by me. I did not hire a tractor or anything to bring the poles home. I used my own hands. I did the same for the garden poles. I am in the process of plastering my home so that when heavy rains fall my dwellings will not collapse. At least my small children get a grant from the government so they do have food and clothes.

Willowvale Households	Theme: Grant Dependency
HH81	I cannot plough my fields now that I do not have an income. Things will be much better when I finally get the old age pension. Lack of income is the barrier.

Table 1.6. Personal narratives of crime in Lesseyton

Lesseyton Households	Theme: Crime
HH34	I was born and grew up here. Lots of things have changed for the worse. The children are uncontrollable these days. When I grew up I had a disciplined childhood. Money had a value then but not today. Crime was not rife when I grew up.
HH36	I wish the crime could come to an end. I am worried about the murders that happen in this community and the burglaries. I wish this community could change for the better. Recently a young girl was raped and murdered in broad daylight.
HH41	It was a quiet place when I first arrived here but now things have changed. There was no crime here and no murders.
HH41	Since young people are jobless they spend their time drinking and committing crime. If they could get jobs things would be better. They would have something keeping them busy. Also if the taverns could close early while it is still daylight.
HH12	We live in fear because of crime. Crime is rife. A woman was raped and slaughtered in broad daylight. The case is being investigated by the authorities.
HH12	For the crime, the police should patrol day and night.
HH25	Stock theft, especially goats and crime.
HH40	When the farmer died we moved to this place. We each got a plot. There was no rape and no crime at the farm. We have experienced crime for the first time when we moved to our plots. Things changed.
HH40	In 2010 my cousins 14 year old was murdered and raped. The grandmother was stabbed. There were 7 of them who did this crime.

Table 1.7. Personal narratives of crime in Willowvale

Willowvale Households	Theme: Crime
HH84	Yes it has. When I grew up my family was farming. There was no crime and children were disciplined; unlike today. Today education is a priority for everybody whereas when I grew up there were few people who believed in educating their children. Life is now more comfortable than it was when we grew up.
HH81	Crime is rife. I cannot leave my chickens in the fowl run. When it is bed time, I fetch the chickens and they sleep with us in the house. There are livestock thieves and also cars get stolen.

Willowvale Households	Theme: Crime
HH82	Crime is my main concern. I worry about what will happen to my family when I have passed on.
HH82	Climate could change for the better. Children are uncontrollable; they are involved in all sorts of crime. Only if that could come to an end.

Table 1.8 Personal narratives of climate, farming, and natural resource use in Lesseyton

Lesseyton Households	Theme: Climate, farming and natural resource use
HH34	There is no difference; drought is drought. It is the same situation; farming is at standstill and we get all necessities from the shops – nothing from the garden. It is too costly. We do not always have the money to buy the things we need. Prices have gone up; you don't get all that you want
HH34	I do not have money to buy seeds to plant in the garden. That too costs money.
HH36	When we grew up, we never experienced any. This year – yes we did experience drought. Livestock died. Those who have money buy barley for their stock.
HH22	It hit my family really bad. We had no food. We were starving. There was no money to buy food.
HH22	There is no money to buy pesticides.
HH25	I do have livestock and crops. The grass dries and the crops die. There is no harvest. I have to buy vegetables from the shops. I do not have the money. There is no grass and there is no water for them.
HH25	Drought – If I had a job I would buy barley for my livestock. Cattle die of hunger and crops die. There is no water for them. I do not have money to buy pesticides.

Table 1.9. Personal narratives of climate, farming, and natural resource use in Willowvale

Willowvale Households	Theme: Climate, farming and natural resource use
HH56	Water supply is still a problem. The water taps are not close to the homes. We still battle to get water. There was a veld fire at some stage. If left the community without homes, no grazing land and no gardens.
HH56	Everything gets destroyed. No planting of the fields, no grazing for livestock.
HH56	Cattle feed is very expensive, we cannot afford it and therefore our livestock die. The government has provided the community with communal taps but sometimes they dry up and one is forced to go to the river to fetch water. These places are no longer safe, they are spots for criminals.
HH56	Pesticides for crops are expensive and we cannot afford them.
HH66	We are starving because we cannot get a good harvest. I use my pension to buy basics from the shop

Willowvale Households	Theme: Climate, farming and natural resource use
HH66	When taps are dry, we fetch water from the river. Crops do not grow well without water. It is hard to fetch water from the river to use for watering. The river is far
HH78	I have, I sold some of my livestock so that I can buy necessities from the shops since there is no produce from the fields and garden.
HH78	I wish the climate could be good so that we can plough our fields and get a good harvest. We don't spend money when we have crops e.g. we don't buy vegetables and maize we get them from the garden
HH79	Starvation is the problem now; since there is no produce in the fields anymore.
HH79	We don't have the cattle to plough the fields. You must have money to be able to plough; to hire the tractors that are used today for ploughing
HH83	Drought affected both people and livestock. There was shortage of water, no grass for livestock
HH83	I hope to see good heavy rains in order to get fresh water for both people and livestock. That will also help us plough the fields. Farming is at standstill because of the lack of rain. Even the taps have dried up we cannot get drinking water from them.
HH83	We water the crops in the small gardens; but there's nothing we can do to help the crops in the fields, we just watch them die. You can never water the fields
HH81	The garden is too big to plant by hand. I need money to hire a tractor. This cattle kraal was made by me. I did not hire a tractor or anything to bring the poles home. I used my own hands. I did the same for the garden poles
HH81	I cannot plough my fields now that I do not have an income
HH81	There were serious droughts when I grew up but even today there is drought. It is November now but it feels like it is July. The crops are dying. I am grateful for the social grant given to the small children.
HH81	We rely on the community taps. The crops will die, it is a long distance to go and fetch water to water plants when the taps run dry.
HH82	Things were better than now. We farmed and got a good harvest. Now the climate has changed; now we are in November, but still no rains. How are we going to plough the fields without the rain?

Table 1.10. Personal narratives of responses in Lesseyton

Lesseyton Households	Theme: Responses
HH34	Lots, I was not working when I had children. I had to beg from neighbours and those around me to help feed my children.
HH34	I used do hard labour like filling in the dongas when the roads have. Things got better when my son got a job in the mines. He always sent me some money.
HH34	I do not have money to buy seeds to plant in the garden. That too costs money.
HH36	Things changed for the worse when my husband died. I could plough

Lesseyton Households	Theme: Responses
	when he was still alive but now things have changed.
HH36	So he was buried, fortunately we were subscribing to a burial scheme. Since the death of my husband I am not the same. It came as a shock and I cannot forget. It still bothers me to this day.
HH36	My sons are now married, they have their own families but they do assist me financially and my daughters too.
HH36	This year – yes we did experience drought. Livestock died. Those who have money buy feed for their stock.
HH38	We do odd jobs in the community to earn an income. We do not get a grant because we do not have a child.
HH38	I ask people for help. I am a beggar. One time the furniture shop came to reposes the furniture as I was behind with my instalments. My mother-in-law gave us the money. I have not paid since. I am afraid they will come for the furniture again. When I was growing up people helped each other. My mother would go and ask for the necessities from the neighbours. When things were right for her, she would pay them back, but these days things are tough. There is not much help you can get from people who are not related to you.
HH38	When I do get a temp job things get better. I can do the things I want to but even the temp jobs are scarce. We were trained and got certificates in plumbing. Training was organized by the local Councillor when water taps were put in our location but still I do not get a job, not even with my skill.
HH38	People help each other in the rural areas. My parents would go to the neighbours and ask for help. They would give them a bowl of mealie meal or maize; depending on what she asked for. Then she would return whatever she borrowed when conditions were favourable.
HH38	If I had a job my worries would be less. I struggle because there are no jobs available although I have certificates. I trained to do plumbing work and I have the skill, but it is still difficult to get a job.
HH38	I ask for help from people around me. They do help when they can. I remember when I could not keep up with my instalments at the furniture shop; they came and repossessed my furniture. I sought help from my mother-in-law and I paid the store. I am behind on my instalments as we speak. I do not know what I will do when they come for my furniture again. I have to make a plan for my furniture not to be repossessed. I do not know how at this stage.
HH41	I do chores for people such us their laundry and other odd jobs and they pay me.
HH41	I have to walk long distances to go and draw water.
HH42	When I was old enough I did domestic chores e.g. doing other peoples laundry to earn an income so that I could assist my mother to make end meet. I sometimes worked in the fields and I did all kinds of odd jobs. My father did not support us; he was married and had his own family.
HH42	I get a child grant and my husband also has a job so at least we survive.

Lesseyton Households	Theme: Responses
HH42	At least my children are raised by their two parents unlike me who was raised by a single mother. Unlike my mother who did not get financial support from my father, my children are supported by their father and they go to school to get an education. My life has changed for the better than when I grew up.
HH42	My husband borrowed money from his employer and he had to pay it back. While he was paying back his debt we struggled financially; but he finally paid it off.
HH42	Since we fetched the water from far, water use was restricted. It was used for cooking and drinking only.
HH42	It is different now; we get assistance from the municipality; water trucks deliver water to the village and we fill containers so that we don't run short of water soon. We battle when the water truck does not arrive. Those who have a bakkie assist us and load our containers and look for fountains that have not dried up.
HH42	I go to my neighbours, relatives and the people around me for assistance.
HH42	We walk for long distances to get water and restrict the usage of water
HH42	Drought: I would plant a small area as there would be no water to water the plants.
HH42	If I don't have money to buy pesticides, I would use cold ash from the fire as pesticide.
HH25	I seek help from my sisters. The community does not help. They gossip about other peoples' problems so I do not bother asking them for help.
HH25	I search in the mountains for water springs and draw water for domestic use. I have to buy vegetables from the shops.
HH25	In case of floods, I make a trench to allow the water to flow away from the house.
HH40	I left her with my sister and went to look for a job
HH15	Highest standard passed is Std. 6. We moved to this place end of 1961. From 1970 – 1975, I worked for a scaffolding company (SGB) in Cape Town. During that period I played for a team called "Wallabies". Thereafter i went to Johannesburg and worked for SAB in Alberton for +- 4 years as a forklift driver. I also worked for Fedgas for a couple of years also in Johannesburg. I returned home and worked for Coca-Cola in Queenstown. In 1984/1985 I went back to Alberton and worked for Bandag Tyres for a couple of years. I went back home and did a short stint with Raylite Batteries. In 1990 I worked for KSM Milling in Queenstown until I was retrenched in 1994. I did odd jobs in Johannesburg and Durban until I retired last year (2010).
HH15	Sometimes the municipality trucks do not deliver the water when they are still delivering in other areas. That leaves me with no other option but to fetch water from a faraway place with a wheelbarrow.
HH15	I fetch water using a wheelbarrow to water my crops. It is not an easy job.

Table 1.11. Personal narratives of responses in Willowvale

Willowvale Households	Theme: Responses
HH66	We are starving because we cannot get a good harvest. I use my pension to buy basics from the shop
HH66	It was a difficult death in the family when my daughter-in-law died. I sold some of my cattle to prepare for the funeral.
HH66	There are shops that you go to and get what you want then you pay them back on your pay day.
HH66	When taps are dry, we fetch water from the river. Crops do not grow well without water. It is hard to fetch water from the river to use for watering. The river is far
HH66	You hire people to re-build your house
HH66	When the floods have stopped we re-build the houses. We start from scratch, make bricks, collect grass for thatching and pay the people who assist us.
HH66	We do not belong to a burial scheme. We would use of the old age pension to carry out the funeral
HH66	We buy pesticides from the shop.
HH78	I have, I sold some of my livestock so that I can buy necessities from the shops since there is no produce from the fields and garden.
HH79	Drought & water shortage: We look for rivers that have not dried up.
HH79	There is nothing I can do, I will have to just watch them die
HH79	If you have livestock you sell so that you can get money to cover the costs.
HH83	I do odd jobs for the people in order to get an income
HH83	I do all sorts of odd jobs to cope with hardships and I also contact my relatives and those close to me for help. Also my brother's wife gets a social grant so she's able to pay back whatever she has borrowed from the neighbours; unlike when i grew up when we depended on her husband's income only.
HH83	go long distances to fetch water
HH83	We water the crops in the small gardens; but there's nothing we can do to help the crops in the fields, we just watch them die. You can never water the fields
HH84	At this stage I am not working. I have a bakkie that i use as a taxi to earn an income
HH86	I would do domestic chores for other people in order to put food on the table for the children. I hoed their fields, plastered their huts and collect firewood for them. I
HH91	I borrow money from my relatives; they do give when in a position to
HH81	I am in the process of plastering my home so that when heavy rains fall my dwellings will not collapse.

Table 1.12. Personal narratives of assistance in Lesseyton

Lesseyton Households	Theme: Assistance
HH34	Yes, everyone was willing to assist. Neighbours and relatives assisted with whatever they could afford from financial assistance to perishables. They were very helpful.
HH41	It is not easy; very few people are willing to assist. People only care for themselves. If someone assists you with anything, they expect you to pay back. They do not give for free.
HH41	I would go to my family for help.
HH42	I get a child grant and my husband also has a job so at least we survive.
HH42	Those who have a bakkie assist us and load our containers and look for fountains that have not dried up
HH42	I go to my neighbours, relatives and the people around me for assistance.
HH12	I always fall short in my budget and I borrow money to cover for the shortfall.
HH12	Financially they can increase the pension so we can be able to live. For the crime, the police should patrol day and night
HH12	Municipality provides food parcels and I ask my brother for help.
HH22	When the taps dry up, the municipality provides us with Jojo tanks and fill them with water.
HH25	I seek help from my sisters
HH40	I get old age pension. My sister and my children support me. When I fall short of anything I phone them.
HH15	My children visit me and assist me with everything.
HH15	We rely on the municipality to provide assistance. The municipality provides us with containers to be used as temporary shelters.

Table 1.13. Personal narratives of assistance in Willowvale

Willowvale Households	Theme: Assistance
HH56	I go to the neighbours for assistance
HH56	Social grants are needed. When one is sick we need for hire a mode of transport to go to the clinic or hospital. Without support from the government we do not have the money to hire transport.
HH56	We get help from family members.
HH56	We get medication from town for our livestock. We seek help from family for a death in the family
HH66	When the floods have stopped we re-build the houses. We start from scratch, make bricks, collect grass for thatching and pay the people who assist us.
HH66	We would seek assistance from the government.
HH78	I get assistance from my children; when I ask them for something they provide.

Willowvale Households	Theme: Assistance
HH78	Floods: I would get someone to assist but he would expect payment for his services.
HH79	I wish government could supply this community with electricity and also assist us with community projects and also create employment opportunities for everyone
HH79	Disaster: The neighbours assist each other
HH79	Veld fires: If I lose everything I would stay with my neighbours until some good Samaritan comes to the rescue.
HH83	I do all sorts of odd jobs to cope with hardships and I also contact my relatives and those close to me for help. Also my brother's wife gets a social grant so she's able to pay back whatever she has borrowed from the neighbours; unlike when i grew up when we depended on her husband's income only.
HH83	Family members help each other
HH86	I was living with my mother-in-law who was blind. She was getting a social grant from the government which assisted us to get food and other necessities. She then passed away. Without her social grant we struggled even more
HH86	When my husband died I was assisted by my sister financially
HH91	In times when my mother ran out of sugar or anything she would go and ask from the neighbours
HH91	I borrow money from my relatives; they do give when in a position to
HH91	I would like to get good rains as early as October of each year so that we can start ploughing the fields. There is no money to hire the tractors to plough the fields; government should assist us financially and provide the community with projects
HH81	The police forums in the community are not paid for their services. If the police can do their job and patrol day and night and not expect the forums to do their jobs.

Table 1.14. Personal narratives of health in Lesseyton

Lesseyton Households	Theme: Health
HH34	One of my children died of HIV AIDS. At that time I knew nothing of HIV; I was wondering what was wrong with him; he lost so much weight and he was so thin. It was not a good sight. Eventually he died and we buried him. Since he was working in the mines we received money from the employer so we managed to bury him in a dignified way. Now that I have come to know of HIV AIDS; I know that he died from AIDS.

Lesseyton Households	Theme: Health
HH34	<p>I am sick as we speak. I've been to the clinic. I also have cataract; I am waiting for a date for surgery. People do attend the healthcare centres</p> <p>People understand HIV much better now. If one follows the advices given at the clinic and take medication regularly one gets better. But if you don't take medicine and you drink a lot you do not get any better.</p>
HH36	<p>In the past, the people were healthy and were fit and working. Funerals were not an everyday thing as it is the case now. Every weekend there is a funeral, it has become the norm. HIV & AIDS is rife. Some disclose their status and other do not.</p>
HH38	<p>I have noticed cholera in the area. Then we are told to boil and cool water for drinking. I lost my child. My child's problem has been the chest. We took him to the doctor and got medication. Since he didn't get any better he was referred to the hospital where he died before they could transfer him to EL.</p>
HH38	<p>I have seen people dying of AIDS; but in the beginning people didn't take AIDS seriously. But now they know AIDS kills so they take precaution; they follow the lectures that the healthcare workers give to the community. People now do practice safe sex and use condoms.</p>
HH41	<p>Then it was only headaches and stomach-ache, nothing major. Today we hear of diseases that are not curable like HIV. There was no HIV when I arrived here but today HIV is all over the place. People are dying from it.</p>
HH42	<p>My husband's brother died of AIDS</p>
HH42	<p>We had no knowledge of HIV when I arrived here. But now through TV and the local clinic we have come to know of HIV. People get tested at the clinic and get treatment use condoms.</p>
HH12	<p>There were no diseases like HIV then. The rate of death due to HIV is very high.</p>
HH22	<p>I live with my brother who is disabled. I must look after him. My life is on stand still. He needs constant care.</p>
HH22	<p>Being on my own with no one to assist me. Taking care of my disabled brother with no assistance from other family members. I would have expected the family members who are males to assist me with bathing my brother but they are not. I wash him myself.</p>
HH25	<p>TB and HIV are very common now. It was not like that when I grew up.</p>
HH40	<p>Sickness is worse now. There was no HIV and no asthma. People then would have a headache or stomach ache and would go to the doctor and get help.</p>
HH15	<p>Now I live alone in my home. This year things are tough for me. I did not plough my garden due to illness. I was diagnosed with high blood pressure and diabetes. I take treatment from the local clinic. The clinic once referred me to the chemist; they did not have certain medication. It is tough because you have to pay at the chemist while treatment is for free at the local clinic. Illnesses these days are incurable, unlike in the old days.</p>

Lesseyton Households	Theme: Health
HH15	My income is spent on medication and transport to the health centres. I am worried that I fail to pay my burial subscription due to ends not meeting

Table 1.15. Personal narratives of health in Willowvale

Willowvale Households	Theme: Health
HH56	People got help from herbalists and they got cured. Today most people go to medical doctors but there are a few who still use herbalists. The rate of HIV is high. There are people with HIV in the community.
HH56	Yes it is, so much that people keep it a secret. Not many people are disclosing their status.
HH66	It was a difficult death in the family when my daughter-in-law died. I sold some of my cattle to prepare for the funeral.
HH66	Asthma, TB and HIV Aids are most common. Treatment is available from the local clinic
HH66	No support from the community. People do not want to associate with it. They bad-mouth people with HIV
HH78	I have lost 3 members of the family. Things were hard, but I managed to bury them
HH78	There were not many doctors then and people then didn't worry much about their health. Unlike now there are many doctors and healthcare centres HIV is so common these days. The healthcare centres speak openly that AIDS kills and the people in the community no longer take HIV as a joke. They have come to understand that it is here.
HH79	My problem is my ill health; I can no longer do things I used to. My husband too is an invalid.
HH79	People have died of AIDS in recent years. Now people are getting treatment from the health centres. People don't talk about it; even the ones who know their status are not disclosing it; they would say they are suffering from something else
HH83	HIV AIDS is getting worse; people are dying.
HH84	Due to ill health I left the job. The doctors said it was epilepsy.
HH84	Today people depend on medication; it was not like that when we were growing up. In the old times people were very strong, their resistance to illness was very high; they didn't get sick easily like we do now. It looks like it's getting better with the education we get from the healthcare centres. If one sticks to the advices and take medication regularly HIV can be controlled. There is no discrimination against people living with HIV in this village.
HH86	The most common sickness then was TB. Today the health centres are providing medication to fight the disease

Willowvale Households	Theme: Health
HH91	Health was good in the old times. Now there are so many diseases and people are dying from HIV related sicknesses. People accept that HIV is a disease like any other disease and they take treatment from the clinic. People don't think of suicide when diagnosed with HIV
HH82	<p>Health is not good at all. Everybody is ill - Arthritis.</p> <p>People could reach 80 years and above; but now we die at age 40. We are not as strong as the people of old times were. We are a cursed generation, we think.</p> <p>HIV is a bit under control now. People take their medication and the health care centres do educate the people on HIV. There is no discrimination against people with HIV; we've been well lectured on HIV and AIDS.</p>

Table 1.16. Personal narratives of future concerns in Lesseyton

Lesseyton Households	Theme: Future concerns
HH34	I worry about how I am going to survive if the government could stop the old age grant. Also worry about what will happen to my children when I have passed on.
HH36	<p>I am worried about my grandchildren going to high school next year. I wish she could live by the standards that I have instilled in her because she will be leaving home for the first time. I wish she could get a good education and live a better life.</p> <p>I wish the crime could come to an end. I am worried about the murders that happen in this community and the burglaries. I wish this community could change for the better. Recently a young girl was raped and murdered in broad daylight.</p>
HH38	Death is my main concern. My wish is that when I die, I could leave behind something for my children. I wish I could get a job so that I provide for my children so that they get an education and live a normal life even when I have passed on.
HH41	My main concern is my health and my children's health. Who will take care of us when we are no longer healthy? If I die and leave my children behind, who will take care of them? Those are my concerns.
HH41	To see a stop to the drinking spree. Since young people are jobless they spend their time drinking and committing crime. If they could get jobs things would be better. They would have something keeping them busy. Also if the taverns could close early while it is still daylight.
HH41	I wish the weather could be fine. I wish we would get summer rains as we used to and so could be able to plough our fields and have plenty of water.

Lesseyton Households	Theme: Future concerns
HH41	If there could be a cure for all these incurable diseases. To see everybody in good health.
HH41	If the government could assist the community with projects and improve the water supply to the community.
HH42	The future of my child. To stop to unemployment, crime and diseases. I wish to see good rains for us to be able to plough the fields and for livestock to get grazing land. I wish I could get money as I now depend on the child grant.
HH12	I am afraid of being stacked and murdered. I live under lock and key. A pig was stolen from y house at about 20h00.
HH12	If HIV can be treated and cured.
HH22	My children are still very young. My concern is what will happen to them should anything happen to me.
HH22	Government to give assistance to HIV and people by providing the health centres with all the things needed. Water supply needs attention. The taps run dry. Job opportunities for the unemployed. To do away with corruption. Social grants to be given to those in need. I do not get a social grant. We depend on my brother's grant to live. My child dropped out of school in Std 7. I do not have the means to pay for her schooling.
HH25	Unemployment. It worries me that I cannot do the things I want to do, that I could die not having achieved anything due to unemployment. I wish I could build a house for my family. This one is too small. Water supply is the main concern. The taps have been locked; they say the dam is not clean. They will unlock the taps after the dam has been cleaned. The authorities have supplied us with Jojo tanks, but we cannot us that water for the crops. It is for domestic use only.
HH25	Education – the authorities need to build more schools closer to the community and there needs to be free education – no school fees, everything supplied free to the learners. Projects – such as community gardens. The authorities should supply everything and assist the community in these projects. They should work hand in hand with the community.
HH40	Crime gone, no more HIV, no killings, no drought, no illness. If things could go back to what they were when I grew up.
HH40	Water supply and food

Table 1.17. Personal narratives of future concerns in Willowvale

Willowvale Households	Theme: Future concerns
HH56	<p>I am worried about the health of the children – I am a diabetic.</p> <p>I want electricity as it is pitch black in this community. Most people here have cell phones but are struggling when it comes to charging them.</p>
HH56	<p>Social grants are needed. When one is sick we need for hire a mode of transport to go to the clinic or hospital. Without support from the government we do not have the money to hire transport.</p>
HH66	<p>If my grandmother should pass on, I would have no one to support me as I depend on her old age pension for surviving. I am worried that there is no rain as we speak. We cannot plant the land and that will result in us starving.</p>
HH66	<p>If there could be job opportunities, electricity and roads and RDP houses.</p>
HH66	<p>Projects like community gardens</p>
HH78	<p>I would love to get a proper dwelling structure, electricity. We rely on the generator for electricity</p>
HH78	<p>I wish the climate could be good so that we can plough our fields and get a good harvest. We don't spend money when we have crops e.g. we don't buy vegetables and maize we get them from the garden</p>
HH79	<p>I am worried about the HIV AIDS; how can it be stopped. I always worry about the climate because the rain is scarce.</p>
HH79	<p>I wish government could supply this community with electricity and also assist us with community projects and also create employment opportunities for everyone</p>
HH83	<p>My main concern is death; livestock also die when the climate is not good. I hope to see good heavy rains in order to get fresh water for both people and livestock. That will also help us plough the fields. Farming is at standstill because of the lack of rain. Even the taps have dried up we cannot get drinking water from them.</p> <p>Job opportunities for the community are needed. There are many unemployed people in the community.</p>
HH84	<p>HIV AIDS is my concern. People must get tested and know their status</p> <p>I wish to see a disease free community and to see a generation of disciplined youth</p>
HH84	<p>Projects, electrification in the village, job opportunities</p>
HH86	<p>My main concern is whether my children will get employment in the future and be able to provide for themselves</p>

Willowvale Households	Theme: Future concerns
HH86	Every household to have an RDP houses Job opportunities and food parcels for the poorest in the community
HH91	To get good rains as early as October of each year so that we can start ploughing the fields There is no money to hire the tractors to plough the fields; government to assist us financially and provide the community with projects
HH82	Crime is my main concern. I worry about what will happen to my family when I have passed on.
HH82	Climate could change for the better. Children are uncontrollable; they are involved in all sorts of crime. Only if that could come to an end.
HH82	Employment opportunities for the youth. That could help a lot as they are the ones committing the crimes. Community projects, RDP houses and electricity supply. Paraffin is very expensive.