
**UNPACKING THE LINK BETWEEN ADAPTIVE CAPACITY, ASSETS AND
RESPONSES OF RURAL LIVELIHOODS FACING MULTIPLE STRESSORS IN THE
EASTERN CAPE**

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ABSTRACT

Southern Africa has been plagued by multiple interacting shocks and stressors in the past decades, which have rendered this region even more socially vulnerable, which in turn affects their adaptive capacity. The continuing perpetual state of lack of assets, compounded by high sensitivity to climate change driven shocks and stressors, such as food insecurity, therefore, leaves many households' livelihoods vulnerable. Thus, there is a need to identify ways to implement adaptation initiatives; or to find means to improve the adaptive capacity of rural households and communities in Southern Africa, including those in the Eastern Cape Province of South Africa. However, despite recent work in other parts of the world regarding adaptive capacity, our understanding of adaptive capacity and adaptive needs in specific regions or communities is still limited. Furthermore, heterogeneity (inter- and intra-households), is often not accounted for in many studies, limiting our understanding on how differentiated household compositions affect and/or are affected by assets, agency and capabilities; and how this impacts upon adaptive capacity and responses of these households. Thus, greater attention needs to be paid to the social inequalities of vulnerability amidst multiple stressors. This study therefore explored;

- i) variations in vulnerability across heterogeneous household characteristics as influenced and reflected by assets and responses both at the single household and community levels;
- ii) how household and community level assets and responses interacted with institutions and organisations at various scales (as barriers and enablers (to-adaptive responses which affect adaptive capacity)), and;

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- iii) how pre-existing vulnerabilities in heterogeneous households influenced current adaptive capacities and how institutions and organisations influence current and future adaptive capacity.

In addition to the conceptual framework used in this research, structural transformations, asset functions and multiple stressors, the Local Adaptive Capacity and the Sustainable Livelihood Frameworks were also considered. The main findings of this research showed a considerable prevalence of liquid asset poverty in rural households in the Eastern Cape, being more pronounced in female-headed households, households with an elderly head and in small sized households. Livestock were found to be the dominant asset type. However, as land management is under communal arrangement, issues of power, access and control need to be considered with respect to how they can better accommodate vulnerable societal groups. Findings revealed a prevalence of erosive coping strategies at the household levels. Collective responses were also found to be greatly affected by a lack of knowledge and conflicts, whilst also displaying exclusionary tendencies towards women. Overall, the adaptive capacity of households in the study area showed a need for better policy and context-specific intervention in education, equal rights and opportunity creation.

Keywords: Adaptive capacity, assets, climate change, coping responses, Kat River Valley, multiple stressors, rural livelihoods, sustainable livelihoods, vulnerability

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PREFACE

This thesis is composed of three parts namely: Part I – Introduction and overview of the study; Part II – Empirical case studies, and Part III – Overall discussion and conclusions. Part I consists of three chapters. Chapter 1 introduces and sets the context for the study, providing a general background to the problem of the study from the broader, global perspective to the more focused South African context. A succinct review of literature is presented, which focuses on research trends and perspectives, whilst specific details are presented in the introductory sections of the empirical chapters and synthesis chapters. Chapter 2 provides an overview of the conceptual framework and approach and explains and defines key concepts and terms. Chapter 3 introduces the methods used in the study (although these are further detailed in successive chapters), and describes the study area.

Part II is made up of the three empirical chapters which investigate the current state of assets in rural South African households, shocks and stressors to which these households are exposed, and subsequent responses to these at the household level, and finally; collective responses as reflected in community projects. A brief introduction is provided at the beginning of each chapter, as well as any specific methods used exclusively in the respective chapter(s). Each chapter presents a detailed analysis of collected data and discusses the results as they relate to other studies.

Part III consists of a synthesis chapter, which provides a general discussion and conclusions section for the study, along with the implications of the findings for adaptive

capacity of rural households in the Eastern Cape Province of South Africa. This chapter a) summarises the key issues emerging, (including the role that assets play in building adaptive capacity, the issues of asset accumulation, access and market dynamics; and the importance of considering agency and capabilities in how assets function in responses both at the household and collective levels; and b) considers the broader policy and development implications of the work. Justification for focusing on building adaptive capacity, whilst acknowledging its many complexities and difficulties is presented.

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DECLARATION

I, Mwazvita Tapiwa Beatrice Dalu, hereby declare that the work described in this thesis was carried out in the Department of Environmental Science, Rhodes University. The various components of the thesis comprise original work by the author and have not been submitted to any other university.



Mwazvita Tapiwa Beatrice Dalu

8 December 2017

CHAPTER ONE: SETTING THE SCENE



Cattle, sheep and goat kraal made from tree branches and zinc sheets [Photo: Mwazvita TB Dalu]

1.1. Chapter overview

This chapter introduces the general study. It outlines the general vulnerability context of Southern Africa. It focuses on adaptive capacity and how it is linked to the state of assets and responses in the region. It then introduces the specific vulnerability context of South Africa. It provides a succinct literature review of adaptive capacity, assets and responses, identifying the gap that this research attempted to fill. The purpose of the study is then presented; followed by the research propositions, key objectives, related questions. Lastly, the structure of the thesis is outlined.

1.2. Introduction

1.2.1. Vulnerability context

Southern Africa has been plagued by multiple interacting shocks and stressors in the past decades. These have rendered the region even more vulnerable to climate change (Adger & Kelly, 1999; Eakin & Luers, 2006; Blaikie et al., 2014). Vulnerability, meaning susceptibility to harm, can be attributed to social determinants that limit access to assets. This leads to greater exposure and sensitivity to new and existing stressors and a limited capacity to adapt (Tun Oo et al., 2017). Stressors and adaptation are intertwined because stressors deplete assets. This then cripples the ability to adapt. On the other hand, (mal) adaptation or asset eroding coping strategies may decrease assets available to respond to future stressors (McDowell & Hess, 2012). In addition to the stressors to which populations are exposed such as HIV/AIDS, unemployment and a general lack of opportunities; climate change is yet another stressor that threatens to completely deplete the livelihood assets of poor people in Southern Africa (Shackleton

& Shackleton, 2012). For example, there has been more flooding in Southern Africa in the past decade than previously observed (Dai et al., 1998; Conway, 2009). Unpredictable rainfall patterns that have severely altered the growing seasons of crops have become more common (Rosenzweig et al., 2001). Furthermore, Southern Africa falls under the semi-arid regions of the world where the largest expansion of drylands has occurred since the 1960s (Huang et al., 2016). Thus, this region is particularly more sensitive to climate change than any other region in the world. Populations here are affected because of the marginal and fragile nature of the resources to which they have access (Beltagy & Madkour, 2012).

Climate change associated vulnerability, such as food insecurity, is worsening in the Southern African region, with rising food prices only exacerbating the situation (Shackleton et al., 2015). Over and above this, Southern African rural populations are also amongst the poorest globally, possessing few assets (Gupta et al., 2009). Southern Africa is also characterised by underperforming economies and poor governance. The Gini coefficients of many Southern African countries reflect high income inequalities which cripple economic development. South Africa in particular has amongst the world's highest inequality (Klasen, 1997). Thus, the continuing perpetual lack of assets compounded by high sensitivity to climate change driven shocks and stressors, such as food insecurity, leaves many rural households' livelihoods vulnerable (Shackleton & Luckert, 2015). The livelihoods of these households are therefore subjected to multiple and interacting socio-economic and ecological stressors that are linked in a social-ecological system (Walker et al., 2004).

Poor people with few assets are usually heavily reliant on the natural environments surrounding them (Banerjee & Duflo, 2007; Kamanga et al., 2009). This is because a considerable number of the poor tend to be involved in economic activities directly and/or indirectly linked to natural resources such as subsistence farming, harvesting of natural resources for consumption and for sale, as well as for safety nets against shocks (Mollee et al., 2017; Nyangena & Gathiaka, 2017). They are therefore increasingly more sensitive to climate change related shocks and stressors due to their livelihood activities, to which they must respond accordingly (Ofoegbu et al., 2017; Panda, 2017). Natural resource dependent communities, however, tend to have a limited adaptive capacity to cope with, or respond to, unanticipated events and impacts of climate change (Shackleton et al., 2013; Ford et al., 2015). With only a small proportion of such households having access to debt and insurance, most people are left with very few livelihood options from which to draw upon in the event of shocks and stressors. This compromises sustainable livelihood outcomes (Green, 2000; Shackleton & Shackleton, 2004).

1.2.2. The South African context

Over and above the aforementioned stressors that characterise the Southern African region of which South Africa is a part, the historical context of South Africa further actively disadvantaged the black populations who now constitute the majority of South Africa's most vulnerable. As such, South Africa's socio-political past cannot and should not be ignored when considering vulnerability. The aftermath of apartheid South Africa

is still acutely apparent, with as much as 60 % of the population still lacking adequate education and skills training. They further lack in capabilities and opportunities as well as motivation, which compromises agency to escape the poverty trap (Woolard, 2002). Geographically, the black majority were often confined to economically disadvantaged areas in the form of Bantustans which severely crippled development (Rogerson & Letsoalo, 1985). This was systematically executed during the apartheid government to force black labour into large farms and mines. Due to this, the majority of the rural population is mostly only able to look for work in these areas, where remuneration remains low and health risks high, creating a dependency on state welfare. Fast forward a few years however, the current social, economic and political atmosphere of South Africa looks gloomy. The future is even the more uncertain and insecure especially for the already vulnerable residing in rural South Africa.

In the period between 2015 and 2016, South Africa witnessed a remarkable drop in the value of the South African Rand (ZAR) to the United States Dollar (USD) (Anon, 2015). Furthermore, South Africa experienced a drought during the same period which was thought to have been a consequence of the El-Nino event. Coupled with overall poor water management over a prolonged period, the country experienced an acute water shortage (Cox, 2015). This further pushed the country into a downhill economic spiral as imports increased with a looming food security problem, which was worsened by the poor ZAR performance and general internal issues (Anon, 2016). The political situation in South Africa saw many strikes from September-October 2015 in the mining sector and the tertiary education system, as well as unpredictable changes in the cabinet that

threaten the stability of the country (Tandwa, 2015; Davis, 2017). In 2019, South Africa has a new president, Mr Cyril Ramaphosa. The country is, however, still experiencing hyper-inflation, particularly of diesel and petrol, both of which have gone up four times in 2019 before the second quarter of the year (Daniel, 2019). As the economic situation is discouraging to international investors, the future of the country seems to hang in the balance with serious implications on livelihoods (Donnelly, 2015). It is within this context that rural households in South Africa must respond to shocks and stressors. These are influenced by, and have implications upon, their assets, agency and capabilities, as well as their adaptive capacities.

The changing role of the state in shaping the vulnerable rural context

The initial role that the state played prior to 1994 divided the country's land into three main territories. The apartheid system effectively defined three kinds of spaces in South Africa, each with its own political, social and economic systems: the major urban areas; the commercial farming regions and the associated small towns; and the Homelands. It did so by implementing various segregation policies, such as the 1913 Natives Land Act, which dispossessed Africans of 87% of their land (Gwanya, 2010). A key initiative of the government, whose effects are still acutely apparent in rural South Africa, was the Betterment planning programme. The Betterment planning programme was initiated by the Department of Bantu Affairs through Proclamation 31 of 1939 and regulated by Proclamation R 169 of 1967. It came into effect in the 1930s (Letsoalo & Rogerson, 1982). It was the major form of rural development planning that sought to regulate these areas and control land usage particularly those on trust land in accordance with the

Land Act of 1936. It was implemented in the former Homelands where the rural black population was confined (ibid.). At the point when the National Party handed over to the African National Congress (ANC) at the advent of a new democracy in South Africa, the economy was stagnant, with rising levels of unemployment and government debt. The poverty facing rural areas in South Africa today can therefore be understood to be as a result of the way apartheid shaped access to economic opportunities and government services through rigidly enforced tenure, settlement and labour policies (Kepe & Cousins, 2002; du Toit, 2017).

Challenges related to this include under-utilisation and/or unsustainable use of natural resources; poor or lack of access to socio-economic infrastructure and services, public amenities and government services. They also include lack of access to water or lack of water sources for both household and agricultural development; low literacy, skills levels and migratory labour practices, unresolved restitution and land tenure issues, townships not formally established thus hindering service provision and development, dependence on social grants and other forms of social security; and unexploited opportunities in agriculture, tourism, mining and manufacturing (Gwanya, 2010; du Toit, 2017).

Apartheid used development projects to channel people to a different direction and localities, removing developmental links between the urban centres and rural areas (Gwanya, 2010; du Toit, 2017). This perspective motivated the post- apartheid ANC government to come up with clear development policies that would change the apartheid legacy, bridging the gap between the first (white and affluent) and second (black and impoverished) economies. The Restitution of Land Rights Act of 1994 was the first law to be passed after the elections. This law allowed land reform to start, but

only on privately owned land. Communal areas remain state owned, governed by traditional leadership structures and the state. Although laws involving arbitrary racial distinctions have been repealed, land in the former reserves continues to be registered in the name of the State. This can be an opportunity or a difficulty, depending on how tenure reform is perceived to affect the interests of those with power and influence, and this is considered in Chapter 4 (Adams et al., 1999; Kepe & Cousins, 2002).

Following the constitution of South Africa which strives for socio-economic equality, the ANC government has rolled out a series of initiatives, including policies, programmes and white papers to facilitate rural development. These include, amongst others, The Rural Development Strategy of the Government of National Unity of 1995. The strategy set out the mechanisms by which rural people and their elected representatives at rural District Councils and Local Councils could take charge of the development process in their own areas (Gwanya, 2010). In 2001, the South African government introduced the Integrated Sustainable Rural Development Strategy, which later became a programme (ISRDP). The ISRDP was a mechanism for the integration of government development projects (ibid.). It mainly targeted former homeland areas and attempted to introduce the spatial focus to deal with poverty and underdevelopment. It also attempted to define how integration would happen. However the unit of intervention was at District Municipality level, failing to target local municipality, wards and/or village needs. Various sector specific strategies such as those focusing on sanitation and transport have also been implemented in the new millennium (du Toit, 2017). The most recent change in the role of the state has been to roll over a more comprehensive strategy in the development of rural areas in South Africa. The Comprehensive Rural Development

Programme (CRDP) was conceived “to create vibrant, equitable and sustainable rural communities” (Gwanya, 2010: 10). It sought to address poverty and food insecurity through maximising the use and management of natural resources. It also sought to rectify past injustices and improve the standard of living and welfare through rights-based interventions that addressed skewed patterns of distribution and ownership of wealth and assets. The primary objective was to “facilitate integrated development and social cohesion through participatory approaches in partnership with all sectors of society” (Gwanya, 2010:10). This programme also aimed to tackle the issue of land redistribution in South Africa. The CRDP was in effect during the data collection phase of this study, and is revisited in the synthesis Chapter 7.

1.2.3. Adaptive capacity, assets and responses

Assets, agency (being the endowments, belief systems, self-regulatory capabilities and distributed structures and functions, through which personal influence is exercised) and capabilities (defined as the choices that an individual possesses to produce outcomes that they value and have reason to value) can enhance or constrain the ability to respond to shocks and stressors, also known as adaptive capacity (Adger & Kelly, 1999; Jain et al., 2015). Economic and social development produces, and is also a product of, human capital (such as education, skills, knowledge, health, nutrition and labour power); or assets and human agency and capabilities (Sen, 1999). Adger & Kelly (1999) and Shackleton & Shackleton (2012) put forward the argument that a household’s resources and assets determine the ability to respond and ultimately augment the adaptive capacity of a household. Adaptive capacity can be understood as

the ability to modify exposure to risk and in the context of climate change, to be able to absorb and recover from subsequent losses, and take advantage of new opportunities that are concurrent to the adaptation process (Adger, 2006; Coulibaly et al., 2015). This capacity is also seen to be predominantly influenced by the entitlements of individuals and groups to available assets, reflected as their agency and capabilities (Jones & Tanner, 2017). Therefore, the adaptive capacity of individuals is influenced by assets, agency and capabilities, and results in response differentiation (Egyir et al., 2015).

According to Shackleton et al. (2015), differences in responses to a multiplicity of shocks and stressors are related to assets, vulnerability and poverty levels. They also include political issues of access. In rural Kenya for example, a high percentage of wives were found to adopt crop-related strategies, whereas husbands employed livestock- and agroforestry-related strategies. This reflected gender differentiated issues of access to, and control of assets within households (Ngigi et al., 2017). Responses can also lead to fewer livelihood outcomes resulting in maladaptation. For instance, food insecurity may result in unsustainable practices. An example is over-clearing of land. It may compromise other vital ecosystem services such as flood mitigation, rendering the household more vulnerable in the event of a flood (Blaikie et al., 2014). Responses, therefore, consist of either coping, adaptation, transformation, the lack of action or maladaptation (Bene et al., 2015). Thus, understanding the nature of responses is important in this study so as to fully comprehend how they impact upon adaptive capacity. This then determines the trajectory of rural livelihoods in the Eastern Cape of South Africa in facing current and future shocks and stressors.

1.2.4. Gaps and research needs

Despite recent work in other parts of the world into adaptive capacity (e.g. Warrick et al., 2017; Nykvist et al., 2017; Holland et al., 2017; Duncan et al., 2017; Krofcheck et al., 2017), our understanding of adaptive capacity and adaptive needs in specific regions or communities is still limited (Smit & Wandel, 2006). This understanding is crucial to the identification of ways to implement adaptation initiatives, and to find means to improve the adaptive capacity of rural households and communities, including the Eastern Cape Province of South Africa. According to McDowell & Hess (2012), the process of adaptation to multiple stressors remains poorly understood. More insight is needed into the relationship between adaptation, assets, and multiple stressors. In the past, this lack of understanding has often been reflected in a succession of failed interventions and mismatches between the actual needs, values and abilities of a given community and a prescribed project implemented within communities (Webber et al., 2007). Furthermore, inter- and intra-household heterogeneity is often not accounted for in many studies. This limits our understanding on how differentiated household compositions affect and/or are affected by assets, agency and capabilities. It further limits understanding on how this impacts upon adaptive capacity and responses of these households. Household heterogeneity means that each household has different levels of human and political capital. For example, a household with many males would likely have more manual labour, and more influence in traditional institutions of power; this, contrasted to a household composed of only females, who would have less manual labour, and are unlikely to have a voice in traditional institutions of power. In this way, inequalities would

exist between these households. Thus, greater attention needs to be paid to the social inequalities of climate-related vulnerability (Ribot, 2009). Overall, each context is unique, and as such, any research that feeds into interventions to combat vulnerability needs to be tailored to the specific contexts (Sachikonye et al., 2016). In a proposal submitted for the Sandisa Imbewu project, of which this study was a part, Shackleton (2014) suggests that we need to better understand communities' and individual households' assets, agency, capabilities, and institutions; and how structural factors, inequalities, markets and historical processes impact on these.

1.2.5. Purpose of the study

The purpose of the study was to explore variations in social vulnerability and adaptive capacity across heterogeneous household characteristics as influenced and reflected by assets and responses both at the single household and community levels. To achieve this, the study explored:

- i) variations in vulnerability across heterogeneous household characteristics as influenced and reflected by assets and responses both at the single household and community levels;
- ii) how household and community level assets and responses interacted with institutions and organisations at various scales (as barriers and enablers (to-adaptive responses which affect adaptive capacity)), and how this, compounded by pre-existing vulnerabilities in heterogeneous households impacted current and future adaptive capacity.

In this study, multiple frameworks were employed, as these provided powerful analytical tools from multiple disciplinary perspectives. Dorward (2014) proposed a framework in which structural transformations fed into assets, their properties and attributes, asset functions, and livelihood transitions. Within the conceptual framework used in this research, in addition to structural transformations, asset functions and multiple stressors, the Local Adaptive Capacity (LAC) and the Sustainable Livelihood Frameworks (SLF) were considered. The amount, diversity, distribution and use of different asset capitals were also important in understanding responses and adaptive capacity (Chapin et al., 2009) and were investigated. Moreover, there are individual and cultural dimensions of climate change that include barriers to responding (Smith et al., 2011), which were also investigated in this study.

1.3. Key questions and objectives

1.3.1. Key questions and objectives

The broad research objectives and related key questions were as follows:

1. To understand asset stocks and distribution across heterogeneous household profiles and at the community level, and the associated dynamics of access and accumulation, use and effectiveness in determining adaptive capacity.
 - a) What are the financial, physical, natural, social and human asset stocks in households?
 - b) How are they distributed across differing household profiles such as gender of household head, wealth status of household, age and education level of household head in relation to asset poverty?

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- c) What factors reflected in the different household profiles, act as barriers or enablers to the accumulation, effective use and retention of assets and why?
 - d) Which household profiles therefore reflect the highest or lowest adaptive capacity?
2. To identify the shocks and stressors to which households are exposed and understand responses to these by unravelling the factors influencing differences in responses and the implications for adaptive capacity.
- a) What are the shocks and stressors to which households are exposed?
 - b) What are the responses to these?
 - c) How do these responses impact upon asset stocks?
 - d) Do different household profiles experience shocks and stressors differently?
 - e) What factors influence how households respond to shocks and stressors?
 - f) How does this affect the adaptive capacity of different household profiles?
3. To analyse how agency and capabilities are affecting, and are affected by, collective responses to shocks and stressors at the community level.
- a) How are collective responses organised in the community?
 - b) How are the levels of agency and capabilities interacting within projects such that communities take full advantage of opportunities to increase adaptive capacity?
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- c) To what extent have local agency and capabilities been considered within the development and management of projects?
 - d) How does this affect project success and collective adaptive capacity of the community?
4. To consider the broader implications of the findings on adaptive capacity for rural households in the Eastern Cape Province for future adaptation, transformation and policy development.

1.3.2. Structure of thesis

This thesis is composed of three parts namely: Part I – Introduction and overview of the study; Part II – Empirical case studies, and Part III – Overall discussion and conclusions. Part I consists of three chapters. Chapter 1 introduces and sets the context for the study. It provides a general background to the problem of the study from the broader, global perspective to the more focused South African context. A succinct review of literature is presented, which focuses on research trends and perspectives. Specific details are presented in the introductory sections of the empirical chapters and synthesis chapters. Chapter 2 provides an overview of the conceptual framework and approach. It explains and defines key concepts and terms. Chapter 3 introduces the methods used in the study (although these are further detailed in successive chapters), and describes the study area.

Part II is made up of the three empirical chapters which investigate the current state of assets in rural South African households. It investigates the shocks and stressors to

which these households are exposed and subsequent responses to these at the household level. Finally, collective responses as reflected in community projects are investigated. A brief introduction is provided at the beginning of each chapter, as well as any specific methods used exclusively in the respective chapter(s). Each chapter presents a detailed analysis of collected data and discusses the results as they relate to other studies.

Part III consists of a synthesis chapter, which provides a general discussion and conclusions section for the study, along with the implications of the findings for adaptive capacity of rural households in the Eastern Cape Province of South Africa. This chapter a) summarises the key issues emerging, (including the role that assets play in building adaptive capacity, the issues of asset accumulation, access and market dynamics; and the importance of considering agency and capabilities in how assets function in responses both at the household and collective levels; and b) considers the broader policy and development implications of the work. Justification for focusing on building adaptive capacity, whilst acknowledging its many complexities and difficulties is presented.

CHAPTER TWO: CONCEPTS, FRAMEWORKS AND KEY DEFINITIONS



A typical house made of mud and sticks with a satellite dish found in Fairbairn [Photo: Tatenda Dalu]

2.1. Chapter overview

This chapter provides an overview of the key concepts and frameworks used to frame this study, as well as providing key definitions of terms. The starting point is finding a working definition of adaptive capacity for this study. This is done by first identifying the various ways in which adaptive capacity had been defined by other scholars, including within the definitions and conceptualisations of vulnerability. Assets, adaptive capacity, agency and capabilities are then defined and conceptualised for this study. As part of the conceptualisation of this study, the Local Adaptive Capacity framework (LAC), the Livelihoods framework and the Sustainable Livelihoods Framework (SLF) are briefly discussed as they relate to responses and livelihood outcomes. Lastly, barriers and enablers to adaptation stemming from previously discussed assets, agency and capabilities, as they relate to responses, are also discussed.

2.2. Vulnerability and the conceptualisation of adaptive capacity

2.2.1. Definition of vulnerability

Adaptive capacity has often been conceptualised as it relates to vulnerability (e.g. Adger, 2006; Dorward, 2012). Similarly, this study starts to conceptualise adaptive capacity by unpacking the various definitions of vulnerability, and relating these to adaptive capacity. Vulnerability can be defined as the state of susceptibility to harm from exposure to stresses associated with environmental and social change. It is also the absence of the capacity to adapt (Adger, 2006; Birkmann et al., 2013). Cutter et al. (2003) in their research have classified vulnerability as exposure and social condition. They also classified it as the integration of possible exposures and societal resilience,

specifically focused to places or regions. O'Brien et al. (2005) consider localised social vulnerability as an outcome of overarching contextual vulnerability. In this study, adaptive capacity was assessed as it related to social vulnerability. Variables for the questionnaire, such as education, employment and overall assets, including income, are indicative of levels of social vulnerability. In chapter one, the overarching context of South Africa is presented, so as to show the current overarching contextual vulnerability, or the prevailing social condition within which the study was set. Social vulnerability is an outcome of this context, as per the definition of O'Brien et al. (2005) and Cutter et al. (2003). In the subsequent section, vulnerability is further unpacked into individual components. One of these components is adaptive capacity, and is further unpacked in the sections below.

2.2.2. Components of vulnerability

Overall, the key indicators or components of vulnerability are the stresses to which individuals, groups and/or systems are exposed, their sensitivity to these stressors and their adaptive capacity (Smit & Wandel, 2006). Exposure is the extent to which an individual, group or system experiences environmental or socio-political stress. It is measured in terms of the magnitude, frequency, duration and spatial extent of the stress, as suggested by a CIFOR report by Tiani et al. (2015). Sensitivity is a measure to which an individual, group or system is altered by perturbations (Knight & Jäger, 2009). Adaptive capacity is the ability of people, whether a community or a household, to adapt to multiple, long-term and future risks. It is the ability to develop and adjust post disaster. It is also the ability to undertake intentional and planned decisions, with an aim

to reach a desired state in the face of potential transformation (Blaikie et al., 2014; Thulstrup, 2015). In this study, some of the key stressors and shocks are identified. The capacity to adapt to these is investigated. Adaptive capacity is shaped around these identified shocks and stressors, and they must not be ignored in assessing the state of adaptive capacity in the study area. What is also a desirable state of wellbeing into the future is also important to adaptive capacity, as stated in the definition. This desired state of wellbeing is related to the capabilities of the people in this study. It shapes their intentionality and their goals, both of which are subcomponents of agency.

2.2.3. Conceptual approaches to vulnerability

Vulnerability is a concept common to several traditions and disciplines including psychology, economics and anthropology (e.g. Perrig-Chiello, 2016; Barrios, 2017; Bayer et al., 2017). The conceptualisation of vulnerability has evolved since its inception. Earlier scholarship focused on the hazards and entitlements, that is, the analysis of vulnerability as lack of entitlements and the analysis of vulnerability to natural hazards (Ribot, 2013; Fisher et al., 2013; Blaikie et al., 2014). More recent approaches make an attempt at integrating social and ecological systems, thus relating to the multiple stressors framework (Shackleton et al., 2015). The sustainable livelihoods and vulnerability approach, is merited for being complementary to the hazard approaches to vulnerability. It does so by conceptualising and measuring the links between risk and wellbeing at the individual level (Norton & Foster, 2001). It is however criticised for not engaging integrative social-ecological systems. Furthermore, the attempt to separate entitlements from natural hazards is criticised, as the two are not

mutually exclusive. This is because vulnerability researchers have increasingly shown that famines and food insecurity, for example, are much more often a consequence of disease, war or other socio-political factors (Watson, 2017).

It is, therefore, plausible to conclude that the assessment of vulnerability whilst only considering one isolated factor does not reveal the true vulnerability context, as often, people are exposed to multiple interacting factors. Furthermore, focusing on exclusively either physical production variables or social variables limits the ability to capture the issues that render individuals or places vulnerable to multiple stressors (Grootaert & Van Bastelaer, 2001). It is important to combine measurement aspects of vulnerability and thresholds, with the role of institutions and governance processes and explanations of overall vulnerabilities. This research acknowledged this complication. It used multiple frameworks (further explained in section 2.4 on conceptualising the study) and a triangulated methodological approach. It anticipated including and comprehending the impact of multiple stressors on the livelihoods of the communities under investigation, and how these affect their asset base, responses and subsequent adaptive capacity.

2.3. Adaptive capacity

2.3.1. Defining adaptive capacity

Social groups and/or individuals with the ability to respond to or cope with changes quickly are said to have high adaptability or adaptive capacity. A social group, linked within a social system (a social system here implying an arrangement of social interactions based on shared norms and values), armed with capacities divided into

absorptive, anticipatory and adaptive capacities, reduces its vulnerability to shocks and stressors. This allows for sustained livelihoods, wellbeing and human development, in spite of climate extremes and other challenges (Bassett & Fogelman, 2013). Social systems can be broken down into sub-systems, such as community groups or households within which interactions occur. Community in this study is being understood as per the definition of Smit & Wandel (2006:283), in which a community is understood as “some definable aggregation of households, interconnected in some way, and with a limited spatial extent”. All social systems and sub-systems, such as communities and households are made up of individuals. This study focused on a community, households and the individuals of which these two sub-systems are composed. Adaptive capacity is the ability of social groups (such as households) and individuals linked within a social system to adapt to multiple, long-term and future risks. It is the ability to develop and adjust post disaster, and to also undertake intentional and planned decisions, with an aim to reach a desired state in the face of potential transformation (Blaikie et al., 2014). It includes the ability to react to shocks and stressors such that harm and the likelihood of occurrence are reduced. It is also the ability to improve through learning from the experience of the shocks and stressors. Adaptive capacity is usually enhanced in non-emergency periods. For example, a farmer may choose to diversify his portfolio by participating in non-agricultural activities which are not sensitive to climate change (Tiani et al., 2015). This action stems from learning from historical experiences of vulnerability, also known as reflexivity; a sub-component of agency (which is elaborated upon in the chapter in discussing agency). This results in social groups linked within social systems recovering using means that

reduce future vulnerability to the same shock or stressor (ibid). Knowledge, skills and the assets necessary for the identification and implementation of adaptation, are constituents of adaptive capacity (Jacobs et al., 2015). Crucial to adaptive capacity, and what is in common with all the definitions here, is the ability to recover and reduce vulnerability to future shocks and stressors, thus avoiding risk traps and vulnerability cycles (Walker et al., 2004). The above definitions of adaptive capacity guide how variables were selected in this study. From these definitions and conceptualisations of adaptive capacity, it is important to know what the context of stressors and shock is, as the capacity to adapt is developed in relation to these. In this study, it was proposed in Chapter one, Section 1.2.2, that the overarching identified vulnerability context within which this study is set in South Africa is poverty and inequality, and this became the focus of the first empirical chapter, Chapter 4. In the overall conceptualisation of this study that will be discussed further along this chapter, the context within which the communities and households that are a part of this study is a key component in understanding the state of adaptive capacity. Secondly, the definitions here also inform this study that responses to identifies shocks and stressors should be investigated. How they impact the future vulnerability to these and other shocks and stressors by either increasing or decreasing adaptive capacity, should also be investigate. This was investigated in Chapter 5. Lastly, the definitions of adaptive capacity guide this study to also consider processes of agency, institutions, self-organisation and decision-making when opportunities to enhance adaptive capacity are afforded. This was the focus of Chapter 6.

2.3.2. Assessing adaptive capacity

Most approaches to assessing adaptive capacity involve the identification of the factors that affect adaptive capacity. They also assess the ability to mobilise the identified factors as is necessary (Brooks & Adger, 2005). One approach focuses on relative adaptive capacity of localities using variables selected by the researcher in a comparative evaluation. In this instance, vulnerability represents the starting point in the evaluation (Vincent, 2007). In this study, the selection of variables to study were selected by the researcher, guided by the definitions of adaptive capacity, as well as the frameworks that were complimentary to each other. These were the Sustainable Livelihood Framework (SLF), the Local Adaptive Capacity framework (LAC) and the Livelihoods Framework. Together with the agency and capabilities approach, these formed the conceptual and theoretical framework of this study.

Adaptive capacity depends on the characteristics of individuals, institutions and organisations that encourage learning in the context of change and uncertainty. In assessing adaptive capacity in this study, there was a strong link to agency and social cognitive theory. This link was self-reflexivity, which is important during the learning process. Some key variables in assessing adaptive capacity were taken from both the Local Adaptive Capacity framework (LAC), and expanded upon further through unpacking agency and social cognitive theory. These variables included the willingness to learn from mistakes and the engagement in collaborative decision making. How diverse an institution was and the ability to self-organise for the purposes of learning and problem solving were also assessed. The asset base was assessed, as it is from

these assets that people draw when faced with shocks and stressors. The asset base was assessed in relation to the prevalence of asset poverty, as poverty was related to the greater context within which the study was conducted. The analysis of social capital was found to be useful in assessing adaptive capacity. This is because social capital can impact the manner in which people act as a household or as a community, when faced with shocks and stressors.

2.4. Conceptualisation of study

Conceptual characterisations and assessments of adaptive capacity at the local level have typically been synonymous with the SLF's five capitals. The various links between sustainable livelihoods, availability of assets and capitals, and adaptive capacity are manifold. They provide a useful starting point in helping to understand the drivers behind adaptive capacity, as shown in Figure 2.1. Hence, the first empirical chapter of this thesis, Chapter 3, investigated the availability and state of assets and capitals. It related this to the overarching vulnerability context of poverty (this context, being the backdrop behind the conceptualisation of the study as shown in Figure 2.1) and inequality in South Africa. This was done by compiling asset profiles of respective households, and relating this to the Lower Bound Poverty Line in 2016 when this study was carried out. However, given that so much of the ability to deal with stressors and change will depend on intangible processes, relationships and functions, solely looking at the community or individual's asset base is unlikely to give a complete picture of adaptive capacity. Thus, this study went further to unpack social capital and the processes of responding to stressors in greater depth in the second empirical chapter.

In the third and final empirical study, relationships and processes in projects were also investigated. Particular focus was on governance or leadership and decision making, innovation, self-organisation, institutions and knowledge and information dissemination for learning.

Overall, the three frameworks selected in this study, namely the Local Adaptive Capacity framework (LAC), the Sustainable Livelihoods Framework (SLF) and the Livelihoods framework, along with the capabilities approach, agency and social cognitive theory, together shaped the conceptual framework of this work. They guided the literature that was reviewed as a background to this study. They also informed the research methods used in this study that are discussed in Chapter 3. These frameworks and approaches were found to be complimentary to each other; at times overlapping. They built upon each other in the differences in emphasis placed upon certain elements that were unique to each of them.

In all frameworks and approaches, assets were a fundamental component in sustaining livelihoods. Both the SLF and the Livelihoods framework classify each of these assets into categories, with the Livelihoods framework delving deeper into understanding the attributes of each of these assets. The Livelihoods framework also incorporates processes and actions that cause changes to these assets. In the SLF, these processes and actions are referred to as livelihood strategies. Such actions are influenced by capabilities and agency, for example, the process of accumulation. The accumulation of

assets, such that they increase adaptive capacity by increasing the asset base from which households draw form when dealing with shocks and stressors, would involve substantive freedoms. These are the ability to participate in economic and/or political activities. They are combined with intentionality and forethoughtfulness. The difference between the Livelihoods framework and SLF, is that the former also incorporates processes and changes of assets themselves, such as depreciation and decay. In this way, this framework takes into account not only how much of an asset a household owns, but also the nature and type of asset itself. This is also important in assessing the asset base, which contributes to adaptive capacity. Both the Livelihoods framework and the SLF, as well as capabilities and agency include institutions and organisations as components that should be considered when understanding livelihood outcomes. All frameworks and approaches also consider that different livelihood outcomes are possible, depending on the dynamic interplay of the various components. The LAC, which is the main framework used in this study, ties each of the frameworks to capabilities and agency, showing how they each contribute to adaptive capacity. Adaptive capacity in turn will determine the continued sustainability or the decline of livelihood outcomes of households through response mechanisms (hanging in, falling down and out etc., Figures 2.1 and 2.2). This implies an increase or a decrease of vulnerability to the identified shocks and stressors that characterises the vulnerability context. This research incorporated the principles of a function-based approach (Figure 2.2) which emphasizes the importance of knowledge, skills and capacity (human capital). It also incorporates social relationships (social capital) (or the lack thereof as barriers to enhancing adaptive capacity). An asset-based livelihoods approach and a

triangulated methodology that combined quantitative and qualitative data were also used in this research (Spires et al., 2014).

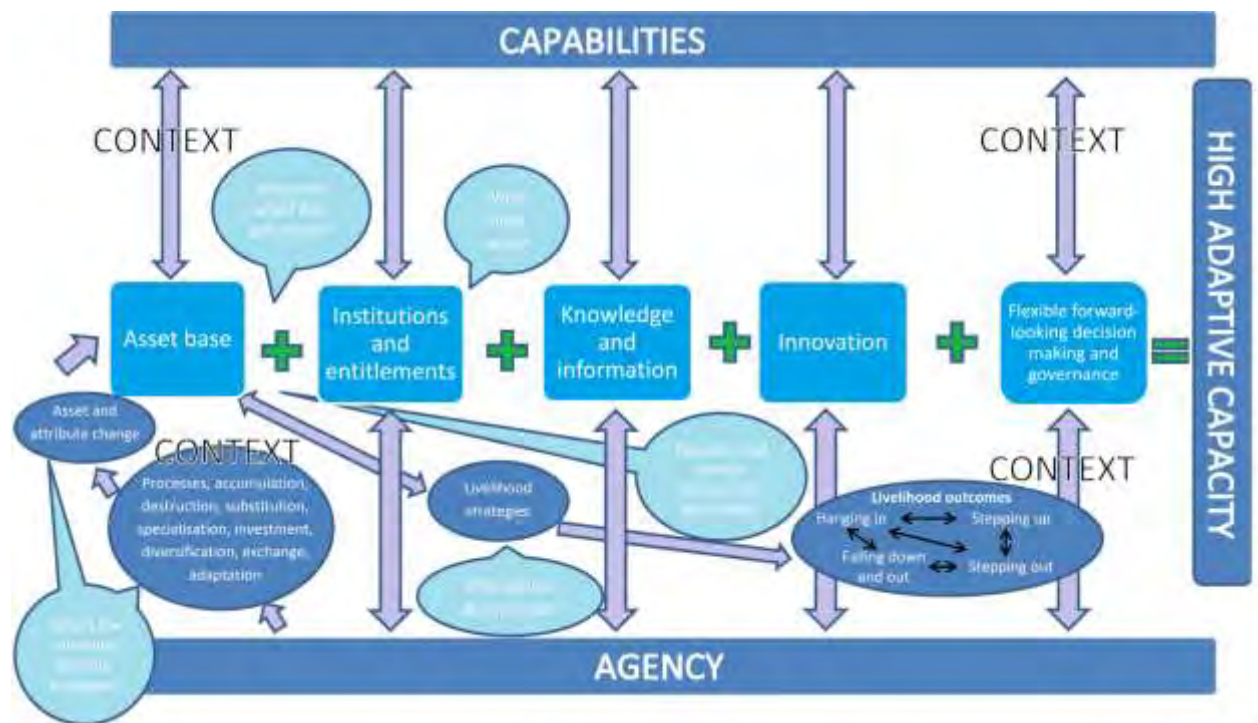


Figure 2.1 Conceptual framework highlighting the different frameworks utilised during this study

2.5. Assets and adaptive capacity

2.5.1. Defining and categorising assets

Assets can be defined as the stocks of all resources that an individual possesses, is able to access and to control (Ellis, 2000). An asset can change its attributes e.g. by appreciating or depreciating in value over time, or generate new value e.g. generating income such as rent. According to the International Food Policy Research Institute's (IFPRI) Gender, Agriculture, and Assets Project, Phase 2 (GAAP2), 2017, who focus on

validating measures for women's empowerment for development agencies and project implementers, an asset can also be tangible (e.g. a vehicle) or intangible (e.g. social networks), can be liquid (e.g. cash flow) or illiquid (e.g. investments), internally-embodied (e.g. knowledge) or externally-embodied (e.g. a healthy body). Often the term 'assets' is interchanged with the term 'capital'.

Following the Sustainable Rural Livelihood Framework (SRLF) of Scoones (1998) and GAAP2 (2017), assets can be categorised into six broad categories (although social and political capital can at times be combined to make only five categories) namely:

- i) Natural capital, which refers to land, water, vegetation and other genetic resources;
- ii) Physical capital such as livestock, agricultural and business equipment, houses, consumer durables, vehicles and transportation, water supply, sanitation facilities, technology and communications infrastructure;
- iii) Human capital such as education, skills, knowledge, health, nutrition and labour power;
- iv) Financial capital which includes savings, credit and inflows (state grants and remittances);
- v) Social capital such as membership in organisations, networks that facilitate increased trust, the ability to work together, access to opportunities, reciprocity and informal safety nets; and

-
- vi) Political capital referring to citizenship, enfranchisement, and effective participation in governance- which is often important for controlling right over other assets.

Important to this study, is to examine the issues surrounding the control over, ownership of, and access to, assets which are critical components of adaptive capacity. Typically, it is the poor that are most vulnerable to climate change and other stressors, largely due to their lack of, and/or limited access to key assets (Green, 2012). Control and ownership of assets creates an effective pathway out of poverty, as opposed to increased income or consumption (Muyanga et al., 2013). Assets can be used to create income, e.g. fields, and can also generate income from their sale. Assets can also be buffers against negative shocks or stressors, as they can act as safety nets (Shackleton & Shackleton, 2004; Shackleton et al., 2007). This is unlike income which fluctuates easily and can be subjected to several sudden and at times dramatic changes such as illness and unemployment, and is thus not secure (Brown et al., 2013). Asset ownership also impacts upon people's sense of self-worth, which can have implications on inclusion, participation and agency (Rohe & Stegman, 1994). It is also important not to only focus on how much and who owns an asset, but also on which type of asset and how is it used. This may at times have a greater bearing on adaptive capacity than the former (GAAP2, 2017). Further, the extent to which assets can be substituted also affects the effectiveness of the asset base (ibid). Thus, asset diversity and access to a surplus of assets that are interchangeable can be as important to adaptive capacity as asset availability and abundance (ibid).

2.5.2. The Sustainable Livelihoods Framework (SLF)

The Sustainable Livelihoods Framework (SLF) can also be useful in conceptualising the five capitals or assets from both a bottom-up and top-down manner. The balance in the interactions of assets is important, as each of the assets is complimentary (Scoones, 1998; Ellis, 2000; Grootaert & Bastelaer, 2001). Thus, this framework also allows for the balance and interactions, as well as the transformative nature of assets, to be analysed and made sense of (Jacobs et al., 2015). Similar to the livelihoods framework of Dorward & Kent (2012), this framework uses a function-based approach by linking processes of access, transformation and substitution across the different assets. These processes are affected by the mediating effect of social relations, institutions and prevalent culture, impacting on the ability of households to access and transform an asset (Figure 2.1). These mediating factors, along with the levels of uncertainty and change, affect the responses that people have to shocks and to stressors, with their responses having an impact on the asset base which subsequently affects adaptive capacity (Pasquini et al., 2015). As each context will have each own unique set of mediating factors, there is a diverse range of possible responses. Different assets have different values placed upon them by different communities, as dictated by their current livelihoods (Adger et al., 2013).

It is for this reason self-assessment or bottom-up approaches were utilised in this research, as they allowed for local interpretation of assets, coupled with their mediating factors (Berkhout et al., 2014). Although top-down approaches can often cover greater

geographical extents within a short time period, and are able to give a general idea of levels of adaptive capacity, it is often challenging to decipher to whom the results apply (Yuen et al., 2013). Furthermore, top-down approaches are not able to shed light upon the underlying barriers and constraints to adaptive responses, as these are usually context-specific, and thus require a localised understanding (Jacobs et al., 2015). As no specific information that relates to local needs is often generated, top-down approaches usually fail to mobilise capacity building action (Grootaert & Bastelaer, 2001). Thus, bottom-up approaches are used for this purpose, allowing for the local construction of data necessary for building adaptive capacity. The SLF is a framework that allows for the combined strengths of both approaches to be used to generate indices of vulnerability and adaptive capacity that can be potentially applicable to a greater geographical extent (Jacobs et al. 2015).

2.5.3. The Local Adaptive Capacity (LAC) framework

A useful framework in understanding the internal and external factors that affect adaptive capacity is the Local Adaptive Capacity framework (LAC) developed by the Overseas Development Institute (ODI) for the Africa Climate Change Resilience Alliance (ACCRA) programme in 2010 (Wojcik & Hogarth, 2016). The framework is useful to understand how development or social protection (e.g. grants in this study) contributes to adaptive capacity. It takes into account that a framework that looks only at the capacity of a local community to deal with exclusively climate change is impractical, as a community's ability to respond to climate change depends to some extent to the underlying drivers of poverty and social vulnerability (ODI, 2010). Thus, this framework

analyses adaptive capacity to shocks and stressors within the context of wider development processes and interventions. Unlike asset-based frameworks such as the Sustainable Livelihoods Framework, the LAC is able to facilitate a better analysis of the dynamic processes central to adaptive capacity, taking into consideration power relations that may determine adaptive capacity at the local scale (Anon, 2017). The LAC therefore identifies five characteristics that are conducive to adaptive capacity, namely asset base, institutions and entitlements, knowledge and information, innovation, as well as flexible forward-looking decision making (Table 2.1). It is noteworthy that the framework does not describe an adaptive system, as this can be context-specific, varying in its nature in different communities. For example, what can be understood as fostering innovation in one cultural context can be different from another (Jones et al., 2010).

Table 2.1 LAC's five characteristics and features (ODI, 2010)

Characteristic	Features that reflect a high adaptive capacity
Asset base	Availability of key assets that allow response to evolving circumstances
Institutions and entitlements	Existence of an appropriate and evolving institutional environment that allows fair access and entitlement to key assets and capitals

Knowledge and information	Possession of the ability to collect, analyse and disseminate knowledge and information in support of adaption activities
Innovation	The existence or creation of an enabling environment to foster innovation, experimentation and the ability to explore niche solutions in order to take advantage of new opportunities
Flexible forward-looking decision-making and governance	The ability to anticipate, incorporate and respond to changes with regards to its governance structures and future planning

2.5.4. The Livelisystems framework

The relationship between vulnerability and assets can be understood using the Livelisystems framework of Dorward & Kent (2012). A livelcosystem can be defined as the multiple interactions of resources or asset functions that are used along with the activities of open, structured and actively self-regulating systems to maintain and/or increase their negative entropy, with means to move around information for the purposes of replication or reproduction (Dorward & Kent, 2012). The livelcosystem framework builds on previous work by Chambers & Conway (1992), Knudsen (2010) and Kent & Dorward (2012). This study focused on the asset functions, asset changes, assets and attributes, these changes being produced by human agency, and more specifically, individuals' choices with regards to how assets are used. The study investigated the flexible forward-looking decision-making, particularly in response to shocks and stressors, so as to understand adaptive capacity linking with the LAC framework.

Individual's choices and actions with regards to asset uses can define four livelihood outcomes, namely hanging in or maintaining the status quo, stepping up or improving livelihood outcomes, stepping out which entails adopting a new livelihood with different activities, assets and asset functions, and falling down and out, which is falling below the status quo and devolving into a livelihood that produces less outcomes, and being unable to survive (Vedeld et al., 2007). Asset functions are categorised as regulating, provisioning, supporting and cultural, and further classified into categories of production, consumption, accumulation, buffering, insurance, protecting and social integration (Shackleton, 2014). These functions are performed by the different types of (asset) capitals, namely financial, physical, social, human and natural (Chambers & Conway, 1992). Asset attributes are productivity, utility, security, holding costs, life, depreciation, convertibility, complementarity, ownership, divisibility and dispersion (Dorward & Kent, 2012). The attributes of any asset are determined by the nature of the asset itself, implying, for example, that some assets depreciate faster than others, such as different makes of cars. Assets will have different uses or services that they provide (ibid). This implies that the core characteristics, composition and structure of assets and attributes can be affected by endogenous factors. These factors stem from mutations, innovations as well as recombination's; all product of individuals' agency (Dorward, 2014). Thus, the categorisation of assets as material, informational or relational applies in that it categorises assets and attributes firstly as they are composed and secondly as how individuals choose to use them (Dorward, 2014).

The changes to assets and their attributes are also influenced by changes in livelihood outcomes. For example, the loss of assets and livelihood outcomes can happen when assets are directly consumed or if they decay or depreciate at a pace that is greater than how they are replaced or accumulated, for example, by erosive coping responses (Jacobs et al., 2015). Alternatively, assets can be accumulated through activities such as income generation or through investments; a product of human agency and capabilities (Figure 2.2). Learning from the processes that result in the changes in asset and attribute gain or loss, and passing on this information of adaptive solutions within a society in the form of informational and relational assets and attributes, can potentially enhance adaptive capacity into future generations (Dorward et al., 2009).

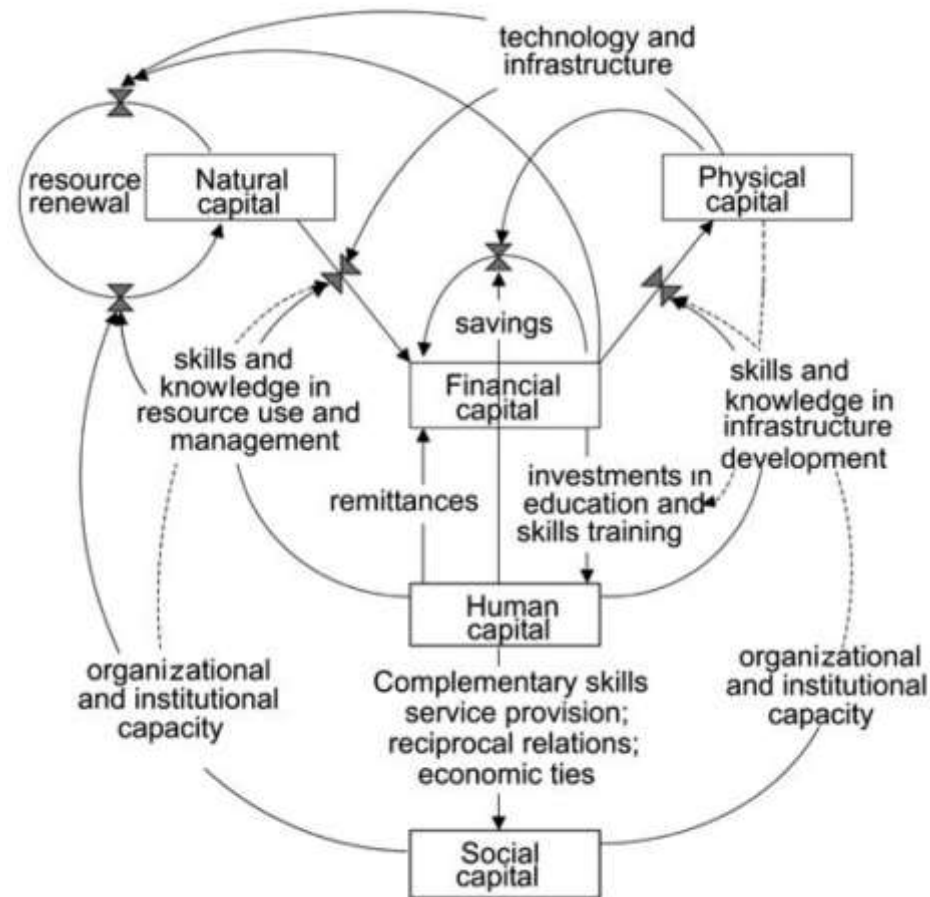


Figure 2.2 Relationship between assets (referred to in diagram as capital), capabilities and agency (adapted from Jacobs et al., 2015)

The livelihoods framework is applicable for assessing effects of changes in assets that are important in sustaining people's livelihoods, which result from individual agency and choices. It does so by making the critical links between the nature of an asset and all the various scenarios within which it can be used (determined inter alia by agency and choices) affecting the state of the asset, whether it be increasing and/or improving, or decreasing and/or depreciating in quantity and state and/or condition (Figure 2.2; Dorward et al., 2009). Choices that affect assets, for example, their availability or value, lead to alterations in (responsive) livelihood strategies and ultimately lead to changes in

livelihood outcomes (Dorward et al., 2005). The framework also links mediating factors such as the wider socio-economic and political sphere and the natural environment, which constitute external perturbations which act as barriers and enablers to adaptive action (Spires et al., 2014). This process involves multiple drivers and feedbacks or responses which include human adaptation. The research objectives and key questions of this research were therefore placed within this framework, particularly to identify the key changes in assets that affect the livelihood outcomes of households, and thus, the adaptive capacity of the households, as well as to point out the specific threats to these, with the anticipation of establishing the critical interventions whether they be financial, behavioural, institutional or governance and policy related, to promote adaptive capacity and action in the communities.

2.6. Agency, capabilities and adaptive capacity

The two aforementioned frameworks (the Livelihoods framework and the SLF) link assets to adaptive capacity through making critical connections between the attributes and functions of assets, to human capability and agency (Figure 2.1). Agency is defined as the ability that people have in order to play a (productive) role in life, determined by their level of exertion, and their capacity, which is the sum of their skills and knowledge (Sen, 1983, 1997). Capabilities on the other hand are more of a reflection of an individual's value system, which in turn influence where an individual directs his/her efforts and invests his/her assets (Shackleton et al., 2015). Thus, people can produce the above livelihood outcomes by mobilising their assets (Section 2.6.2) with their agency and capabilities.

2.6.1. Defining capabilities

Capabilities are defined as the choices that an individual possesses to produce outcomes that they value and have reason to value (Sen, 2001). This definition emphasises the importance of both opportunity and ability in achieving these desired outcomes and, thus, possesses an inherent functional nature. Capabilities have their grounding within the field of economics (Clark, 2005). The capabilities approach, however, deviates from mainstream understanding of wellbeing in economics, which predominantly focuses on wellbeing as it is reflected in stocks (of assets/capitals) and flows (reflected mostly by income), and introduces the idea of welfare (Bisiaux, 2013). Amartya Sen's initial argument of assessing capabilities was, therefore, composed of five principles which, firstly, were concerned with the distribution of opportunities within society and secondly, the importance of real freedoms in assessing the life advantages that individuals may have over others (ibid). As such, capabilities have a strong weighting upon this research, which considers institutions in understanding adaptive capacity. This study focuses on issues affecting freedom of choice, and considers inter-household heterogeneity, as well as the multi-dimensional nature of welfare in rural South Africa. Also important to this research is the functionality of these capabilities, known as 'substantive freedoms', encompassing the ability to participate in economic and/or political activities (Michel & Randriamanampisoa, 2017). The third component in assessing capabilities, thus, has to do with the individual differences in the ability to transform resources into valuable activities (Sen, 2001). This has great bearing upon linking assets to capabilities and agency, which ultimately affects adaptive capacity, as

simply possessing many assets does not always necessitate high adaptive capacity, as also seen in the Livelihoods framework.

Another understanding of substantive freedoms as functional capabilities, has to do with values and the subjective process that regards the construction of meaning and self-fulfilment, which also affects motivation; a key component of human agency. This is opposed to freedoms being viewed solely as utility or access to resources. Thus, this assessment also includes the diverse nature of activities that conceive personal happiness, and also considers the balance of materialistic and non-materialistic factors that contribute to human welfare (Clarke, 2005). Individuals can therefore be deprived of functional capabilities, which affect their agency, due to a variety of reasons that include poor education, lack of information, institutional and governing oppression, and a lack of assets (Green, 2012). These are therefore considered in depth in this study, and the links to adaptive capacity are established.

2.6.2. Defining agency

According to Bandura (2001), agency is the endowments, belief systems, self-regulatory capabilities and distributed structures and functions, through which personal influence is exercised. It is agency that enables people to play an active role in their lives, which entails self-development, adaptation and self-renewal with changing times. Agency involves individuals actively engaging their sensory, motor, and cerebral systems to accomplish those tasks and goals that give them meaning, direction and satisfying lives (Marsh et al., 2008). Sen also adds that agency is embedded in the actions of

“someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well” (Sen, 1999:18). Agency is a critical component in sustainable livelihoods, and in reducing vulnerability to climate change by influencing adaptive capacity of both personal and collective actors. Armitage (2005) has suggested that adaptive capacity depends on the characteristics of individuals, institutions and organizations that foster learning in the context of change and uncertainty. These characteristics can be understood as key variables for monitoring adaptive capacity, and include; the willingness to learn from mistakes, the willingness to engage in collaborative decision making, and the extent to which institutional diversity and redundancy is encouraged or accepted. Each of these characteristics constitute human agency. Lived experiences or livelihoods occur in a socially-mediated world (Sen, 2001; Kuus, 2019). Socially-mediated environments are governed by a bi-directionality of influence between social structure and personal agency (Bandura, 2001). Understanding the characteristics of individual agency, and how this affects and is affected by institutions and organisations, provides a better understanding of adaptive capacity.

Agency itself is however not apart from assets or capitals, which in turn affect adaptive capacity. Agency is a producer, and a product of, the capitals that individuals utilise in conducting their day-to-day lives, namely financial, human, social, natural and physical assets or capitals (Ellis, 2000). It is the combination of agency (as influenced by capabilities) and these assets or capitals that either enhances or constrains adaptive

capacity, which is especially important given the stressors and shocks to which rural communities are subjected as a consequence of climate change. Agency has four subcomponents namely intentionality, forethought, self-reactiveness and self-reflectiveness.

2.6.3. Subcomponents of agency

2.6.3.1. Intentionality and forethoughtfulness

Intentionality entails the active choices people make to act or react in a specific manner to specific stimuli (Bandura, 2006), directly linking to the decision making feature of adaptive capacity in the LAC framework (Table 2.1). It represents a future course of action to be performed, which, according to the LAC framework, is also necessary to accomplish forward-looking decision making. Thus, intentionality is premised upon plans for future action. It is however impossible to plan every specific detail for future action, hence, initial intentions must be adjusted, revised, refined or reconsidered as new information surfaces in acting out an intention, which is referred to as flexibility in the LAC framework (ibid). However, complications occur where intentions are acted amidst other participating agents. This is often the case in community projects that can affect adaptive capacity. Thus, projects are often challenged in collaborative activities surrounded by diverse self-interests which must be moulded for the sake of achieving common goals and intentions collectively pursued in unison (Bandura, 2002). This subcomponent of agency can have bearing upon the development of adaptive capacity for communities and individuals in collective projects.

Forethoughtfulness has the ability to motivate and guide actions in anticipation for future events (Bandura, 2001). It provides direction, coherence and meaning to one's life when values are put into consideration (Bandura, 1999). Hence, the ability to bring anticipated outcomes to bear on current activities promotes foresightful behaviour. This subsequently empowers people to transcend their current circumstances or environment, empowering them to shape and regulate the present to fit a desired future (Bandura, 2006).

2.6.3.2. Goals and self-reflexivity

Goals are rooted in a value system (a component of personal identity) (Bandura, 2001). The characteristics of goals themselves, namely their specificity, level of challenge and temporal proximity, often have a bearing upon motivating action. Too general a goal, or too challenging a goal, or too far off into the future a goal can challenge motivation (Latham, 2012). On the other hand, goals embodying self-engaging properties serve as powerful motivators of action (Bandura, 1999).

Self-reflexivity is the final component of what constitutes human agency. Here, people act as self-examiners of their own functioning (Bandura, 2001). This meta-cognitive capability allows people to reflectively and self-consciously evaluate their motives, values and the meaning of their life pursuits (ibid). It involves people judging the correctness of their predictive and operative thinking against the outcomes of their actions, the effects that other people's actions result in, the beliefs of others, deductions from established knowledge and subsequent consequences (Alkire, 2005). This

component of human agency is linked to the learning feature of adaptive capacity, to reduce susceptibility to previously experiences of shocks and stressors. Individuals should therefore expand their self-regulative capabilities so as to avoid social traps which lead to detrimental livelihood outcomes, and to have the ability to extricate themselves from such predicaments should they become enmeshed in them, also known as adaptive capacity.

2.7. Factors affecting agency

Agency is affected by certain factors that render it either effective or non-effective in acting and can thus impact upon adaptive capacity. These factors are self-efficacy, fortuity or chance and social structures and the environment.

2.7.1. Self-efficacy

Self-efficacy refers to the belief in one's ability to exercise some measure of control over one's own functioning and over environmental beliefs (Luszczynska et al., 2005). This belief forms the foundation of all human agency. Without this belief in oneself of having the ability to produce desired results and deter undesired ones, people would otherwise not be motivated to act or to persevere in the face of difficulties (Case, 2015). Often, in shifted power dynamics such as those that exist in group dynamics, this belief is tested.

Efficacy beliefs play a pivotal role in the self-regulation of motivation through goal challenges and outcome expectations (Latham, 2012). For example, a strong sense of coping efficacy reduces vulnerability to stress (Bandura, 2002). Thus, self-efficacy

beliefs shape the courses lives take by influencing the types of activities and environments people chose to enter, affecting the direction of personal development significantly. This is a consequence of social influences operating in certain environments (e.g. societal groups) which perpetually promote certain competencies, values and interests even beyond the decisional determinant having established its inducting effect on agential action (Bandura, 2006). What this means, for example, is if the ability to drive is already present within women in certain societies, which would mean that women are able to drive; if the society does not encourage women to be drivers, then very few women would act upon this ability, with most rather choosing to be driven instead. Thus, the outcome of one's life can be influenced by one's choice and shaping of their environment, amidst external social influences.

Self-efficacy in recent times has been affected by the rapid pace of informational, social and technological advancements (Bandura, 2001; Chapter 6). A good example is education; whereby in the past, one was limited to the choice and school environment to determine one's knowledge abilities, but now, as a result of the internet, one has access to vast educational resources. To this effect, good self-regulators expand their knowledge and cognitive competencies whilst poor ones fall behind (Schunk, 1991). This has direct implications for adaptive capacity, as access to the right type of knowledge can significantly increase adaptive capacity e.g. knowledge of a diverse range of farming methods to reduce water loss and knowledge of markets. This ability is therefore critical to the adaptation narrative.

2.7.2. Fortuity or chance

Agents must also be capable of managing fortuity, or chance, which in the climate change narrative relates to uncertainty into the future (Bandura, 2006). Though an agent may find himself in the midst of a particular set of unforeseen circumstances, it does not mean that effects of fortuity are uncontrollable. An agent can increase the probability of chance by being inquisitive and adventurous, traveling and exploring new activities (Bandura, 2001). People can also cultivate their interests and enable their self-belief and competencies, as only the prepared mind is favoured by chance. Thus, fortuitous factors require that agents focus on building personal resources that enable individuals to exploit chances, e.g. building education and being innovative. Relevant to the narrative of adaptive capacity, agents can take up insurance products to guard against unprecedented shock for example.

2.7.3. Social structures and the environment

To a larger extent, social structures are characterized by authorized structures of rules, social practices and sanctions designed to regulate human affairs (Green, 2012). These social structures are often executed by human beings holding these authorized positions (ibid). As such, personal variation in the interpretation, enforcement, adoption, circumvention and active option to the rule structures of social system can result in conflict. They can also result in winners and losers. Three environmental structures are acknowledged within social cognitive theory as influencing the scope and focus of personal agency. These are the imposed, selected and constructed environments (Bandura, 1999). Economic conditions, socioeconomic status and educational and

family structures affect behaviour by impacting upon people's aspirations, sense of efficacy, personal standards, affective states etc., thereby affecting the development of adaptive capacity (e.g. Carr & Sequeira, 2007). Poverty is one factor that seriously impinges upon everyday life in a very proximal manner and can be constructed, but it is often imposed (Green, 2012). Agents can however act generatively and proactively to shape the nature of their social systems. Thus, in many agentic transactions, people are producers and products of social systems (Lehman et al., 2004). What this implies, is, for example, that people can create a set of values in a work place, such as a code of conduct (which is a type of value system), and yet be subjected to these same set of values at a different point in time, for example, in a disciplinary hearing. Further, social bonds and communal commitments that lack marketability are especially vulnerable to erosion by global markets unrestricted by social obligation (Sen, 2001). This is increasingly the case in rural contexts which are left behind by advances in communication, information and transport technologies, especially within a globalized context. As such, social structures and the environment can affect adaptive capacity.

2.7.4. Modes of human agency

There are three different modes of human agency, namely personal, proxy and collective. In many spheres of functioning, however, people do not have direct control over the social conditions and institutional practices that affect their day to day lives (Bandura, 2002). Because people do not possess all the necessary resources to master every realm of life, successful functioning thus requires a cocktail of reliance on proxy agency and collective agency. Proxy agency relies heavily on perceived social efficacy

for enlisting the mediative efforts of others (Bandura, 2001). Often, to avoid the responsibility of continual self-development, people opt for proxy agency to avoid responsibilities, stressors and risks, which can at times be detrimental to developing individual adaptive capacity (ibid). People also use proxy agency when they can exert direct influence, but they themselves have not developed the means to do so, or they feel others can do better, which in some collective settings, can enhance adaptive capacity (Shapiro, 2005). People's shared belief in their collective power to produce desired results is a key ingredient of collective agency (Bandura, 2001). Group achievements are both the result of shared intentions, knowledge and skills of the members; as well as the interactive, coordinated and synergistic dynamics of their transactions. Thus, collective efficacy is emergent in groups (ibid). However, this efficacy is subject to the beliefs and the actions of each individual making up that group (Sen, 2001). A group can only function if all individuals are acting on a common belief. Furthermore, if the belief in the power of self (self-efficacy) to produce results is put in the service of relational goals and beneficial social purposes, it fosters communal life as opposed to selfish endeavours and self-indulgency (Alkire, 2005). Culture can also impact upon collective agency, and sometimes present challenges to common goal setting, as it can at times be heterogeneous amongst individuals within families, friends and colleagues (Lehman et al, 2004). Furthermore, culture is dynamic (ibid). Cultural embeddedness shapes the manner in which efficacy beliefs are developed, how they are used, as well as the socio-structural arrangements within which they are optimally used (Bandura, 2001). Thus, in collective efforts, individuals coming from collectivist cultures work most productively (Goncalo & Staw, 2006). These common beliefs then

ultimately function similarly to personal efficacy beliefs. As people also depend upon each other in a group, high levels of personal efficacy are necessary for a group to perform roles and coordinated activities (ibid). Overall, the higher the perception of collective efficacy; the higher the group's aspirations, motivational investment in activities and staying power in the face of challenges and setbacks. This also results in higher resilience to stressors.

The factors that affect agency, as well as the modes of agency were investigated in the series of projects within which the Fairbairn community has been involved. How agency was used, and the various barriers and enablers to agency were assessed, focusing on how agency was impacting upon adaptive capacity. How and if people have made relevant judgements about their agency and capabilities; whether or not they anticipate the probable effects of different events and courses of action; and size up socio-structural opportunities and constraints and regulate their behaviour accordingly were also investigated.

2.8. Implications of barriers and enablers to adaptive responses

Adaptive capacity is mostly intangible and often relies on the perceptions of barriers to action by the people in each localised setting (Jacobs, 2015). The potentially great magnitude for change, coupled with great uncertainty in the future creates great challenges to adaptation (Jacobs et al., 2015). Uncertainty affects the ability of individuals and institutions to make decisions that promote adaptation, and this can be one form of a barrier to adaptive responses. Spires et al. (2014) grouped barriers into

three main groups, namely, social, resource and physical, which overlap and interact (Figure 2.3). Resource barriers refer to assets whether they are financial or human, technical or informational whose unavailability hinder adaptive action (Wise et al., 2014). Social and resource barriers are linked by communication mediums, being influenced by world and personal viewpoints as well as cultures (Spires et al., 2014). Physical barriers refer to natural or man-made infrastructure. Much attention is given particularly to social barriers, as they affect the transition of adaptive capacity into tangible adaptive action. Social barriers have been disaggregated into cognitive, psychological, normative, institutional, organizational, political, cultural and behavioural barriers (Spires et al., 2014).

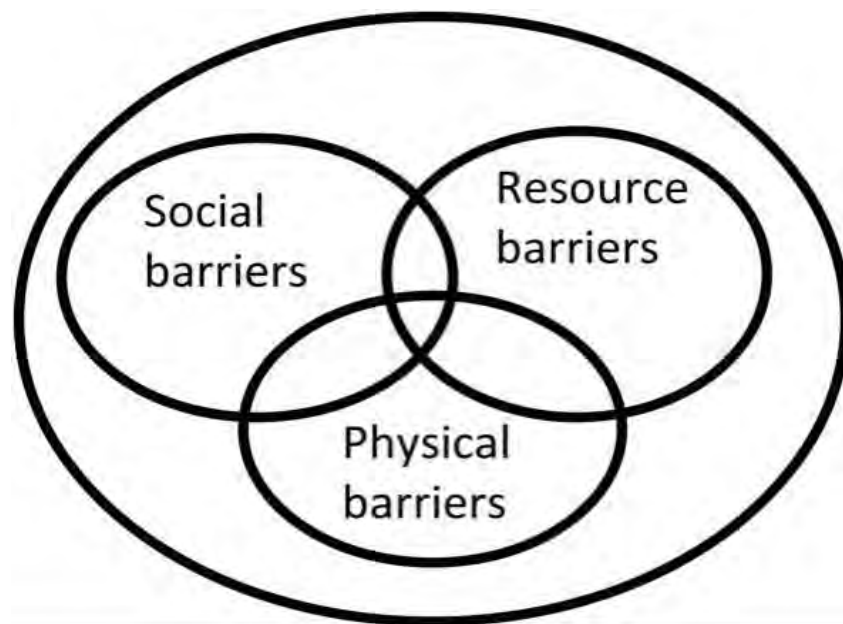


Figure 2.3 Typology of barriers to adaptation (adapted from Spires et al., 2014)

Adaptive capacity incorporates cognitive aspects, where an awareness to change is apparent in the ability of individuals or groups to adopt new strategies suited to

developing and mitigating the effects of unanticipated shocks and stressors. Smith et al. (2011) identify barriers to adaptation as including psychological and social barriers, in addition to cognitive responses to uncertainty. In many instances, this can result in the absence of action (e.g. Birkmann et al., 2013; Ribot, 2013). It can also result in maladaptive responses, which stem from feelings of being overwhelmed for those that do chose to act, whilst others are trapped in denial. Denial is characterised by active and casual denial, where the former challenges scientific evidence directly, whilst the latter focuses on scientific uncertainties and errors to discredit the problem (Smith et al., 2011). Maladaptive coping strategies include making the threat seem smaller than it actually is by altering its scale or time frame, or by creating diversions and distractions such as doing very little so as to feel better, indifference or devolving into wishful thinking (Kemp & Nielsen, 2015). Uncertainty is a great barrier, not only to the individual, but also to institutions. Although probabilistic scenario mapping helps with bringing a problem down to scope, people tend to base future events on past experiences, thus limiting the effectiveness of the proposed solution (Shackleton et al., 2015).

Perceptions are important in understanding barriers to adaptation to climate risk and other stressors. The historical context of South Africa specifically, can be speculated to affect agency of the poor by limiting functional capabilities, and is therefore a cognitive barrier. One way in which this was done was by compromising the education of black populations during apartheid in South Africa, and the aftermath of this is evident in post-apartheid South Africa within vulnerable poor populations, most of whom are black

African (University of Oslo, 2013). Low education limits the knowledge that people have to negotiate certain limitations, leaving them with a perception of having no options when faced with problems. Grothmann & Patt (2005) suggest that perceived barriers to adaptation do in fact limit adaptive actions, even in instances where resources and capacities for adaptation are available. Often, barriers to adaptation are linked to assets. People themselves view the lack of assets as a barrier to adaptation e.g., I do not have money, I have no access to credit, thus there is a close link between barriers, assets and adaptation, with a lack of assets, or the perception of lack thereof, negatively affecting adaptive capacity, by impacting forward looking decision making towards action and reducing the likelihood of individuals taking advantage of new opportunities to improve livelihoods. A qualitative analysis of existing barriers and enablers, or perceptions thereof that impact upon the levels of adaptive capacity, was therefore conducted using semi-structured interviews with few households sub-sampled within the questionnaire participants.

Barriers and enablers are frequently interchangeable in that the absence or misuse of an enabling factor, such as funding, can itself become a barrier to adaptive responses. Enabling factors are however often external factors such as government funding, knowledge sharing, favourable political and economic climates, availability of knowledge and skills, developed infrastructure (natural and man-made) and technologies and power of citizenship (Jacobs et al. 2015). Internal enabling factors are frequently embedded in social capital encompassing beliefs and perceptions, often expressed in people's agency (Grootaert & Van Bastelaer, 2001). There are, however, also

cognitively-based enabling factors such as possessing the will power to control feelings and refraining from expressing negative emotions so that they do not hinder action, and to conduct problem-solving through knowledge sharing and education, and by also recalibrating value systems such that they become less materialistic and more sociable (Smith et al., 2011). These factors are all interlinked, and thus the ability to combine and mobilise them is a constituent of adaptive capacity.

Despite cognitive barriers of individuals often impacting organisations and institutions, however, their ability to act is largely more effective than that of individuals. Structural aspects of institutions can, however, also present barriers in the process of adaptation, and resolution is confined to high level decision makers within the institutions such as governments (Green, 2012). Governments are typically responsible for long term and large-scale decisions and actions, such as infrastructural development that facilitates general national development. Thus, their reluctance to action in infrastructure and urban planning can be a significant barrier to adaptation initiatives (Shackleton et al., 2015; Lata & Nunn, 2012). National policies which are ill-matched to local priorities and resources negatively impact local government adaptations action (Patt & Schroter, 2008).

2.9. Propositions underlying the study

This study is based upon four propositions listed below and these were shaped by the review of literature as well as observations of the South African rural context. They were instrumental in guiding the approach, design and methods used in this study and are

the basis for the main discussion. Specifically, proposition one was tested in chapter four, which is the first of the empirical chapters in this thesis. Household assets were profiled, and means of earning income were investigated so as to find out which was the primary source of income flow in the households that were part of the study. Proposition two was investigated in Chapter 5 of the thesis. Households were asked which shocks and stressors they were dealing with, and which strategies they were using in response to these. These strategies were then related to assets. It was analysed which asset was most drawn upon, and in what way, linking this to how this affected adaptive capacity. Chapter 6 investigated proposition three, looking into collective projects that were implemented in the community, focusing on the existence of an appropriate and dynamic institutional environment that allowed fair access to assets, was innovative, and with governance structures that were forward-looking and flexible in their approach to decision making. The propositions are related to the conceptualisation of this study, and provide guidance to the investigation in this study.

1. Many rural households possess few assets and have low means to accumulate assets. They are therefore increasingly dependent upon state welfare in the form of grants as their primary source of income flow, hence reducing adaptive capacity.
2. Rural households are experiencing multiple shocks and stressors simultaneously. Social capital is an important asset capital in responding to these, but an over reliance on this capital could negatively affect future adaptive capacity.

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3. The agency and capabilities of rural communities are often challenged in collective response initiatives such as community projects. This can negatively affect adaptive capacity, as communities find it difficult to take advantage of new opportunities that are concurrent to the adaptation process.
 4. There exist clear differences across different households in a single community in levels of vulnerability and adaptive capacity. This adaptive capacity is a product of assets, agency and capabilities which vary across heterogeneous household compositions.

CHAPTER THREE: METHODS



Fairbairn poultry cooperative members being interviewed during one of the small focus group meetings [Photo: Tatenda Dalu]

3.1. Chapter overview

This chapter presents the overarching methods utilised in this study. It firstly presents the ethics considered whilst conducting this research. Following this, a description of the study area is provided. A brief discussion on the methodological approach is then presented, after which descriptions of the data sampling, collection and analysis are presented.

3.2. Ethical considerations

The researcher was obligated to adhere to ethical guidelines whilst conducting this study. As such, ethical clearance was sought for and given prior to the commencement of this research, from the ethical committee of the Department of Environmental Science and Rhodes University. As stipulated by the requirements of ethics, all participants were informed of their rights whilst participating in this research. All participation in this research was entirely voluntary, and no individual was coerced into participating. Where individuals agreed to participate in the research, written or verbal consent was given to the researcher as applicable. Participants were fully informed of the nature and purpose of the research, and were informed of their right to withdraw at any point during the interviews or surveys.

The researcher respected the right to confidentiality of the participants, and therefore applied anonymity to each participant. The identities of the participants were kept secret, and the information collected in this research will not be shared to any third parties outside of this research without the consent of the participants. Data will be

stored for up to five years in a secure locked cabin, after which it will be destroyed completely by the researcher. The researcher also had the responsibility to keep her participants, and herself, safe. This entailed that all interviews were held during daytime hours. As much as possible, interviews were conducted in open or public areas. According to the safety procedures of the Department of Environmental Science, Rhodes University, no student can undertake research alone. To this effect, the researcher was accompanied to the study area by one male known to and trusted by the researcher, and also solicited the assistance of a community member whilst in the study areas. The researcher kept her identification documentation on her at all times, was medically insured and also travelled with a first aid kit. Finally, the right to feedback information of the participants was respected by the researcher, by reporting back on the research via the overall group project leaflets produced intermittently during the research. Feedback was also provided at the farewell Sandisa Imbewu Imbizo, held in October 2017, at the local community hall in Fairbairn village.

3.2.1 Researcher's reflections

The researcher of this project was a female, black African foreign national from Zimbabwe. As such, the researcher had language barriers in the research area, as she was not a Xhosa speaker. This meant that she had to rely on her assistant to collect her data. This is not unique, as many researchers find themselves in this position. To overcome this problem, the researcher used assistance from the village. This was done to instil rapport with the community that was being researched, as she herself was a foreigner. It was also to contribute towards the empowerment of the community by

providing experience and short-term income. The researcher was also aware of the risks associated with using assistants from the same community under study, which could include the assistants influencing responses. Thus, the researcher trained the assistants in asking questions, and also outlined the research ethics to which they needed to adhere during data collection. Much care and consideration was also taken in selecting the assistants. The researcher nominated to work with researchers with prior experience working with other researchers in the area, who were of a mature disposition, and had a matric qualification. Such standards helped in ensuring that the assistants understood the instructions, and also be respectful of research ethics. The researcher was also sensitive to the possibility of respondents not being able or being unwilling to divulge information relating to household income. Thus, it was at times necessary to depend on the mean figures. Questions were also rephrased, for example, it could be asked if the household received grants, for which values are known. Estimates according to market values were also used. This is further discussed in Chapter 4, Section 4.3.

3.3. Study area

3.3.1. Location

This study focused on three study villages in the former Transkei/ Ciskei area of the Eastern Cape province, namely Fairbairn, Herzog and Stonage. The settlements are within the jurisdiction of the Amatole District Municipality in the Nkonkobe Local Municipality in the Eastern Cape Province of South Africa. They are located within a 100 km radius from the urban centres of Fort Beaufort and Alice. The villages, located at the

foot of Amatole Mountains and Winterberg, are surrounded by small commercial citrus farms, which are the main agricultural and economic activity in the area. They are located along the Kat river, in its valley which extends for 80 km, with a catchment area of approximately 1 717 km². These villages are previously irrigated areas from this river (WRC, 2008). Geographic differentiation “apartheid system” effectively defined three kinds of spaces in South Africa, each with its own political, social and economic systems: the major urban areas; the commercial farming regions and the associated small towns; and the so-called Homelands. These study areas were selected, firstly, due to them falling between the commercial farming region and then the homelands, being in the former Transkei/ Ciskei region. This thus would allow for a better understanding of context, particularly as it related to markets and communication links, which are important in determining the long term health, education and opportunity of individuals (McBride & Quinones, 2019), Secondly, this study area was rich with background information, being an area that has been the subject of other previous researches. The area had a good relationship with Rhodes University, and this allowed for easier rapport with the researcher. It was also conveniently located <100 km away from Rhodes University, where the researcher was based.

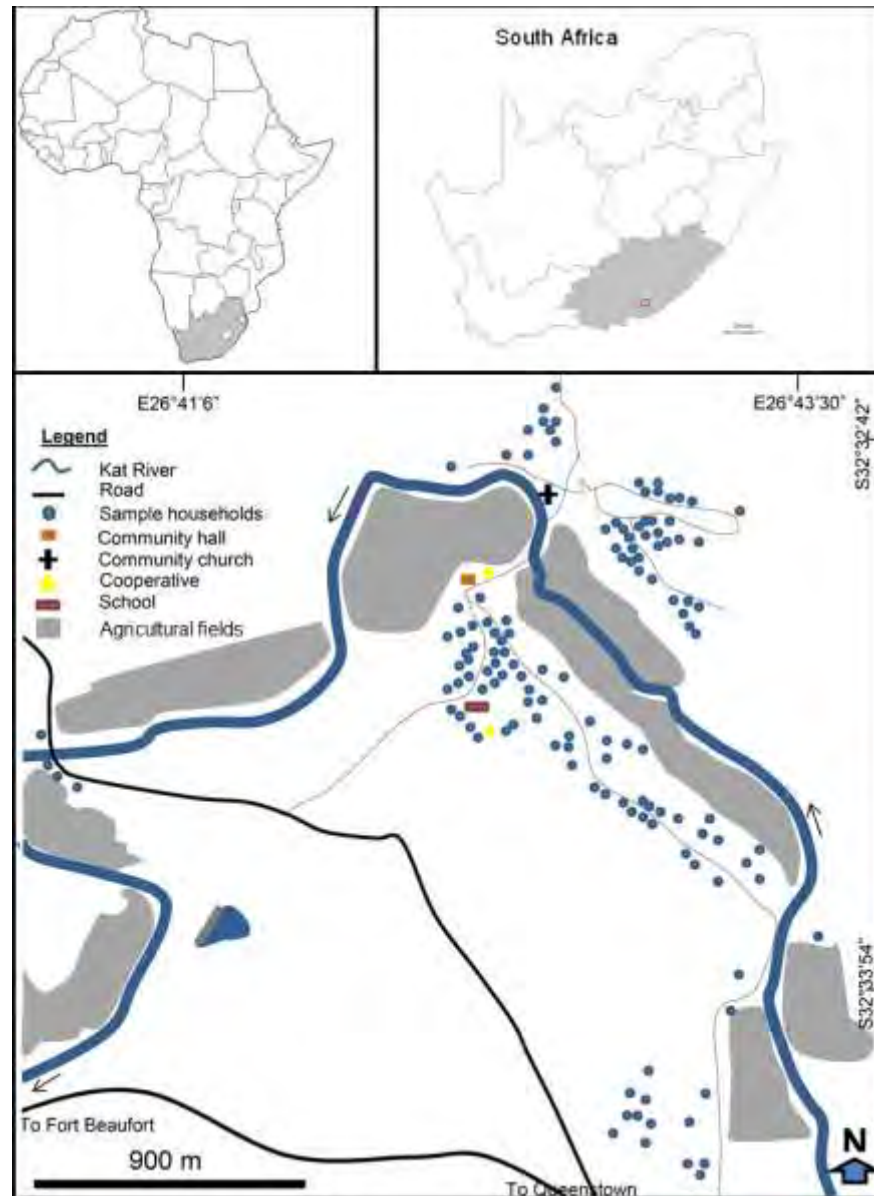


Figure 3.1 Location of the study area, Fairbairn, Herzog and Stonage Eastern Cape (South Africa)

3.3.2. *Bio-physical environment*

Settlements are within a semi-arid area, with a mean annual precipitation of 520 mm, and a mean annual temperature of 16 °C (Mucina & Rutherford, 2006; Falayi, 2017). The mean monthly maximum and minimum temperatures for the area are 38.6 °C and -

1.0 °C for January and July, respectively. Frost is common in the area, with 14-16 days per annum having temperatures below 0 °C (Climate Information Portal, 2016; Brooks, 2017). Rainfall is largely unreliable, with an average coefficient variation of 25-36 % (ibid). Climatic conditions are strongly influenced by topography (Falayi, 2017). The dominant geological feature in the area is the 'east-west trending Cape Belt'. Sedimentary rocks such as the Dwyka and Eccca groups are found in the area (ibid). The soils from this area are derived from the Mudstone and Arenite of the Adelaide Subgroup. Overall, the soil structure is deep and well structured (Brooks, 2017). The natural vegetation is the Albany Thicket Biome (characterised by semi-xeric conditions) but the location of Fairbairn is classified as an AT13 Eastern Cape Escarpment Thicket (Falayi, 2017). The vegetation type at the settlements is characterised by bushveld dominated by *Vachellia karoo*, corresponding with a succulent thicket in the south with a range of different species such as *Euphorbia* spp., *Diospyros dichrophylla* and *Oleo europea* (Shackleton, 2002). The mountain slopes, part of the Katberg, to the west of the village, are covered in grasslands (ibid).

3.3.3. Socio-economic context

The national Census in 2011 estimated that the population of Fairbairn, one of the dominant settlements in the Kat River valley, was approximately 362 households (Falayi, 2017). Fifty-five percent of households are male-headed (ibid). Education levels are generally low, with 9.7 % of people having completed matric, and no records of any tertiary educated adults (Statistics South Africa, 2012). There is a heavy reliance on

state grants, particularly the old age pension and child grants in Fairbairn village (see Chapter 4).

The former Ciskei area was an area that was characterised by perpetual contest over land resources between tribes and races. During the apartheid era, the black communities were forced into the less productive land and clustered in overpopulated homelands, whilst the whites were given the greater proportion of the productive land (Ndaba, 1998). Within these homelands, issues of tenure frequently translated into poor land management, which further degraded the landscape (ibid). Although some community members have attained private ownership of the land, the area largely remains communal and state-owned land (Chapter 4). In spite of these problems, however, the area has attracted some positive developments such as irrigation schemes and infrastructural developments.

The Nkonkobe local municipality was established in 2000, and has 60 % of its population residing in the rural areas, with the majority of the urban population living in Fort Beaufort and Alice. As at 2011, the population of the municipality was 127 115, with 94.5 % being Black Africans, characterised by a stark contrast of the developed west to the former homelands in the east of the area, which consist largely of under developed poor small towns and informal settlements (Statistics South Africa, 2012). Unemployment rate is 48.1 %, with approximately 27 % of households earning an average income of between ZAR9 601–19 600, and approximately 18 % having no formal source of income. Education is also relatively low in the municipality, with 17 %

of citizens aged 20 and above having matriculated (ibid). Infrastructure and basic services lack for most citizens in the province, with only 20.1 % of dwellings having piped water. There are 49.5 % female-headed households (Statistics South Africa, 2012).

3.3.4. Livelihood activities and food security

A mixture of livelihood activities, including natural resource collection and trade, small-scale agriculture and on- and off-farm wage employment, are evident in the settlements (Falayi, 2017). Nearby citrus farms remain productive on a commercial scale, providing some employment opportunities for the settlements. The communities here have in the recent past been involved in development projects such as the Hertzog Agricultural Co-operative (HACOP) and Masimanyane, which mostly harnessed the agricultural potential of the area (Falayi, 2017; see Chapter 6). In recent times, however, there has been a decline in field cultivation in the area, which appears to have been overtaken by the increased use of smaller home gardens (Brooks, 2017). This change has had implications upon food security in the settlements, and may be contributing to the higher reliance on social grants for many households.

3.4. Methods

3.4.1. Mixed methods approach

Vulnerability, which is reduced by adaptive capacity, is a constantly evolving phenomenon. Continuous fluctuations in both the biophysical and the social processes that influence the broader vulnerability context, as well as the ability to cope, means that

the measurement of vulnerability must reflect these processes, outcomes and multiple complex linkages. The use of exclusively quantitative metrics in an attempt to unpack the complex set of parameters reduces the impact and complexity thereof (Alwang et al., 2001). There therefore exists a challenge of developing metrics that can incorporate human well-being, whilst acknowledging the relative and perceptual nature of vulnerability. Quantitative methods and qualitative assessments of vulnerability in places and contexts were employed in this study to incorporate narratives (Creswell, 2013).

This study employed a mixed methods approach. Quantitative methods were used to assess and examine household assets and vulnerability contexts, whilst qualitative techniques were used to investigate the experiences and perceptions of institutions and entitlements, and how these affected adaptive capacity and responses. Mixed methods, that were used in this study validated and triangulated data (and this is discussed further). Mixed methods are used in research on mapping vulnerability, so as to derive more robust measures for both policy analysis and intervention. Spatial comparison is often used in mapping vulnerability. However, this comparative method has been criticised for its inability to capture the social differentiation of vulnerability, and the local conditions that affect adaptive capacity. This is especially problematic at country-level analysis, as it overlooks sub-national spatial differences. Using mixed methods, as this research has done, allows for the empirical identification of the specific variables that represent exposures, sensitivities and elements of adaptive capacity, being carried out in the community (Cutter et al., 2003). This allows for the experience and knowledge of

the community members to give character to the relevant conditions, community sensitivities, adaptive strategies, adaptive capacity and corresponding decision-making procedures, which this study aimed to investigate (Jacobs et al., 2015). Mixed methods research was used in this research to enhance the validity of methods and findings, and secondly, to gain a fuller illustration or better understanding of the phenomena under investigation, through relating complementary findings (Williams, 2011; validity is discussed further down this section).

Mixed methods research is “...*an approach to knowledge (theory and practice) that attempts to consider multiple viewpoints, perspectives, positions, and standpoints...*” (Johnson et al., 2007:114). Its origins are nested within the social and behavioural sciences, which found strengths in both quantitative and qualitative viewpoints and methods in addressing research problems. These strengths are now evident within work done in anthropology and fieldwork sociologists, plausibly attributed to its use of qualitative and quantitative methods that facilitate the collection of data about historical and contextual factors, mainly concerned with power (Creswell, 2013). They are, therefore, applicable in addressing the objectives of this research.

A mixed methods approach is one in which both qualitative and quantitative methods are used within one research project for either or both collection and analysis, with an emphasis on triangulation (Fielding, 2012). There is an ongoing debate on how mixed methods research is defined and conceptualised. It has been understood as a method that can use both quantitative and qualitative methods without altering their original

structures, but can also be changed and suited to a specific research question and budget, thereby becoming a modified form mixed methods (Creswell, 2011). This is how it has also been viewed in this research, being a modified form of mixed methods. Others prefer to view it and term it 'multi-method research', implying the use of several differing styles of research within a single project (ibid). Furthermore, these styles need not always be from both quantitative and qualitative methods, but could only be from either, for example, combining qualitative participant observation with qualitative in-depth interviews (Small, 2011). This is directly contested by those that are of the view that any combination of two or more methods is not mixed when it is informed of the same research tradition. It has also been put forward that mixed methods cannot refer to the use of different methods to investigate different questions in the same study, but rather, can only refer to different methods answering the same question (Migiro & Magangi, 2011). In this study, interviews and questionnaires are used to answer the similar questions in Chapters 4 in compiling an asset profile, which is important in understanding the asset base, being one of five characteristic features that reflect a high adaptive capacity (Chapter 2, Table 2.1).

Combining both qualitative and quantitative techniques in research design, data collection and analysis can ensure the sampling of a representative sample size, and was used in this research for this purpose. It can also assist in the effective selection of appropriate concepts and instruments in research design. Quantitative data allows for the assessment of generalizability of qualitative research, and also aids in the avoiding of bias towards high-status individuals (Wimsatt, 2012). Thus, in using mixed methods

research, this study seeks convergence and corroboration of results through triangulation, seeks elaboration and clarification through complementarity, and finally, aspires to develop new theory, through the exploration of, and expansion upon, contradictions, by using a large range of components of inquiry (Koc & Boz, 2014). Between-method triangulation is preferred over within-methods triangulation, as it does not share the limitations of being confined to one paradigm, and was used in this research (Hussein, 2015). Furthermore, bias resulting from using only one type of data or method is greatly reduced, resulting in better explanations of observed social phenomena (Gill et al., 2008). Richer data is created in triangulation, as it allows for the integration of theories thereby uncovering contradictions and facilitating creativity in data collection (Flick, 2011). Mixed methods that included a questionnaire, interviews and focus groups were used in this study.

Reliability and validity are important in evaluating research outcomes. Both internal and external validity are important when utilising mixed methods approaches, and are, therefore, important to this study. Internal validity is most applicable to qualitative research methods, being concerned with gaining a deeper understanding of phenomena, as opposed to its general applicability to a broader framework as is the case with quantitative data, for which external validity is more important (Creswell, 2013). Qualitative design in this study was associational, whereas the quantitative design aimed to be descriptive, as well as to examine relationships. The random sampling technique that was therefore used increased the generalizability of the quantitative data. Relationships within the data were statistically determined using

multiple regressions, thus inferences made in this study were statistically based for the quantitative data, and based on the participants' responses for the qualitative data. Construct validation of this research was ensured by conducting a thorough literature review of the topic at hand. The review was comprehensive, and evaluated for rigor and quality. A report of both this study and other related studies was provided, evaluating both current and past studies so as to inform the purpose and design of the studies. A thorough review of literature related to the measures used in the study was also included. The design, measurement, sampling and analysis in the study were examined for adequacy using the criterion under reliability and validity. Results of correlation matrix and regression analyses were used to evaluate appropriateness of inferences.

Two main methods were selected for the purposes of this research, namely household survey, and interviews with key informants. In addition, participatory self-assessment approaches were used to collect data so as to develop context-specific indices by means of interviews and focus groups (described in more detail in Chapter 6). Results were then aggregated so as to achieve greater geographical applicability. Data were collected over a five-month period between February and May 2016, with a pilot study having been conducted in November 2015. An initial community group meeting was conducted prior to any data collection, which established the social and cultural boundaries within which this research was to be conducted, as well as to familiarise community members with the purposes and proposed activities of the research.

3.4.1.1. Household survey and interviews

A standardized questionnaire consisting of fully structured and mostly closed-ended questions was administered to a total of 106 households (Appendix 1). The head of the household or their proxy was asked to participate in the survey. The proxy was at least 21 years of age, and was able to make decisions for the household in the absence of the head. Follow-on questions to those identified as key informants were asked of consenting participants. The questions were also drawn from a set of predetermined questions (Appendices 1 and 2).

3.4.2. Sampling

Household clusters were identified using static images from Google Earth, and printed at a scale of 1 cm to 50 m. A 2 cm × 2 cm transparent grid was layered onto the clusters, and all households within every second box were sampled. In total, 133 households out of an estimated 362 households were selected from the three settlement clusters of Fairbairn, although mostly concentrated in Fairburn (see Figure 3.1). Their coordinates were recorded in Excel, a numeric number was assigned to each, and the RAND() function was used to randomly select 40 households per settlement. Purposive sampling was then used to select key informants on the basis of knowledge and levels of participation and involvement with the phenomenon being investigated (see data chapters for further details).

3.4.3. Data collection

A household survey, capturing household demographic and income data, was administered to each of the households, to the household head. The household head is referring to the adult in the house who is primarily responsible for the welfare of the household; most likely the main bread winner, and one who makes the key decisions for the household such as those regarding where the household is located and family values. The survey was used to assess household composition and human capital, social capital, physical capital and services, natural and financial capital (see Chapter 4). The survey also assessed responses to shocks (see Chapter 5). It therefore covered topics of household membership and composition, education, asset ownership, production (agricultural or otherwise) and income. The researcher and assistants conducted the questionnaire at the respective homes of the participants. These questionnaires were only administered during daytime hours. Each questionnaire took approximately half an hour to complete. Interviews and focus groups were also used to provide a context to the survey data, as well as to corroborate the data. Interviews were used to provide a better understanding of asset use and acquisition, and were instrumental in better understanding the challenges of collective assets (see Chapter 4 and 6). Interviews were also used to understand responses to shocks and stressors, and unpacking social capital (Chapter 5). Focus groups were used to better understand collective adaptation efforts specifically the projects in which members of the community were involved (see Chapter 6). Both the interviews and the focus groups took a semi-structured nature, with the researcher and assistants facilitating discussions, and probing any interesting responses given by the respondents.

3.5. Data analysis

3.5.1. Assumptions and limitations

This research assumed that all selected participants would be willing to cooperate with the researcher, and that the information that was provided to the researcher was truthful, relevant and factual. The research assumed that the translations provided by assistants were true and accurate, with minimal error. The research also assumed that the sample sizes for each of the research methods was adequate.

With the exception of only two households, all selected participants were willing to participate in the study. This was likely due to the rapport established, firstly, by the long standing relationship of the community and the university, through various community engagement projects, and secondly, the permission granted by the community leaders for the research to be conducted, as well as the imbizo's conducted prior to starting the research, that provided a platform for the community to know the researcher and the project before it began. The researcher could only assume that participants did not participate due to a sense of obligation to the leadership, but were willing to participate, seeing value in their contribution to knowledge, and potentially, their livelihoods. Translations were presumed accurate, as the assistants had prior experience with other students from Rhodes University, and also had a matric certificate. Transcriptions from audio recordings of interviews and focus groups were done by experienced translators that were not from the community so as to minimise any inaccuracies that could arise from conflicts of interests. However, as the field assistants who collected the data were

in fact members of the community itself, perhaps some biases may have been unavoidable, in spite of the measures that had been implemented to guard against these.

The limitations in this research included the fact that the primary researcher was neither a Xhosa nor an Afrikaans speaker, and thus depended on the respective strengths of assistants and translators. The research could have been subjected to presumed knowledge, and thus a thorough review of literature was carried out prior to data collection to ensure that this was kept minimal. Interviews were semi-structured, guided by probing questions. The sample size of this research was limited by the willingness to participate of the selected participants. To ensure that the sample was adequate, a larger than necessary sample was initially selected to compensate for any drop-outs. Furthermore, tests for normality and homogeneity were conducted prior to the data being statistically analysed.

3.5.2. Statistical analysis

Descriptive statistics were used to show the demographic and economic profiles of the households by calculating means, modes and standard deviations using Excel. Statistica was used to conduct correlations between assets and responses, regressions to reveal the factors that affect adaptive capacity and chi-squares to reveal any differences in assets and responses between groups of households based on demographic profiles (StataCorp, 2011). Qualitative data were coded and organised into

existing and emerging themes as in Sachikonye et al. (2016) (see Chapter 6 for more detail).

CHAPTER FOUR: ASSET PROFILES, HOUSEHOLD COMPOSITIONS AND IMPLICATIONS FOR ADAPTIVE CAPACITY



Overview of Fairbairn households and some old farm equipment [Photo: Mwazvita TB Dalu]

4.1. Chapter overview

This chapter is the first of three empirical chapters. It focuses on addressing the first objective of the broader study. The chapter presents empirical findings on household asset profiles, and relates these to different household demographic profiles. Specifically, the chapter investigates the prevalence of asset poverty. It does so by grouping households' assets into either liquid or illiquid assets in an asset profile, and comparing this to the Lower Bound Poverty Line of South Africa in 2016, when the data was collected for this research. It then focuses on issues of use, access and control of collective assets, which were the physical and natural assets in the spatial study area. Discussions focusing on implications of these assets on adaptive capacity are presented with the results, after which conclusions and recommendations are drawn and given respectively.

4.2. Introduction

The South African government acknowledges the role that poverty plays in increasing livelihood vulnerability to multiple shocks and stressors. This vulnerability subsequently limits the ability of households coping with, and adapting to, unpredictable change (Shackleton, 2014). Consequently, the government has responded by introducing a slightly progressive tax system and highly progressive government spending which has halved the number of South Africans living in poverty (Nicolson, 2015). As a result of social grants, free basic services and taxes favouring the poor, the poverty rate dropped from 46.9 % in 2014, to 39 % in 2015 (ibid). As such, these developments in South Africa have yielded positive outcomes. On the other hand, they have also been

accompanied by a decline in diversified income streams, and possibly, overall income from paid work in many households. Perret et al. (2001) in Mathebula et al. (2017) confirmed that most households in Limpopo benefited primarily from child grants and pensions, with very few households benefiting from employment wages or farming. This phenomenon of decreasing overall income from paid employment and income diversity, and higher reliance on social transfers can thus not be ignored. It should be better understood in terms of how it is influencing the adaptive capacity of households.

Although many households may not receive any income from paid jobs, they still have access to finances through social grants (and to a lesser degree remittances and informal trading), which they convert to assets. These assets can either be liquid, or illiquid. For the purposes of this study, illiquid assets are defined as assets that cannot easily be sold or exchanged for cash without a substantial loss in value. A liquid asset is cash on hand or an asset that can be readily converted to cash. The primary measure of financial assets/capital is net worth, defined as the current value of all marketable or fungible assets (both liquid and illiquid assets) less the current value of debts (Wolff, 1998). The sum of all assets will henceforth be referred to as net worth. The provision of social grants has resulted in a decrease in poverty, not excluding asset poverty. Asset poverty refers to the extent to which households have a stock of assets which is sufficient to sustain a basic needs level of consumption during temporary hard times (Haveman & Wolff, 2005). These assets can be taken stock of using an asset profile. An asset profile reflects the possession of assets, including the degree of access to different productive household assets that are directly and/or indirectly related to income

generation and welfare (Wisner et al. 2004). In conceptualising asset poverty, households that do not have a 'safety-net cushion' composed of asset holdings, are seen as vulnerable, especially if alternative sources of income support are absent (Shackleton et al., 2007). Another definition of an asset poor household, is one whose access to wealth-type resources is insufficient to enable them to meet their basic needs for some limited period of time (Haveman & Wolff, 2005). For the purposes of this study, an assumption was made that a household's needs can be met by access to financial resources, such as income or real assets (e.g. owned homes and household furniture), that can be valued in monetary units. Measuring asset poverty versus relying solely on annual income as the indicator of resources, allows for the inclusion of many potential sources of utility or welfare, such as social inclusion, that may be linked to annual income flows (Haveman & Wolff, 2004).

Additionally, the empirical and conceptual foundations upon which adjustments in the poverty line, to account for different family sizes and structures rest are weak (ibid). It is, therefore, important to assess levels of asset poverty in households, as the net worth of the household enables it to live at a minimum level of consumption for a temporary period, should other sources of income e.g., earnings, be unavailable during this period (Brandolini et al., 2009). The net worth, depending on the constituent asset types and market dynamics and other variables (asset attributes, see Chapter 3), then acts as a safety-net for the household, which increase adaptive capacity, especially in the face of an acute absence of financial services (Adger et al., 2009). According to the LAC, one of the key frameworks guiding this study, the availability of key assets that allow a

household to respond to evolving circumstances are one of five features that reflect a high adaptive capacity. Financial asset capital is central to all other asset capital, as all other asset capitals are converted through agency initially into financial assets capital, before they are used to access other important features that are important for adaptive capacity such as investment in education, skills and knowledge, which also ultimately determines organisational and institutional capacity where fair access and entitlement to key asset capitals is facilitated. Financial asset capital also develops human and social asset capital, in which reciprocal relations and economic ties are developed, which foster collective action in projects that increase the asset base of communities and households (Chapter 2, Table 2.1, and Figure 2.1). Due to the important role that financial asset capital plays in linking all other asset capitals into the key features of high adaptive capacity (Chapter 2, Table 2.1, Figure 2.1), this chapter is justified to focus on this important asset capital in assessing adaptive capacity.

Previous studies have, however, established that certain household characteristics, such as gender of household head (Kochar, 1995; Feeny, 2014; Akampumuza & Matsuda, 2017), household size (Nyariki, 2016) and education levels (Sánchez-Martínez et al., 2016; Fang et al., 2016) affect household vulnerability. These characteristics are all constituents of what comprise capabilities, and are highly context-specific, but require our further understanding in how they influence especially asset profiles and prevalence, as this study did. Although studies have been done in rural settings about the relationship between net worth and household vulnerability, many have focused primarily on issues such as income diversity (e.g. Reardon et al., 1992;

Ellis, 1998; Bryceson, 1999; Hussein & Nelson, 2016) or natural resource use (e.g. Shackleton & Shackleton, 2004; Shackleton & Pandey, 2014; Ward & Shackleton, 2016). This study, therefore, argues that linking net worth to household characteristics and composition to agency is vital in understanding the context within which net worth functions, as they relate to the people who own them, their importance etc., and how this affects adaptive capacity (Chapter 1). Not paying enough attention to this link may be a potential gap in our understanding on how net worth assets will differ in their type, prevalence and quantity, depending on the context within which they are located. In addition to this, it is important to recognise that in many rural settings in sub-Saharan Africa, the non-existence or the non-accessibility of the more conventional financial products, such as bank accounts, investments and insurance products, does not necessarily imply a lack of assets altogether (Adger et al., 2009). Some of the more conventionally recognised assets may not be relevant in rural livelihoods as defined by the values and livelihood roles of individuals, subsequently affecting agency and ultimately vulnerability or resilience outcomes. This argument is consistent with findings by an FAO report by Dorward (2009), who found that poorer people did not necessarily invest in assets that are highly convertible and would appear to give more flexibility and lower costs, e.g. investments in stocks. It is further contended in this study, that only focusing strictly on income from paid employment as the sole vehicle for accumulating net worth that can reduce livelihood vulnerability in South Africa, may not sufficiently show the options that households may have in tough times. It is, however, the current net worth of rural households that they use whilst conducting their livelihoods with real implications on their livelihood security, and adaptive capacity.

This chapter, therefore, focused on answering the first objective of the broader study, by attempting to understand asset stocks and distribution across heterogeneous household profiles, and the associated dynamics of access and accumulation, use and effectiveness, in determining adaptive capacity. This was done by identifying key socio-economic characteristics influencing the distribution of net worth. It focused on examining the current levels of (financial) asset poverty in households, and how these vary with differing demographic profiles and household composition. Thus, an asset profiling of households in this study was carried out. This attempt to understand why certain liquid and illiquid (financial) assets were distributed in a certain manner, followed Deaton (2016), who suggested that the distribution of (financial) assets and poverty, and even the type of assets that a household possesses, can vary with certain household characteristics. To compile an asset profile for households within the context of this study, proxy measures in building asset profiles were used (see methods and results sections). This study assessed levels of liquid assets, as a proxy of an emergency net, often used as a direct and immediate response to sudden shocks (Brandolini et al., 2010; Chapter 5). As such, an investigation into the above mentioned makes it possible to identify the crucial liquid and illiquid assets for rural households' livelihoods security, and development of adaptive capacity, in specific contexts. It also gives possible insights to identifying the household characteristics that most contribute to the accumulation or depletion of these crucial household liquid and illiquid assets, with implications upon household adaptive capacity.

4.3. Methods

4.3.1. *Sampling and data collection*

The study employed both qualitative and quantitative data collection techniques. A questionnaire was the main tool used for data collection, complimented by semi-structured interviews (Chapter 3; Appendix 1). Random sampling techniques were used to select a total of 106 households as respondents to the questionnaire (Chapter 3). Convenience sampling was used to select 15 respondents for semi-structured interviews, which were used to get further insights into responses to the questionnaire (Chapter 3; Appendix 2). Data were collected in the respondents' preferred language (predominantly isiXhosa), with the help of research assistants based in the study area. The questionnaire collected data on the employment and education level of the household head exclusively, as the head was responsible for making decisions for the welfare of the entire household. Furthermore, as only two households reported to have a member of the household being employed other the household head, the employment status of other members in the household was statistically insignificant. Income and expenses of the household were collected as a total of what the entire household consumed, and not only for the household head. Household assets were also taken as a total for the household, for example, livestock were recorded as the total for all members in each household. Qualitative data were then grouped into strands of common themes, whilst the quantitative data were described and analysed in Microsoft Excel and Statistica software packages, respectively.

4.3.2. Data analysis

The demographic compositions of households were described using descriptive statistics (means, standard deviations, ranges, medians and modes). To ascertain poverty, the standard used as a proxy for measurement of basic needs in this study was the monthly Lower-Bound Poverty Line (LBPL) figure of April 2016, reported at ZAR758 per capita converted to an annual figure, which is ZAR9 096 per capita per annum (BankservAfrica & PASA, 2017). The LBPL was selected as it was the most inclusive, as functioning's consistency for a set of poverty lines requires that certain normative functioning's are reached at the poverty line (Ravallion, 2016). This was the most suitable substitute in the absence of an endogenous social subjective poverty line (ibid). A household should, have an asset cushion (consisting of liquid assets and illiquid assets) that would allow them to meet their basic needs- the LBPL for three months (25 % of a year), should all other sources of support fail. Consistent with this standard, the stock of asset holdings at a point in time, was compared to 25 % of the annual household-size specific poverty threshold. Hence, a four-member household would be asset poor if what they owned was below ZAR9 096. Analysis of liquid assets was based on proxies for indicators stipulated by Haverman and Wolff (2005), from their investigation which were, cash and demand deposits (*plus* time and savings deposits; certificates of deposit, and money market accounts; government, corporate, and foreign bonds, and other financial securities; the cash surrender value of life insurance plans; corporate stock and mutual funds). From the data collected, the amounts received by households through social grants were, therefore, considered as a source of government financial security. An investigation into cash surrender values, revealed that

funeral policies to which many households had subscribed, imposed restrictions that did not allow them to receive cash surrender payments in case of an emergency, and were thus excluded as liquid assets, being unable to satisfy the criterion of being able to perform an ‘emergency-net’ function for households.

Net worth was calculated by considering proxies to the following: gross value of owner-occupied housing; **plus** (other real estate owned by the household; cash and demand deposits; time and savings deposits; certificates of deposit and money market accounts; government, corporate, and foreign bonds, and other financial securities; the cash surrender value of life insurance plans; the cash surrender value of defined contribution pension plans; corporate stock and mutual funds; net equity in unincorporated businesses; equity in trust funds) **minus** (mortgage debt; consumer debt, including auto loans and credit card balances; other debt). Estimates of value of households’ goods were given by the respondents themselves at the South African Rand to USD value in 2016 (ZAR14 = USD1). Livestock (non-descript) were included in assets. Livestock are usually sold at auction, or privately between community members. The prices can vary depending upon the weight and age of livestock. Specific to cattle, horn size, teeth condition and breed determines the selling price of the animal. Prices used for analysis were, therefore, based on the mean of the range of prices from responses provided by participants, guided by price ranges stipulated by Musemwa et al. (2010) and Tada et al. (2012) (Table 4.1).

Table 4.1 Livestock prices

Livestock	Mean price (ZAR) per unit ± standard deviation
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Cattle	8 500±343
Goat	1 100±546
Sheep	900±204
Pig	600±52
Poultry	40±12

Housing structures were valued according to the proxy local market value of building materials of the wall, and then multiplied by the number of building structures in one yard/compound belonging to one household. Similar to livestock, prices were based upon the mean of the range of prices from respondents: bricks ZAR15 000±1 294 and mud ZAR1 000±182 for a single room. Only brick and mud houses were considered as real assets, as houses made of other building materials, such as reeds and poles, were typically destroyed and rebuilt by incoming residents, and thus, the structure's value could not be monetised. The value of land per household were not considered, as this land was either state or communally owned land.

For the purposes of analysis, data collected were disaggregated by the demographic profiles and income and expenditure patterns of households, namely; education, income and employment status, age of household head, marital status of household head and gender of household head. It was rationalized that a portfolio of assets as complete as net worth is a point-in-time stock that reflects prior saving and other asset accumulation decisions taken over a long period of time. The period of time used in this study was one year. These assumptions were made bearing in mind the following limitations that, firstly, there is no commonly accepted standard for measuring basic needs, as the variety of poverty thresholds used across countries and research analyses varies

widely; and it cannot be known entirely how these annual thresholds can be used to indicate the adequacy of a stock of wealth-type resources, neither can it be known how much of an asset stock a household should have, in order to meet this annual level of basic needs, should other resources not be available (Rakodi, 1999; Haveman & Wolff, 2005). It is also uncertain for how long asset holdings should be expected to provide a safety net cushion. Furthermore, imputation was used, by substituting a notional, but realistic value for missing data from the responses, by reference to other information available in the questionnaire, or by proxies from other generalizable values such as average market values for goods (Thondhlana et al., 2012). In this study, the value of each livestock was imputed as mentioned above using market value estimates, as well as the monetary value of social grants in 2016 based on the figures provided by the South Africa Social Security Agency (SASSA). Such imputation was statistically inevitable, since we respected a respondent's decision not to answer certain questions. Multiple regressions using independent variables of demographic profiles, against dependent variable liquid asset poverty, were undertaken. The subjective data collected using open-ended questions was then thematically analysed as in Sachikonye et al. (2016) (see Chapter 6).

4.4. Results and discussion

4.4.1. Demographic profiles of interviewed households

A total of 106 households were interviewed in this study. It was observed that there were almost an equal number of female-headed and male-headed households, consistent with the national census statistics of the municipality (Statistics South Africa,

2012; Table 4.2). Results also showed that over 95 % of all households interviewed in the study received at least one social grant from the government, a finding also observed by Falayi (2017). Employment in its various forms, and especially formal employment, was observed to be low within all households. Literacy levels were considerably high as shown in Table 4.2.

Table 4.2 Demographic profiles of study households within the Kat River Valley ($n = 106$)

Variable	Kat River valley households
Number of households interviewed	106
Average household size (people)	4.3±2.4
Percent of female headed households	50.9
Percent of households with employed head	7.5
Average age of household head	64.3±15.2
Percent of literate household heads	89.6
Percent of household heads with matric certificate	12.3
Percent of household heads with tertiary education	5.7
Range for household annual social grant amount received (ZAR)	0-60 000

4.4.2. Measuring income in households

Seven and a half per cent of all households interviewed ($n = 106$) reported having heads that were either employed full-time, part-time or self-employed. Only two households of the interviewed, declared having a member of the household employed, other than the household head. It was observed that all but two households had no income from formal employment, having an annual income of less than 25 % of the LBPL. Thus, this overall lack of income flow poses a potential threat to the household

asset base, which compromises the ability of a household to respond to evolving circumstances, thus reducing adaptive capacity (Jones et al., 2010).

4.4.3. The prevalence and distribution of liquid asset poverty

It was found that overall; approximately 50 % of all households interviewed were liquid asset poor. Liquid asset poverty was found to be only slightly more prevalent in female-headed households, compared to the male-headed households (Table 4.3). Households with tertiary educated heads were also less liquid asset poor, though this did not differ much from those with matric qualified household heads. The study also showed that the main source of liquid assets were the state issued grants. There was little evidence of other sources of liquid assets, including income from paid employment in the community. This finding is consistent with those of Falayi (2017), who found a decreasing trend in income stream diversity, with an increasing reliance on social grants (Figure 4.1).

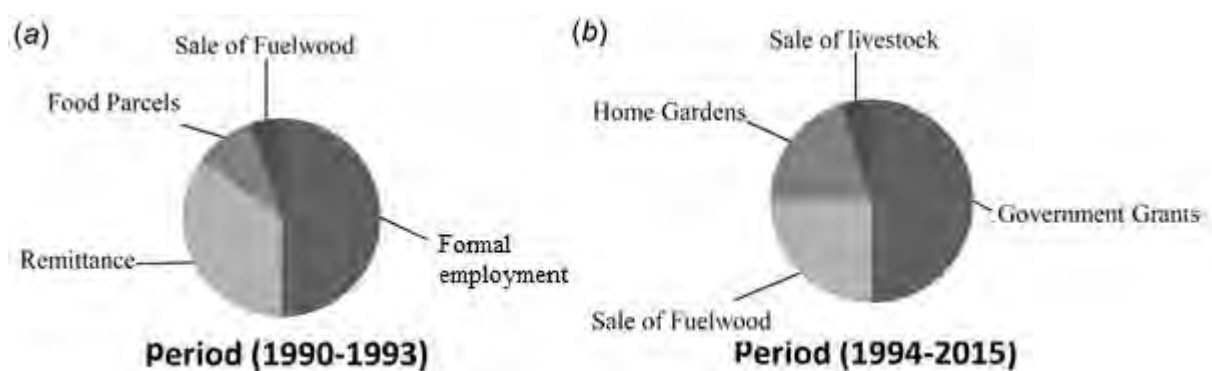


Figure 4.1. Changes in relative amount and importance of income sources for Fairbairn (adapted from Falayi, 2017)

Results showed that households with male heads, households with heads over 65 years of age, as well as households of a size of seven or greater, had the highest amounts of expenses (Figure 4.2). Patterns of expenditure, however, did not correlate with higher prevalence of liquid asset poverty ($r^2 = 0.01$, $F_{(1,98)} = 0.573$, $p = 0.451$). This finding is contradictory to findings by Deaton and Paxton (1998), who concluded that the demand for food had the highest substitution elasticity in households living in countries whose inhabitants are closest to subsistence.

Table 4.3 Asset poverty rates for households by demographic group

Grouping	Category	Net worth <25% LBPL	Liquid assets <25% LBPL
Gender of HH head	Male	0	45.3
	Female	0	52.8
Age of HH head	30-44	0	71.4
	45-64	0	65.6
	65 or older	0	38.9
Education of HH head	literate	0	54.7
	Matric	0	63.2

	Tertiary	0	50.0
Household size of HH head	≤2	0	21.4
	3≥6	0	60.0
	≥7	0	83.3

Results showed that most households purchased the food they consumed, thus negating the effect of subsistence substitution. The historical events that transpired in South Africa rendered most men to be forced into wage employment in urban centres, large commercial farms and mines (Letsoalo & Robertson, 1982). This context may influence the lack of agency into subsistence farming observed in these households, which may result in higher expenses on food. These effects of migration were observed in elderly households, which lacked manpower due to emigration or HIV/AIDS related deaths of the economically active age groups, leaving behind the very young and/or the elderly, who were not able to work in the fields (Shackleton & Shackleton, 2012). Another possible cause of high expenses in elderly households is the more frequent need for medical attention, medication and transportation in comparison to other households. It was, however, found that the provision of the free clinic facility eased this expense in these households. The elderly did however report problems with getting to the clinic, which was located far from their homes.



Figure 4.2 Average monthly expenses of households

4.4.4. Types of household assets and their distribution

No asset poor households were observed in the study area (Table 4.3). This observation was surprising, as generally, asset poverty is more prevalent than income poverty (e.g. Adato et al., 2006). Households that are not asset poor are expected over time to continue into a non-poor state, thus escaping poverty traps (ibid.). This, however, may not be case in some households, due to the nature of the asset itself (whether or not the asset is productive or not, for example) and its attributes, and the respective changes, such as decay, depreciation or consumption (Chapter 2, Section 2.6.1). This may link to what is known as ‘structural’ poverty, which refers to a state in which a household lacks the minimum sufficient combination of assets making them unable to better their circumstance, having a bearing upon adaptive capacity (Aliber, 2003). Overall, male-headed households were found to have higher net worth,

compared to female-headed households. Most male-headed households were either married or living with an adult female, whereas most female household heads were either single or widowed. Households with younger heads or those with heads over the age of 65, as well households of two or less members, had the least net worth. It was expected that the least net worth would be observed in households with young heads, as this supports Haverman & Wolff (2005), who put forward the argument that young people borrow to support consumption while investing in human capital. Where Carner & Wolff (2004) found decreasing asset poverty rates with age in their study, this study found evidence on the contrary. Households with elderly heads in many cases were left with the responsibility of looking after the very young in the absence of the children's parents, which was observed to be depleting their assets and limiting their ability to accumulate assets, or save into retirement. This can be attributed to high HIV/AIDS prevalence rates in South African rural areas (Shackleton & Shackleton, 2012), and a lack of employment opportunities within the vicinity, pushing the economically active to emigrate to urban areas in search for better opportunities. The lack of opportunities is a consequence of low investment in rural South Africa. The lack of investment in rural South Africa is likely resulting from the tenure arrangements in rural South Africa, whereby the State owns the land, with traditional leaders controlling the land (Westaway, 2012). There are also high costs to invest in rural areas in South Africa, with any potential investors reluctant to bear the brunt of needing to also address the under developed infrastructure as well as links to the market (McBride & Quiñones, 2019).

Households with a tertiary educated household head had the highest net worth, followed by households with a head aged between 30 and 44 years (Figure 4.3). These findings are consistent with Haveman & Wolff (2005) who found that while 60 % of families headed by a person with less than a high school degree are in liquid asset poverty in the USA, only about 15 % of the college graduates had insufficient liquid assets to enable them to meet the three months of poverty line consumption standard. Higher education allows for more paid employment opportunities (Green, 2012). It also facilitates for better financial management due to more knowledge about financial products (ibid). Furthermore, asset-specific education may be lacking in households with less educated heads. This was reflected in the consistently lower net worth, showing the difficulties they experience in purchasing, managing, and maintaining these assets (Schreiner, 2001).



Figure 4.3 Estimated net worth of households disaggregated by demographic groups

The study findings showed that the largest asset type contributor to net worth was cattle stock, at 48 % (Figure 4.4). It was also observed that personal savings were a very small contributor to household net worth, at 2 %. All policies that were taken out by the respondents were funeral plans. These plans were either taken from one of the major insurance companies in South Africa, or they were part of a community funeral savings club (stockvel). Interestingly, the community funeral club was a female initiative and all members in this club were women.

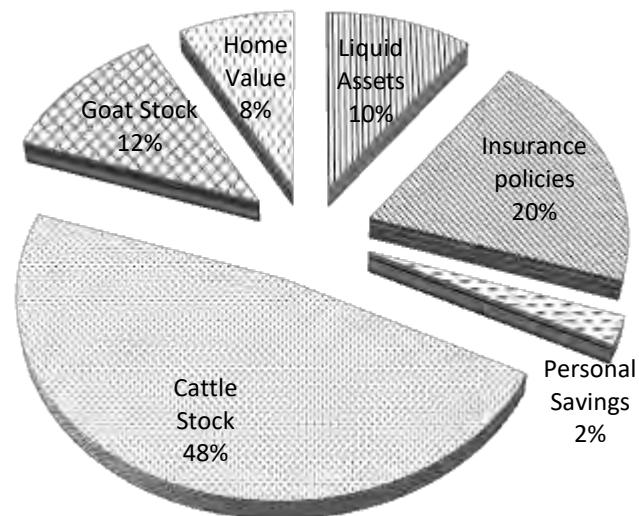


Figure 4.4 Overall composition of net worth disaggregated by asset types

Insurance policies (which included both the formal funeral policies and the informal stockvel funeral savings) thus contributed more to net worth in female-headed households, as compared to male-headed households (Figure 4.4). The contribution of the stockvel to insurance in times of a funeral shock reflected the ability of social capital to substitute incomplete markets (Adato et al., 2006). The contribution of liquid assets, personal savings and home value was also greater in female-headed households

compared to male-headed households (Figure 4.5). These findings suggest that female-headed households have access to more grants, particularly the child grant, as they tend to take on the responsibility of looking after children (Mathebula et al., 2017). Male-headed households had a greater contribution of animal stocks to net worth than female-headed households, possibly reflecting patriarchal values in property ownership, specifically cattle, existing within the community (Figure 4.5; Whatmore et al., 1990; Chigwenya & Ndhlovu, 2016).

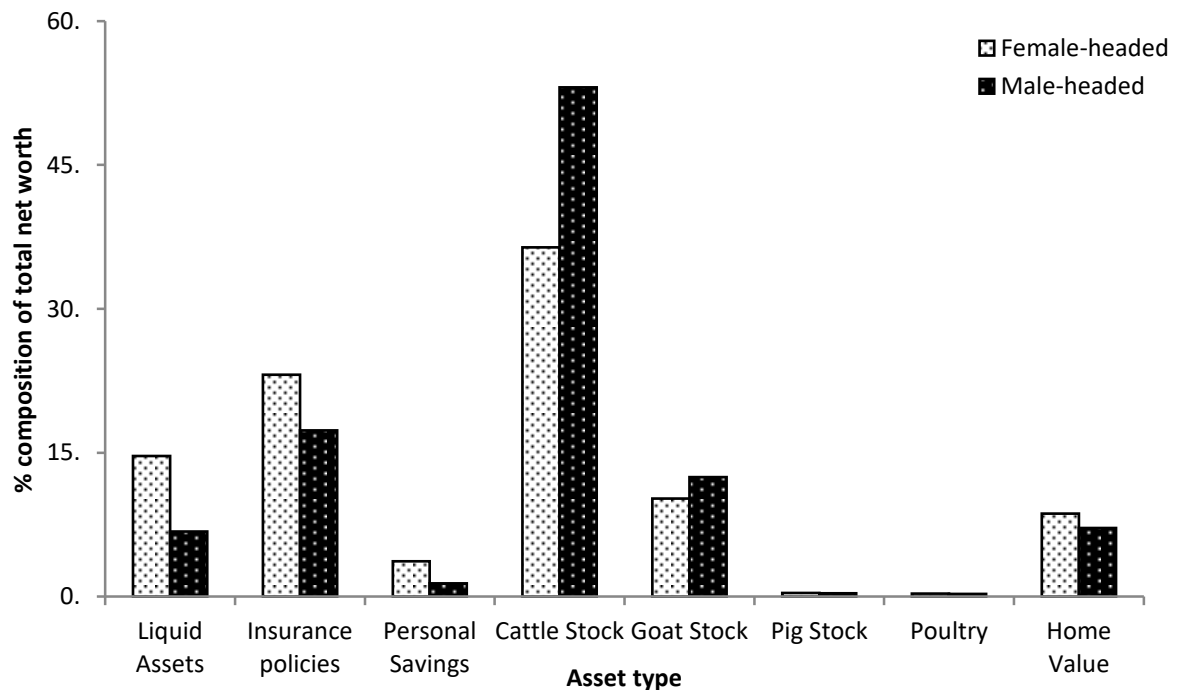


Figure 4.5 Differences of net worth asset composition by gender of household head

No household was without a homestead, as the system of home allocation, which involved a family representative approaching the community leaders to negotiate for a piece of land in the village, did not involve any monetary exchanges. In this way, households that were both income and liquid asset poor had shelter. Households were,

therefore, only responsible for erecting their own housing structure and fencing. Cattle stock was found to be the highest contributor to net worth with all household head age groups. The second lowest contributors to overall net worth were personal savings (Figure 4.6). It was found that the 45–64 household head group invested the most in cattle, and the least in personal savings (Figure 4.6). The same group also had the highest contribution from home value compared to the other groups. The elderly household heads had the highest contribution of liquid assets compared to other groups, whilst the households with young heads had the highest contribution of insurance policies in comparison (Figure 4.6). The former finding may reflect the burden of child care placed upon the elderly, who subsequently claim foster care grants (and possibly remittances) in addition to their pensions resulting in higher liquid assets (Mathebula et al., 2017). This assertion is consistent with Erin et al. (2016) who cite the enactment of the Social Assistance Act of 1992 as having set the policy priority towards the direct transfer of revenue to vulnerable groups outside the labour force, particularly children and older adults living in poverty.

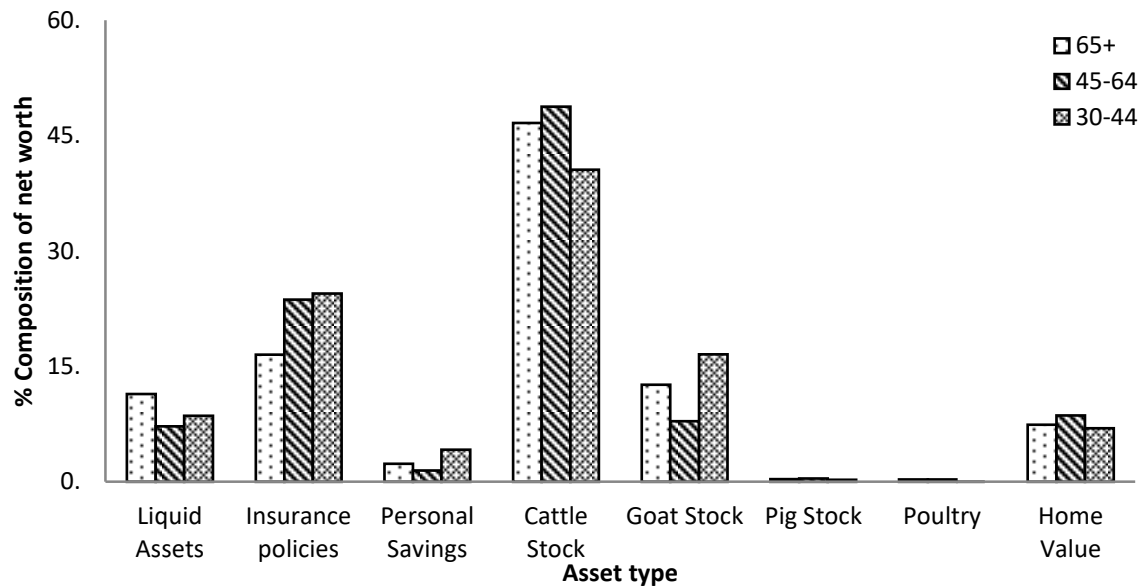


Figure 4.6 Differences of net worth asset composition by age of household head

Cattle stock was the highest contributor to net worth overall with differing education levels of household heads (Figure 4.7). A very slight variance of this contribution between the differing education level groupings of household heads was observed (Figure 4.7).

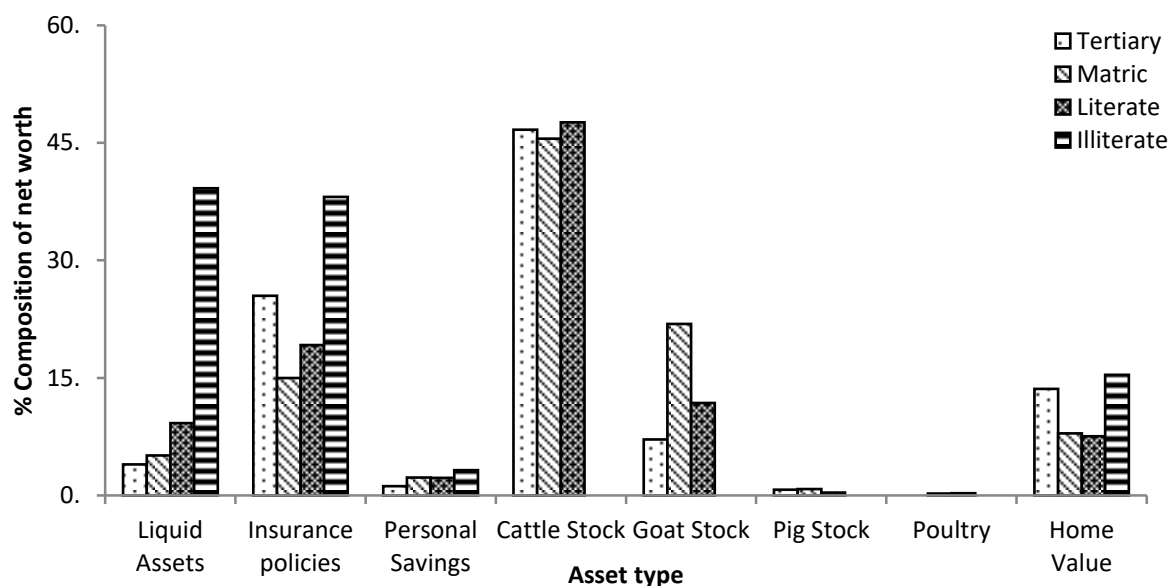


Figure 4.7 Differences of net worth asset composition by education of household head

Although not statistically significant, households with illiterate household heads had the highest contributions to net worth from liquid assets, insurance policies and home values in comparison to other groups (Figure 4.7). Although overall illiteracy was low in the study population, it was more prevalent amongst the elderly household heads. Elderly heads also claimed the highest number of grants, and also have lived the longest in the villages (Figure 4.7). Liquid assets contributed the least to the net worth of households with a tertiary educated household head. This finding was contradictory to those of Carner & Wolff (2004), Haveman & Wolff (2005) and Yellen (2014). It may, however, imply that in spite of education, households are still being forced to largely depend on social grants due to a lack of opportunities to employ their skills and education and secure income, or may possibly be investing in other asset types, as suggested by Dorward (2009).

It was also observed that cattle stocks were the greatest contributor to net worth of all households regardless of household size (Figure 4.8). This contribution was however highest for households with seven or more members. This maybe because cattle stock is of a significant cultural value, and is not generally kept for resale, and is therefore cumulative (Ainslie, 2005). As such, cattle can potentially accumulate as each household member acquires stock. Also observed, was that liquid assets and home value contributed the most to the smallest households. On the contrary, they contributed the least to larger households, possibly reflecting higher running expenses, such as the cost of purchasing food, of the larger households.

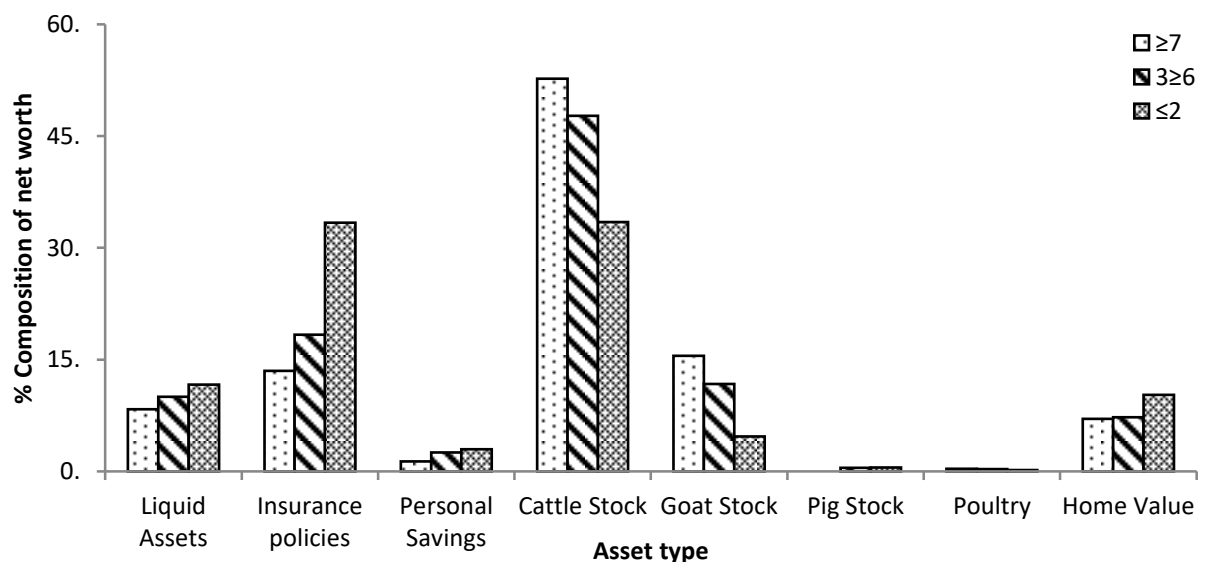


Figure 4.8 Differences of net worth asset composition by average of household size

4.4.5. Factors affecting the distribution and asset composition of net worth and liquid asset poverty

Differences in the prevalence and distribution of liquid asset poverty, and also differences in net worth of households, were observed in this study. A multiple regression analysis showed gender and household size to significantly influence the prevalence pattern of liquid asset poverty, with female-headed households displaying a higher prevalence of liquid asset poverty (Table 4.4). This finding is consistent with that of Horrel & Krishnan (2007) whose findings in rural Zimbabwe showed that female-headed households were considerably poorer than their male counterparts. They observed that households headed by widows had a total income of just over half that of the male-headed households, and *de facto* female-headed households had around three quarters of the income of the male-headed households.

Table 4.4 Regression results of factors influencing liquid asset poverty

Variable	<i>b</i> *	SE of <i>b</i> *	<i>b</i>	<i>r</i> ²	SE of <i>b</i>	<i>t</i> ₍₉₂₎	<i>p</i> -value
Intercept			−175284		97278.7	−1.80	0.074
HH Size	0.24	0.10	8002.5	0.12	3386.5	2.36	0.020
Tertiary	−0.19	0.12	−62415.6	0.01	40326.7	−1.55	0.125
Matric	0.22	0.12	45456.2	0.003	24939.4	1.82	0.072
Literate	0.15	0.10	53793.6	0.01	35061.1	1.53	0.128
Employment	−0.06	0.11	−4885.1	0.05	9158.8	−0.53	0.595
Gender of HH head	0.32	0.10	50740.3	0.08	15647.1	3.24	0.002
Age	0.16	0.12	836.91	0.01	636.69	1.31	0.192

Regression summary for dependent variable: liquid asset poverty $R = 0.45$, $R^2 = 0.20$, Adjusted $R^2 = 0.14$, $F_{(7,92)} = 3.37$, $p < 0.001$, standard error (SE) of estimate: 74286.0

Several reasons have been put forward for the ‘feminisation of poverty’, such as lack of freedoms and capabilities amongst women, one of which is education (Green, 2012). It is also argued however, that female poverty may not only arise from the low level of resources, but more so from the low command and control of resources (Chant, 2004). As was observed in this study, livestock was the biggest contributor to net worth. However, the control and ownership of this specific resource has traditionally been given to the males within many African cultures (Chigwenya & Ndhlovu, 2016). Furthermore, as Paudel et al. (2016) observed in Nepal, women tend to involve themselves more in low growth income activities compared to men when farming livestock. Their study findings showed that when raising livestock, 45 % of women in Nepal were involved in activities such as feeding, cleaning and collecting forage compared to 9 % of men. Men were more involved in fast income generating activities such as milking and selling milk. This finding may emphasize the problem of roles and values (as they affect agency), and freedoms for women. On both ends of the spectrum, household size resulted in an increase in liquid asset poverty. Very small households have less contributors to financial capital (e.g. having less children results in less grants), thus, limiting the accumulation of assets. On the other hand, in the absence of subsistence substitution, a bigger household implies greater expenses, especially food. Hence, the size of the household was, therefore, also observed to have significantly influenced levels of liquid asset poverty.

4.4.6. Differential access to common assets: physical and natural assets

All households were found to have electricity in their households. It was reported that the government subsidises households with ZAR100 worth of electricity, after which households topped-up, or used alternative sources. All households were found to either gather or purchase fuel wood, mostly used for heating and cooking. Findings support Shackleton et al. (2017), who found that, despite widespread electrification in South Africa over a decade ago, and perceptions that the ease of fuel wood collection was declining, most households continued to use fuel wood for cooking and space heating, whereas electricity was favoured for lighting. Thus, this reliance on fuelwood can have a cost saving benefit on household liquid assets, and can therefore increase adaptive capacity. When households do not spend all their liquid assets on day to day costs, such as energy for heating and cooking, the unspent money could potentially be re-invested in purchasing productive assets, or purchasing insurance products, for example, or being put away in savings, playing a safety net role. Such investments can potentially put the household in a state where they are less affected by certain shocks and stressors, or otherwise bounce back easier from them, as they would have a greater capacity to adapt due to an increased asset base. However, the fragile nature of semi- arid plant resources, coupled with poor management of communal resources and land degradation, can also render households dependent upon fuelwood vulnerable to energy shortages (Huang et al., 2016).

It was observed that less than half of all households felt they had adequate water for their household and livelihood activities (Table 4.5). Perceptions of water inadequacy

were mostly reported by male-headed households, which were more involved in growing vegetables in home gardens and also owned fields (Table 4.5). This contradicts Tsai et al. (2016), whose results in Uganda of gender differences in perceptions of water insecurity, reported men generally perceiving household water insecurity as being less severe compared to women. However, findings of this study also suggest that male-headed households had higher water needs, as they owned larger livestock in greater numbers compared to female-headed households (Figure 4.5; Table 4.5). This study, however, also showed that perceptions of adequate water supply were least in households with an elderly head. A study on factors that impact on access to water and sanitation for older adults and people with disability in rural South Africa showed that, environmental, political, social-economic and attitudinal factors were impacting water access and occupation (Wrisdale et al., 2017). The study cites evidence that the actual round-trip distance to water points in rural areas of South Africa can be 600 meters or more, making it difficult for elderly people to access water (ibid). This was problematic, as most households depended on communal taps for their primary water supply, with larger households being the most dependent on taps (Table 4.5). Households that owned large plastic tanks (Jojo tanks) of capacity 250-20 000 litres, however, perceived themselves as more water secure compared to those without, with all households with a tertiary educated head owning at least one tank. Thus, findings in this study support Tsai et al. (2016)'s claim, that water insecurity maybe more a factor of access as opposed to actual availability.

Very few households were found to own fields, and even fewer households made use of these fields (Table 4.5). Neither female-headed households, households with young heads nor small households were found to own or use fields. Mostly male-headed households were found to collect water from the river, and this may have resulted from their ownership of larger livestock and/or their need to water fields. However, more households owned and used their home gardens, mostly to grow vegetables such as spinach and butternut for home consumption (Brooks, 2017; Falayi, 2017).

Households with young heads were also found to mostly use their gardens. As home gardens were easier to manage and easily accessible, these were found to positively contribute to adaptive capacity (Jones et al., 2010; Jones, 2011). More male-headed households were found to use communal grazing than female-headed households, and a higher percentage of tertiary educated heads also used communal grazing. Neither female-headed households nor small households owned any grazing land (Table 4.5).

Table 4.5 Access to, ownership and use of physical and natural assets across different household demographics (%)

Demographic group	All households (n = 106)	Male-headed (52)	Female-headed (54)	Head age 30-44 (15)	Head age 45-64 (35)	Head age 65+ (56)	Literate head (95)	Matriculated head (13)	Tertiary head (6)	HH size ≤ 2 (28)	HH size 3≥6 (58)	HH size ≥ 7 (20)
Adequate water	36.8	50	24.1	86.7	33.3	14.3	29.5	46.2	83.3	46.4	31	40
Collects from river	11.3	21.2	1.9	13.3	11.1	5.4	8.4	15.4	33.3	10.7	5.2	30
Owens Jojo Tank	33	34.6	31.5	60	20.4	26.8	22.1	61.5	100	7.1	43.1	40
Has a private tap	2.8	5.8	0	6.7	3.7	0	0	7.7	33.3	0	3.4	5
Uses communal tap	50.9	69.2	33.3	73.3	29.6	48.2	44.2	61.5	66.7	71.4	24.1	100
Uses borehole	1.9	1.9	1.9	0	0	3.6	2.1	0	0	3.6	1.7	0
Uses communal grazing	18.9	26.9	11.1	13.3	18.5	14.3	12.6	30.8	66.7	3.6	13.8	55
Owens private grazing	7.5	15.4	0	13.3	3.7	7.1	5.3	15.4	16.7	0	13.8	0
Has field	6.6	11.5	1.9	0	1.9	10.7	5.3	7.7	16.7	0	10.3	5
Uses field	3.8	5.8	0	0	1.9	5.4	2.1	7.7	16.7	0	5.2	5
Has a home garden	44.3	44.2	44.4	66.7	33.3	33.9	40	38.5	66.7	46.4	44.8	40
Uses a home garden	40.6	44.2	38.9	66.7	31.5	28.6	37.9	23.1	66.7	42.9	43.1	30

Although women and the youth (represented here as younger households) have relatively equitable use rights to uncultivated communal land (fallow/bush), access to and control of land (and other requirements for production) are deciding factors as to how effectively these groups use this land to enhance their adaptive capacity (Ayantunde et al., 2017). Ribot and Peluso (2003:1) broaden the definition of access to the 'ability to derive benefits from things', thereby enabling the mapping of dynamic processes and relationships of access to assets. They highlight the particular importance of disciplining institutions and practices in influencing the way people act without any apparent coercion. This could explain why women and youth were seen to be benefiting less from the rights they have to communal land as much as men, due to self-regulatory behaviour such as withdrawing from using communal lands where men were actively using the lands. In many African cultures, land is inherited from father to son, with women usually only gaining access to land through marriage (Green, 2012). At the household level, cultivated land resources are also under the control of the head of the household, which is usually a man (Ayantunde et al., 2017). Thus, with insecure land ownership, access to land can be uncertain and problematic. Furthermore, the findings support Ayantunde et al. (2017), who puts forward that a lack of access to funds to invest, restricts them from applying certain measures to improve the land or its use for their purposes such as planting trees, for fuel and fodder production, or making stone bunds to enhance water capture, negatively affecting adaptive capacity. In addition, women are often constrained by the unavailability of manual labour. Women's access to agricultural equipment and inputs, such as seeds and fertilizer, can also be

limited due to lack of finance, and few opportunities for them to access credit (see Chapter 6). Access to training can also be problematic, either because of their existing workloads, or because they require consent from their husbands to participate (ibid).

Although in a spatial social network analysis of resource access in rural South Africa, Schramski & Huang (2016) found very little association among natural resource use, access, and social position with even the most tolerant measure, they found enough association so as not to dismiss the relationship completely. Findings in this research suggest that different households indeed had different levels of access and ownership of shared assets resulting in different levels of use. In considering the gender differences, observations of this study's findings on ownership and use of grazing land support the argument of Goldman et al. (2016), who argue that more than ownership rights to land, access to land, knowledge, social relations and political processes can lead to empowerment of women, as well as helping to keep land within communities. From their findings in Ethiopia, they suggest that access to knowledge about legal rights, such as the right to own land, access to customary forms of authority, and access to a joint social identity as women, and/or as 'indigenous people', can empower women, therefore increasing adaptive capacity. Women were strengthening their access to social relations (amongst themselves, with powerful political players and NGOs), and were gaining strength through collective action to protect land rights. These became the key to both empowerment processes and protecting community and women's land, and are critical components of adaptive capacity (ibid).

4.5. Conclusion

In conclusion, there were generally low formal income levels in the Kat River valley communities as a consequence of limited employment opportunities, as well as the low level of education in the area, with potentially negative implications on adaptive capacity. It was, however, found that all households were not asset poor. This chapter showed that patterns of asset accumulation and how these assets are used are related to the ways in which societies are organised, including their values, the knowledge they construct, as well as the relationships that exist between individuals, institutions and the state (Adger et al., 2009). Specifically, livelihood patterns lend to certain inequalities to access and distribution of assets, as well as the failure of markets to effectively service rural households. In spite of households not being asset poor, this did not render most households from being heavily dependent upon state issued social grants. Thus, the assets owned by households seem inadequate to support a decent livelihood for rural households on a day by day basis. It may also be a result of the (in)ability to benefit from these resources (access), related agency and capabilities; or a consequence of both, suggesting the existence of structural poverty. As such, the limits to adaptive capacity, reflected in the profiles of household assets, could possibly emerge from within societies, and further research would be necessary to identify this.

This study revealed that the distribution and the characteristics of assets and profiles differ with demographic groups, and subsequently, different levels of an asset base, which according to the LAC framework being used in this study, reflects different levels

of adaptive capacity. It was also found that overall; livestock contributed the most to all household assets. Although (lack of) private tenure poses problems, especially when it comes to accessing lines of credit for enterprise for example, it was noted that communally owned land was beneficial to the community- especially considering the contribution of grazing land for livestock, with cost-saving implications to the household asset base. Similar to Shackleton et al. (2007), it was also observed that the most impoverished households were further buffered by the use of the communally shared natural resources in their livelihoods. The most financially insecure households were buffered by using natural building materials such as mud for houses, and *Acacia karoo* for livestock fencing, and fuelwood for cooking and heating (Falayi, 2017).

The limitations to upward mobility of the rural households, however, reinforced the notion that poor households have inadequate access to financial services, and maybe experiencing structural poverty (loans and formal comprehensive insurance, reflected in their low savings and no loans from formal financial institutions). In this circumstance, poor households may become trapped in situations of low assets and failed attempts to accumulate and move ahead with negative implications on their adaptive capacity, in spite of having assets (Adato et al., 2006; Shackleton & Luckert, 2015). Social capital becomes a critical resource in compensating for the lack of other assets or sufficient combinations of these; and this is investigated in the succeeding chapter, in relation to responses to shocks and stressors.

CHAPTER FIVE: SHOCKS AND STRESSORS, HOUSEHOLD LEVEL RESPONSES AND IMPLICATIONS ON ADAPTIVE CAPACITY



Fairbairn household showing the natural resources used to build it e.g. mud and sticks

[Photo: Tatenda Dalu]

5.1. Chapter overview

The previous empirical chapter focused on profiling assets in households, drawing specific attention to how these profiles differed across heterogeneous household profiles. This chapter specifically addresses objective two of the broader study, which is concerned with understanding responses in relation to shocks and stressors and assets, with a particular focus on social capital. Thus, this chapter presents findings on the types of shocks and stressors to which households are exposed in the study areas, and the corresponding responses to these. An attempt is made towards understanding differentiated responses in differing household compositions. Finally, results are discussed as they relate to assets, and how this affects adaptive capacity.

5.2. Introduction

Multiple shocks and stressors pose serious challenges to poverty reduction and all developments towards its achievement. Specific to rural agricultural contexts, climate change is one factor with socio-economic impacts which affect main crop production and animal husbandry, water availability and energy supply (Parvin et al., 2016; Ahsan, 2017). An important aspect of dealing with adverse effects and impacts of climate change and other shocks and stressors is to adopt suitable coping strategies. Notably, natural asset-dependent livelihood options of people at risk are greatly influenced by coping mechanisms, while addressing risks from extreme climatic events; especially in rural areas of developing countries (ibid). Thus, assets and incomes are a clear way to enhance the ability to cope and eventually adapt, or in the negative, to constrain adaptive capacity; as a lack of access and availability to the correct resources

potentially limits a group's or household's ability to cope with, and adapt to, climate change-related and other- shocks and stressors (Williamson et al., 2012; Chapter 1).

Coping is a capacity- allowing for response and recovery from stress or shock (WHO, 1999). Responding is one component of what constitutes a system's coping capacity, of which other components include absorbing, accommodating and recovering (Douxchamps et al., 2017). These are affected by several factors, including the availability of assets, as well the capabilities and values of the individuals making up the households (Afriyie et al., 2017). Emphasis is, therefore, upon the mediating effect of social relations, institutions and upon the prevalent culture, on the ability of a household to access and transform assets, using its agency and capabilities, to effectively respond to shocks and stressors, without compromising its future ability to respond (Adger et al., 2009).

Increased vulnerability implies a decreased capacity to cope and vice versa (DLDLR, 2013). Coping response typically refers to short-term actions taken by individuals to ward off immediate risk, rather than to adjust to continuous or permanent threats or changes, whereas adaptation responses are long-term adjustments aimed at overcoming the destructive impacts of disaster events (Macchi et al., 2015). Adaptation is affected by the degree of access to, or possession of, necessary assets by individuals or groups (known as asset profile or asset entitlement or capital (as in the Sustainable Livelihood Framework (SLF) and the LAC framework) within a given institutional framework (Ahsan, 2017).

Very often, coping response precedes adaptation. However, coping responses also often negatively impact asset reserves necessary for adaptation (e.g. Fischer & Buchenrieder, 2010). Coping responses to shocks and stressors can affect many households such that they fall into transient poverty, depending on the nature of their responses, thus reducing their adaptive capacity (Sumner & Mallett, 2011). Even if household consumption hovers above the poverty line, they are vulnerable to other dimensions of poverty including exclusion, powerlessness and poor health (Zhou et al., 2017). Thus, coping responses pose a serious challenge to building adaptive capacity and, ultimately, sustainable livelihoods in most rural contexts affected by multiple shocks and stressors, not excluding climate change.

The Livelihoods framework is applicable for assessing effects of changes within social-ecological systems, and on assets that are important in sustaining people's livelihoods (Dorward, 2014). These changes lead to alterations in response strategies and ultimately lead to changes in livelihood outcomes. Thus, an attempt is made in this study to deduce which transient livelihood outcomes are resulting from various responses, as they are impacted by, and subsequently impact upon assets. In this way, we understand the impact that various responses, as influenced by assets, are having on rural Eastern Cape households' adaptive capacity, as each livelihood outcome represents different levels of adaptive capacity. Stepping up reflects an increasing adaptive capacity, whilst falling down and out reflects a complete erosion of adaptive capacity (Dorward & Kent, 2012).

To date, little is known on the linkages between rural households' diversified coping mechanisms and their socioeconomic asset profiles (Ahsan, 2017). Zhou et al. (2017) observed that previous global studies on how assets (as depicted by levels of poverty) are affected by responses to climate-related shocks and stressors have, largely only focused on coastal urban populations and major cities. They argue that it is, however, the world's rural populations who are at the front line of climate change induced impacts (ibid). Furthermore, given the highly heterogeneous nature of extra- and intra-global regions, and even within countries that possess specific social economic characteristics, context-specificity is paramount in understanding the phenomenon in question (Shackleton, 2014).

Paul et al. (2016) further observed that there is limited work on how specifically social capital relates to adaptation behaviour; this, in spite of evidence showing that individual and community social capital networks provide access to various resources such as information, aid, finances and support during times of disaster. For the purposes of this study, social capital is defined as *“features of social organization, such as trust, norms and networks, that can improve the efficacy of society by facilitating coordinated actions”* (Putnam et al., 1993:167, in Murayama et al., 2012). Social capital has been separated into three different types namely bonding, bridging and linking. Bonding social capital refers to connections between emotionally close individuals, such as family and friends, as well as people with similar demographic characteristics, attitudes, resources and information (Pelling & High, 2005). Bonding capital is, therefore, the most common type

of social capital. Bridging social capital refers to loose connections that exist between people spanning different social groups, e.g. class and race (Aldrich et al., 2016). Bridging social capital is characterised by demographic diversity, and provides novel information, which can potentially result in stepping up. Linking social capital connects citizens with powerful societal actors (ibid). This capital exists in formal or institutionalised power gradients co-existing with mutual respect and trust, e.g. between voters and elected members of parliament (Wolf et al., 2010). Thus, in addition to the Livelisystem Framework, the SLF was used to encompass the multiple interactions of assets, with a specific focus on social capital; as well as the feedbacks that occur as assets are used in household responses.

This study, therefore, analysed how households respond to the shocks and stressors to which they are exposed in relation to various asset or capital profiles available to them, as well the varying types and intensities of experienced shocks and stressors. The main aim of this chapter, relating to objective three of the broader study, therefore, is to identify the shocks and stressors to which households are exposed and understand responses to these, by understanding the factors influencing differences in responses, and the implications for adaptive capacity. Focus was on answering the following research questions: i) What are the shocks and stressors to which households are exposed? ii) What are the responses to these? iii) How do these responses impact upon asset stocks? iv) Do different household profiles experience shocks and stressors differently? v) What factors influence how households respond to shock as stressors?, and; vi) How does this affect the adaptive capacity of different household profiles?

5.3. Methods

Questionnaires consisting of closed-ended objective questions as well as open-ended subjective questions were used to gather information with regards to which shocks and stressors households were exposed in the year preceding the study, and how they subsequently responded to them (Appendix 1). To assess levels of social capital, focus was placed on the attitudinal and cognitive aspects of social capital. Therefore, one set of proxies was used in the questionnaire, inquiring on levels of trust to other in the community, as well as organisations and institutions (Aldrich & Meyer, 2015; Appendices 1 and 2). Proxies queried feelings and perceptions towards organisations within the community, and behavioural manifestations as levels of participation within these organisations (Appendices 1 and 2). Further, the different types of social capital were distinguished using proxies as indicated in Table 5.1.

Table 5.1 Proxies used to measure different types of social capital

Type of social capital	Proxy measure
Bonding capital	Perceptions of trust and intimacy measured on a scale of 1-5
Bridging capital	Participation in civic and political institutions
Linking capital	Number of households with at least one member involved in a committee

The qualitative data from the questionnaire (captured in the open-ended questions), was then thematically analysed using open coding (see Chapter 6; Sachikonye et al., 2016). Descriptive statistics were used to report quantitative data, which included the number of shocks and stressors to which the community was exposed, types of

responses, and also levels of social capital. Levels of social capital are reported using a scale of 1-5, where five represents a high positive score, 3 is the neutral score, and 1 presents a high negative score on trust, attitude and participation. These scores were taken by counting the number of responses of a particular score. Correlations were used to test independent variables, namely asset profile, type of shock or stressor and type of social capital, to dependent variable type of response. Responses queried in the questionnaire were grouped into three main types (Table 5.2; results section) adapted from the Partnership for Economic Policy Community Based Monitoring System (PEP-CBMS, 2011). The Partnership for Economic Policy (PEP) is an international non-profit organization that links researchers globally to enhance local capacity for policy analysis in developing countries. The types of coping responses are grouped in terms of their erosive ability upon assets and subsequently future ability to cope with and adapt to shocks and stressors.

5.4. Results and discussion

5.4.1. Shocks and stressors experienced by households

A total of eight shocks and stressors were experienced by households in the study area, namely hailstones and crop failure which were climate induced, and then asset loss, livestock loss, illness, death of main bread winner, job loss and delayed remuneration. The most common shock experienced by all but two households, was hailstones. This particular shock was reported as having been severe by most respondents (98 respondents). The second most common shock or stressor was crop failure, experienced by 39.2 % of all households, and was also deemed to be severe by all

households having experienced loss. The least commonly reported shock or stressor was job loss, with only one household reporting that a member of the household had lost their job in the previous year. It was also observed that 42 % of all households were simultaneously experiencing two or more shocks or stressors, with some households experiencing as many as four shocks and stressors simultaneously.

5.4.2. Responses to shocks and stressors

There were seven identified responses to shocks and stressors, namely doing nothing, spending any available savings, selling assets (livestock in all instances), receiving help from family and friends, changing the methods of farming, getting assistance from an organisation and renting out property for money. In some households, combinations of responses were used. It was, however, observed that most households who responded by selling assets and spending savings, would also subsequently receive assistance from friends and family or respond by doing nothing. These households were also experiencing multiple shocks simultaneously (Figure 5.1). Only one of the 106 households responded by renting out property for money. The most common response to the above-mentioned shocks and stressors was to do nothing (38 households or 35.8 %). The second most common response was to spend money from savings (25 households or 23.6 %), followed by having a family member or a friend assist (22 households or 20.8 %).

All observed responses were grouped into three categories (Table 5.2). This showed that only one of the seven reported strategies was non-erosive (seeking assistance from

friends/family). However, this strategy is not always infinite in single communities; and an over-reliance on it can compromise its effectiveness. Further, these categorised responses were then correlated to asset profiles, household social capital profile and experienced shock/stressors.

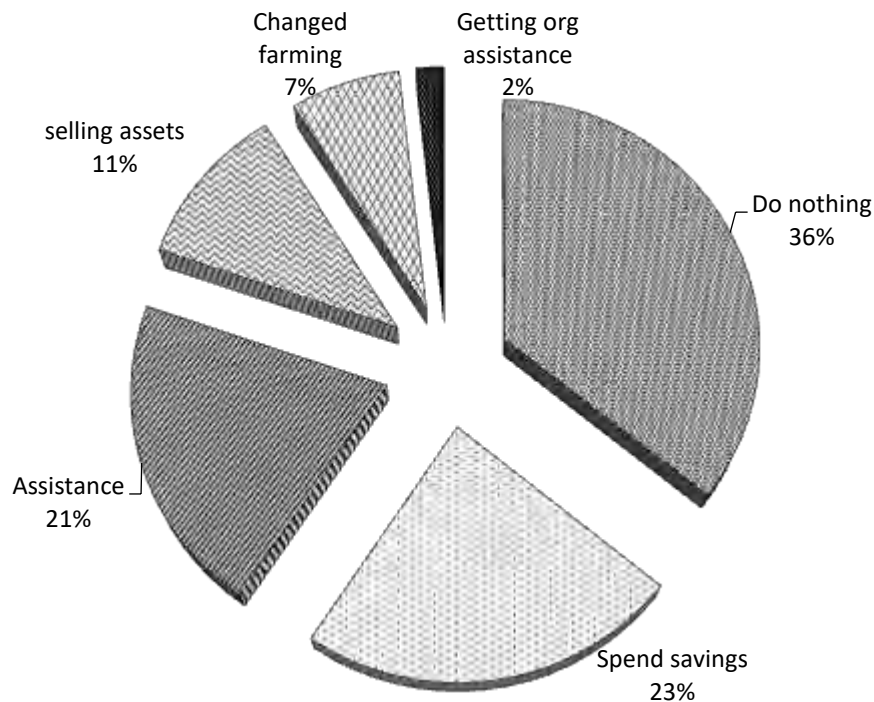


Figure 5.1 Responses to shocks and stressors of households

A significant correlation between the type of shock or stressor and subsequent response ($r_{106} = -0.33$, $p = 0.001$) was observed, but no significant correlations between asset profile and type of social capital was noted. This result suggested that stressors that tended to linger for extended periods (e.g. over a year), would increase the likelihood of erosive coping responses. This ultimately led to failed responses when households were faced with acute shocks, which in this study were hailstones.

Table 5.2 Types of responses to identified shocks and stressors

Non-erosive coping responses	Erosive coping responses	Failed coping responses
Changed farming method	Harvested more	Organisation or donor support
Found extra work	Sold assets	Did nothing
Friend assistance	Borrowed money with interest	
Reduced expenses	Spent savings	
Rented out property or assets		
Concentrated farming		

5.4.3. Differentiation of responses as influenced by demographic and asset profiling and social capital

Overall, there were no significant differences between male and female-headed households and corresponding responses. However, it was observed that male-headed households were slightly more inclined to sell livestock as a coping response than female-headed households (six male-headed-households vs. four female-headed households); whilst more female-headed households responded by spending savings compared to male-headed households (15 households compared to 13, respectively). Only male-headed households were found to have changed farming strategies as a response. The greatest number of households that depended on the assistance of friends or family was households with heads that were older than 65 years. Most of these households were also female-headed, with no matric.

5.4.4. Levels of social capital

The highest level of social capital was found to be bonding social capital (94 households or 89.1 %). This was mostly due to high levels of perceived intimacy with neighbours and friends and generally high levels of trust within the community. Bonding social

capital was found in all female-headed households, mostly through involvement in a local religious group and/or the funeral savings club. This was also true in households with a married male household head. Moderate levels of bridging social capital were observed. Thirty-eight out of the 106 households (35.8 %) interviewed participated in three or more organisations on a regular basis. All 38 of these were female-headed. Only two of the total number of households interviewed did not participate in any organisation, with one being an older widower who lived alone, and the other being a household with a younger single male household head. The last type of social capital assessed was linking social capital. The proxy for this capital was the number of households with at least one member involved in a committee. It was observed that 30 of the 106 households (28.3 %) had at least one member sitting on a committee, thus revealing a modest amount of linking social capital. Twenty-one of these 30, however, were households with an older married male household head, whilst 13 of these were female-headed households.

5.4.4.1. Perceptions and attitudes

Generally, interviewees expressed positive sentiments on being able to depend on others during difficult times. Many respondents indicated that they had blood relatives living in the village, and as such, felt they could call upon them for assistance. These sentiments were not necessarily echoed when it came to attitudes of collective action, particularly with male household heads. Although interviewees belonged to households that actively participated in organisations within the community, many young male household heads did not feel that collective efforts to alleviate certain stressors, such as

unemployment, were always practical. Many would reference past projects within the community that experienced conflicts, such as HACOP and Masimanyane (see Chapter 6). Thus, many would rather approach friends and family members from a more personal and individual standpoint.

5.4.5. Different responses and relationship with liquid and illiquid assets and shock types

Although all households were exposed to similar shocks and stressors, regardless of the gender of the household head, female-headed households responded slightly differently to male-headed households. Men and women often have differing roles and responsibilities, knowledge, and skills, and will, therefore, be exposed to different risks, thus prompting for slightly different responses (Nelson, 2011). Thus, although in the findings showed that all households were exposed to similar shocks and stressors, the actual experience and impacts and the perceptions thereof, may differ according to demographics, resulting in differentiated responses. This assertion supports Djoudi et al. (2016), whose findings also suggested that the differential impacts of climate change shape, and is shaped by, the complex power dynamics of existing social and political relations, and not necessarily by the shocks and stressors themselves.

More male-headed households were observed to have responded by selling livestock than female-headed households. This was not surprising, as female-headed households generally owned less livestock (Chapter 4). Findings support the claim that globally, women tend to be more likely to own small animals, such as chickens,

whereas men are more likely to own larger animals, such as cows, as well as improved varieties of livestock, although women are often involved in animal care for large livestock (Chapter 4; Sellers, 2016). Further, women tend to involve themselves in animal rearing activities that exclude them from any income earning opportunities, unlike their male counterparts (ibid; Paudel et al., 2016).

5.4.6 Social capital, responses and adaptive capacity

A social capital analysis of households revealed that there were relatively high amounts of bonding social capital, which facilitated assistance in the face of shocks, such as hail stones in the area. Although social capital overall was not significantly correlated to responses, it was observed that it was often used by households experiencing multiple shocks. Bonding social capital was also found to be highest in female-headed households (Shackleton et al., 2015). However, it was observed that linking social capital was highest in households that were headed by a married male. Although bonding social capital was useful in coping, through allowing for collective efforts, such as the poultry group for women (ibid; Wolf, 2010; Chapter 6), it did not allow these households to step up by linking them to powerful societal actors, that could connect them to funding and markets, for their projects for instance, and thus did not improve their livelihood outcomes, and ultimately their adaptive capacity (Chapter 6).

However, it was also observed that past failures in group projects have cast shadows of scepticism over collective action, especially with men, which compromised their levels of bonding social capital (Chapter 6). Funded projects initiated by government and other

institutions, tend to structure the management within projects in a formal, and often, hierarchal manner. This is beneficial to the efficient running of the project, but can sometimes create tensions within communities that otherwise have strong cultural norms and values, which may not have been well reflected within the management structure of projects (Turner, 1999, Sachikonye et al., 2016; Chapter 6). This can compromise the ability of bonding capital to function within a seemingly homogenous group, as management structures can cause differences in power relations, which can cause social conflict (Rummel, 1979). This can render collective intervention strategies ineffective in building adaptive capacity. Alternatively, individual households opted to solicit assistance with mostly relatives and friends, using more cultural channels. There are, however, limitations to the support that households may receive from other households to which they are akin, should they reside within the confinements of the same village. Households within the same area are often coping with the same shock or stressor simultaneously, and this limits the extent to which they can extend their assistance to others (Carter & Maluccio, 2003).

5.4.7 Linking erosive and failed responses to adaptive capacity

The response of doing nothing was mostly to the hail stones experienced during the previous year in the village. This shock, inter alia, resulted in the destruction of crops. Often, the response of doing nothing succeeded that of receiving help from family and friends. This indicated that social capital was often a last resort, after all other options had been exhausted, eroded or were completely absent in the first place (Bernier & Meinzen-Dick, 2014). Opondo (2013) found that recurrent floods exhausted asset

reserves of rural Kenyan households, thus compromising their ability to cope effectively as we also observed in this study. This implied that the erosive responses to shocks in households would ultimately lead to households reaching out for help, in the absence of which, the household would fail to respond. In this way, social capital acted as a buffer in asset drained households (Shackleton et al., 2015). Thus, erosive coping strategies resulted in an over-reliance on social capital, and a prevalent state of falling down and out; and a dwindling adaptive capacity.

The lack of response to crop destruction makes households more vulnerable to rising food prices. If households are to keep up with the rate of inflation on food items, then they would need to increase their income revenues as a response. This response, however, has not been evident in any of the observed responses in this study. Rather, a state of devolving or falling down and out was noted in the combination of responses observed in the findings. Many rural households depend primarily on government-issued social grants for income. This is most visible within female-headed households, and maybe attributed to the gendered role of being primarily care-givers (Patel, 2015). Thus, women generally do not have much time nor labour available for them to involve themselves in income-generating activities, which results in considerable dependence upon government social grants, thus, making them vulnerable, due to reduced income diversity (Statistics South Africa, 2012; Patersen, 2017). It was, therefore, observed that mostly female-headed households responded by spending savings, as opposed to them adopting time consuming income generating responses. This, however, has a negative bearing upon their adaptive capacity, as although social grants in South Africa

increased by approximately five percent from the previous year (SASSA, 2017), there has also been a significant increase in the inflation rate of South Africa which fluctuates around 5.1 % (Statistics South Africa, 2017). Thus, higher food expenses are increasingly eating away into many households' financial capital, especially female-headed households. Subsequently, many households are living from hand to mouth, and this reduces their livelihood options into the future.

5.5. Conclusions and recommendations

The study findings showed that rural households in the Eastern Cape are indeed, inter alia, experiencing climate induced shocks and stressors, namely crop failure and hailstones, that are interacting with other shocks and stressors namely asset loss, livestock loss, illness, death of main bread winner, job loss and delayed remuneration. It was also observed that as a consequence of these shocks and stressors, rural households were actively responding, though not all responses were resulting in better livelihood outcomes, and were resulting in possible long-term negative effects upon adaptive capacity. Thus, this study demonstrated that coping strategies can lead to unsustainable current and future livelihoods in rural Eastern Cape households. It was observed that the most common responses to shocks and stressors were failed strategies, followed by erosive strategies. Coping responses were found to be only significantly correlated to types of shocks and stressors experienced by households, and not to social capital and the asset profiles of households. As a consequence of the observed responses in this study, it was concluded that most of the households were on a falling down and out livelihood trajectory.

Limited resources and means for production result in slower recovery from shocks and stressors, and progressively more insecure livelihoods (Opondo, 2013). Thus, evidence from this study supports that interventions should focus on helping households to retain assets when they experience shock and stressors, given the prevalence of erosive coping strategies in rural households e.g. extending lines of credit and insurance products to rural households (Fischer & Buchenrieder, 2010). Given the limited number of responses that were found in the study, it was concluded that livelihoods in most households need more diversification so that they are able to step up (Hoogeveen et al., 2004). In the meantime, however, findings support that the government must continue to provide social protection, especially to female-headed and aging households, which the country currently does through the social grant system (Patersen, 2017). It also urgently needs to implement effective disaster management in rural areas (DRDLR, 2013). Over and above continuing to provide social grants, findings advocate for policy intervention to promote education and training programs that enable households to develop the capacity to more effectively utilise locally available resources, given the considerable amounts of underused physical and natural capital in the villages (Hoogeveen et al., 2004; Chapter 4).

CHAPTER SIX: COLLECTIVE RESPONSES TO SHOCKS AND STRESSORS AND IMPLICATIONS ON ADAPTIVE CAPACITY



Stockpile of old fencing and farming equipment [Photo: Tatenda Dalu]

6.1. Chapter overview

The previous chapters focused primarily on adaptive capacity as it is reflected in the asset base (by understanding asset diversity and relevance to context, the ability to access and accumulate these as well as asset abundance; Chapter 4), and how these were affected by coping responses (Chapter 5). This chapter looks at adaptive capacity through the more intangible social, economic and political factors in collective action (addressing objective three of the broader study). Using an agency and capabilities approach, this chapter attempts to understand how institutions and entitlements, knowledge and information, innovation, leadership and decision-making, are impacting the adaptive capacities of individuals and the community of Fairbairn within intervention projects. It does so using an agency and capabilities approach.

6.2. Introduction

Many natural resource-dependent rural communities in developing nations, including South Africa, have to respond to various stressors, which include food insecurity and reduced incomes (Ting et al., 2017). In response to these and other stressors, communities have often come together to engage in projects that can generate income and/or provide food to supplement households (e.g. Sachikonye et al., 2016; Ulian et al., 2017; Murugan & Israel., 2017). These projects have often been the initiatives of various government departments or non-governmental organisations, as well as charitable organisations such as religious groups (ibid). Such initiatives have provided a platform for individuals in affected rural communities to aggregate their individual assets for a common purpose-adaptation to multiple stressors; not excluding those that are

directly or indirectly climate-induced. The analysis of this collective use of assets thus, in part, investigates the relational dynamics assessed in the previous chapter that govern the use of common physical and natural assets that were profiled in chapter 4.

Social networks and assets can be aggregated and used for the benefit of the group. In many instances, this can increase the ability of communities to cope with stressors and shocks (e.g. Suckall et al., 2015; Nesengani et al., 2016). These social networks are affected by levels of social capital that exists within a community. This capital was profiled in chapter 5, and showed that there were high levels of bonding social capital. As such, there is growing interest in supporting vulnerable communities respond to, and ultimately adapt to the impacts of climate change. Thus, the aim of any local-level adaptation intervention is to increase the individual and the community's adaptive capacity (Jones, 2011). This requires that individuals and communities are actively involved in processes of change; relating to changes in behaviour, resources and technologies (Jones et al., 2010).

This interest has, however, not been matched by a better understanding of the impacts that development interventions have on adaptive capacity at the local level (Jones et al., 2010; Jones, 2011; Suckall et al., 2015). Although some headway towards linking capabilities and agency to adaptation within the specific context of rural South Africa has been achieved (e.g. Cundill et al., 2014), it is still more extensively researched within the fields of behavioural and health sciences, as well as economics, in other parts of the world (e.g. Conradie & Roybens, 2013; Teece, 2014; Mays, 2016; Coraiola et al.,

2017). Thus, our understanding of the interactions of human capital, reflected in agency, and human values as capabilities within initiatives in the context of climate change and adaptive capacity, is still limited within the unique local contexts of rural South Africa. Further, communities are limited in their abilities to adapt by their capacities to act collectively, and social capital, trust, and organizations greatly influence this capability to act collectively (Engle, 2011). This relationship has implications upon the effective use of shared assets, and how these are used can determine the levels of collective adaptive capacity of communities. This is important to this study's context, where natural and physical assets are shared by the wider community. Understanding adaptive capacity, therefore, entails recognizing the importance of various intangible processes that include decision making and governance, institutional structures and entitlements, power dynamics, cognitive abilities, beliefs and opportunity exploitation as they are reflected in the capabilities and agency of individuals and communities (Jones, 2011).

Thus, a holistic view, that also includes understanding the agency and capabilities of individuals and communities, stemming from the understanding that resources and assets are important dimensions of social resilience, alongside social organisation to learn from and adapt to risks, is necessary to build a better understanding of collective adaptive capacity (Water & Adger, 2017). Previous narrow conceptualizations of adaptive capacity have, however, resulted in some past projects being rolled out almost exclusively upon the premise of asset needs assessments without much knowledge of the agency and capabilities of the communities that will execute the project (Sachikonye

et al., 2016). This usually compromises the sustainability of these projects, and often results in very little, if any, improvements upon the adaptive capacities of communities (ibid). Using an agency and capabilities approach, this study, therefore, aimed to contribute to filling this gap in knowledge, by investigating the actions of rural Eastern Cape Province community members of Fairbairn as it was reflected in their agency and capabilities interacting within projects, and understanding how this impacts upon the adaptive capacity of the community. Specifically, an attempt was made to answer these questions relating to objective three of the broader study: 1) How are collective responses organised in the community? 2) How are the levels of agency and capabilities interacting within projects such that communities take full advantage of opportunities to increase adaptive capacity? 3) To what extent has local agency and capabilities been considered within the development and management of projects? and; 4) How does this affect project success and collective adaptive capacity of the community? To answer these questions, the study investigated the existence of an appropriate and dynamic institutional environment that facilitated the fair access and entitlement to key assets and inclusiveness, by understanding the organizational structures of the projects. It looked at the ability of project participants to implement knowledge to support activities, to explore solutions, be self-reflexive and forethoughtful, so as to take advantage of new opportunities. The study also investigated the ability of participants to anticipate, integrate and respond to changes through its governance structures.

The Hertzog agricultural cooperative (HACOP) was a community development project that was established in the Kat River valley shortly after the end of the apartheid regime in South Africa in 1995 (Binns & Nel, 1999). It was set up in the rural village of Hertzog and surrounding settlements. It identified with four foci, namely, promotion of rural markets; promotion of small, medium and micro-enterprises in rural areas; support for agricultural programmes and the promotion of tourism and ecotourism (ibid.). These foci were defined by the government, although this development took place independent of state policy. At the time that there was an exodus in 1984 of white and coloured farmers who had been farming tobacco and citrus, the area was transferred to the Ciskeian state (Nel et al., 1997). Beyond this time, all agricultural production ceased. The remaining coloured and Black African farm workers managed to secure a commercial loan from the Ciskei Agricultural Bank, to establish HACOP (Binn & Nel, 1999). Their motivation was hunger, and not being able to wait any longer for government intervention. Eighty-three members joined the cooperative, starting with a one hectare plot of irrigated land. Most families in the valley gained access to land, and a means of income (Nel et al., 1997). HACOP maintained irrigation pumps and piping, and jointly owned and administered ploughing and harvesting services. The cooperative focused on labour intensive market gardening of cabbages, potatoes, tomatoes, spinach and pumpkins, and enjoyed much success. For example, in the 1996 growing season, HACOP produced a surplus potato crop which came to 6, 000 ten kilogramme bags (ibid.). It therefore depended on the strong social capital in the area, and the shared assets in the area in order for it to be a sustainable pathway out of poverty.

6.3. Methods

6.3.1. Sampling and data collection

Data were collected using both semi-structured interviews and focus group discussions. Interviews were selected as the most appropriate data collection method for exploring the views, experiences, beliefs and/or motivations of individuals on project dynamics and the impacts upon their own livelihoods especially, concerning their ability to achieve greater livelihood security, which influences their adaptive capacity. Interviews provided a deeper understanding of social phenomena, and were thus favourable in answering the current specific research question as it required more detailed insights from individual participants (Gill et al., 2008). Focus groups were useful in generating information on collective views, understanding group norms, meanings and processes; and similar to interviews, were also instrumental to understanding participants' experiences and beliefs (Liamputtong, 2013). Additionally, focus groups were used to clarify, extend, qualify-and at times, challenge the data collected in the other methods used in this research (Gill et al., 2008). Participants for both were purposively sampled on the basis of being residents of the Fairbairn community, and having participated in at least one of the community development projects for a period of at least one year. During sampling, participants were also purposely selected from different demographic groups (i.e. male, female, youth (<30 years old), old (>65 years old), married or co-habiting and single). Semi-structured interview questions focused on understanding project dynamics and power structures. Also considered were levels of involvement and responsibility within the projects, social status within the community, as well as education levels. Questions enquired into how the projects were incepted and

managed, who made the decisions and how these decisions were then received. They also investigated the extent to which projects were successful in achieving their objectives, and related this to how it either increased or decreased adaptive capacity.

As such, the interviews consisted of several key questions that assisted in defining these key areas, whilst also allowing the interviewer or interviewee to diverge in order to pursue an idea or response in greater detail. Questions were therefore open-ended, neutral, sensitive and easy to understand. Interviews varied in length, lasting between 20 minutes to an hour each. These were conducted in places where participants felt comfortable, usually in their homes as per appointment, often during the later hours of the afternoon. A total of five interviews were conducted. Focus group discussions were also centred on similar themes, with groups being grouped by project. Questions moved from the general and became more specific, and also followed the relative importance to the research problem under investigation. In total, four focus group discussions were carried out, with groups varying between four and seven participants each. Two of the focus groups were recruited as pre-existing groups, which allowed for easier interaction, as participants had shared experiences and enjoyed greater comfort and familiarity. Focus group meetings were held at the local community hall, and were carried out during the day, outside of the working hours of the community members. In order to effectively record the discussions, a moderator, proficient in both the local language (IsiXhosa) and English, facilitated the group discussions, whilst two observers (also proficient in both languages), recorded the discussions in English on paper. A translator was present to translate questions and answers to the researcher, who was also taking

notes. A Dictaphone was also used to record the discussions, so as to ensure that no information was lost.

6.3.2. Data analysis

6.3.2.1. Semi-structured interviews

Field notes taken by the interviewer during and immediately after each interview about observations, thoughts and ideas about the interview, were combined with the verbatim transcripts of the tape recorded interviews. This protected against bias, and provided a permanent record of what was, and what was not said during the interviews (Burnard et al., 2008)

6.3.2.2. Focus groups

Observers' notes were collected, and were put together with the transcription of the audio, which was transcribed verbatim, identifying each speaker. The context of each speaker was taken into account (e.g. gender, age), as this was essential to the understanding of individual considerations. Group dynamics that generated remarks such as challenges and justifications were also taken into account.

Both an inductive and a deductive approach were used to analyse the data. The initial framework used to guide the analysis was the agency and capabilities framework of Sen (1999). From this framework, themes of knowledge, power, gender, motivation and attitudes were initially used to examine the data. Other themes were then subsequently added as they emerged from the data. Thematic content analysis, involving analysis of

transcripts, identifying themes within the data and lifting out examples of these, was primarily used (Creswell, 2013). As such, transcripts were read repeatedly whilst making notes of key words, themes or short phrases that summarized the text, also known as the process of open coding (Patton 2005; Burnard et al., 2008). These initial summaries were then copied onto a new document, and duplicates were removed; after which data were further categorized into fewer common themes or categories. These categories were then colour coded and filed. From here, the findings were then interpreted subjectively and presented in the results section to follow. Quotes were lifted from these thematically coded scripts from the interviews and the focus groups, with selected quotes being representative of common sentiments within themes. In order to adhere to the standards of anonymity and confidentiality used in this study, pseudo names were provided in the results wherever names were mentioned.

6.4. Results and discussion

6.4.1. The organization of projects in Fairbairn

6.4.1.1. Phase 1: HACOP inception, initial successes and challenges

According to the interviews and focus group responses, the main project that was implemented in the village was Hertzog Agricultural Cooperation (HACOP), which started in 1994. It included the villages of Fairbairn and Phillipton in addition to Hertzog. It succeeded a farmers' cooperative that focused on tobacco farming which had stopped, as it did not satisfy the food security needs of the community, it stopped. HACOP thus inherited many of the productive assets from this cooperative, which included tools (e.g. ploughs), engine pumps and piping systems, and established a

market gardening project, growing mostly vegetables such as butternut (*Cucurbita moschata*). However, as this was the first project that the community was solely embarking upon, an experienced white farmer was hired to manage the project as the foreman. This foreman was paid a salary by the government. During this period when the community project was being managed, the community enjoyed good profits from the produce of their market gardening project. This success was largely attributed to the then manager's knowledge of, and links to the small town markets in Alice and Fort Beaufort. He was, however, relieved of his duties three years into the project, due to disagreements within the management of the project, and this is believed to have begun the steady decline of the project. This action, however, exposed some existing conflicts within the leadership structures of the project:

“This Mr X was ousted by three other local elders from one of the three villagers - particularly from Hertzog. Two local men wanted to take control over how things were monitored now that HACOP has started with the relevant material acquired from the tobacco co-operative. T and Mr S kicked away Mr X as they wanted to be in control.” **Respondent 12 (male, middle-aged, community leader)**

Following the dismissal of the initial project manager, it also became clear that no knowledge exchange had occurred preceding the departure of the manager, with regards to the continuity of sustainable links to the market:

“When Mr X was ousted administratively things went poor. As one of the things that collapsed was the market. As nobody now could be supplied. The two men who took over did not practice things in an administratively perfect way to make sure that the project flourishes. So seeing now that the project is losing the market...” Respondent 20 (male, middle-aged)

Although community members initially enjoyed financial success, this was subsequently negated by debts accumulated at the time of the change in management that had occurred. It was reported that the new managers had not anticipated and appropriately planned for the repayment of bank loans:

“At that time people could make loans from the banks, namely African Bank in the hope of paying the money back through making things in the field and this happened successfully... Now that these men took over, African Bank was never paid as now the produce is stuck in the field. So now people started receiving collection letters from the bank because of the fact that these men didn't have good administrative skills. When the people produced and sold, people would bring money to these men, these men failed to act with integrity - making it a point that bank payments were paid regularly. This is why the bank came to claim money. They were corrupt as they didn't pay the banks.” Respondent 3 (male, married, middle-aged)

Interviewer: What were the consequences of not paying the bank?

“Letters of demand were the consequences and now because HACOP was failing and failing their accounts were handed over to the lawyers. And remember there was the R3000 being paid for the manager of the project. Now that the project was failing the government stopped paying for someone to manage the project as those men were corrupt.” Respondent 3 (continued)

6.4.1.2. Phase 2: The fall of HACOP, factionalism and the rise of Masimanyane

By 1999, the HACOP project was virtually terminated, and a year later, all villages, except Fairbairn, dissociated themselves from all matters concerning the project. However, it was also around this same period that an NGO, whose name and details are unknown to the respondents, attempted to intervene in hopes of assisting the community to revive the project. The community was at this time struggling to pay off their debt with the electricity supplier Eskom (South African electricity public utility). With assistance, they did, however, manage to pay off the debt, and also acquire some diesel pumps in 2000. The respondents, however, report that these pumps were put to personal use by members of the other two communities that had left the project. By 2001, production had seriously decreased, with much less hectares under cultivation. During this time, the then project managers struggled with accessing bank services due to overdrafts. The community then received assistance from the local municipality in the form of seedlings, a tractor and diesel in 2003.

It was in this same year that a new project called Massive Maize was conceived. The community, however, was unable to meet the production stipulations of the project, and ended up splitting into two factions, with one starting a separate project called Somgnuka. The Massive Maize project then evolved from maize production to cotton production. It was at this point that most of the remaining Fairbairn community members removed themselves completely from the project. However, women remained as part of the project, but were challenged with reviving the project.

“Now that this cotton project came into place, people no longer felt that they owned the whole project that was happening in the fields. They just didn’t work on the cotton project. The committee was the only people working on it. Then they were even assigned a certain Mr B from the DEA in order to lead this project. But still people stayed away from this.” Respondent 28 (male, middle-aged, married)

“The fact that many people ended up leaving the project negatively affected the produce as most of the people that remained were women and they couldn’t keep up the pace with the weeds and irrigation. At some point in time they had to hire a male figure to assist them with irrigation.” Respondent 5 (male, older, married)

The overall HACOP project was succeeded by the Masimanyane project, which targeted the youth in the village of Fairbairn. The project started in 2006, with an initial

membership of 60, terminating in 2014. Similar to HACOP, it was a market gardening project that produced vegetables destined for the nearby local small town markets of Fort Beaufort and Alice. It however also suffered a similar fate of failed markets. It was further challenged by conflicting youth aspirations of finding employment and immediate remuneration for work:

“...Another major contributing factor to the numbers dropping down was because there was a tenderpreneur - this gentlemen swayed away the youth’s attention by opening up an informal training - the youth was paid R150 per week. The youth wanted quick bucks - their attention drawn away from working in the fields... The rest of the youth left when this man came. So the elderly were left - about 6 people.” **Respondent 7 (Male, under 30 years)**

“Even before the arrival of this training programme, youth wanted to go against the rules of the project. They wanted to be paid monthly or fortnightly. They demanded that some form of payment should be made to meet basic needs. Some of the youth were family heads”. **Respondent 7 (continued)**

Interviewer: Do you think it was a good rule that people only get paid in December?

“In terms of this rule, the agreement that was between them and social development was that the sharing should take place annually. Now that was

very difficult to reverse. So in essence ended up having to stick to that...

Respondent 7 (continued)

Interviewer: What was the reasoning of only getting paid in Dec?

"The intention was to have something in Dec as Dec is the difficult time, to not at least have something on the table." **Respondent 7 (continued)**

6.4.1.3. Phase 3: Current projects and state of collective efforts

It was reported that the two community members who took over management of the former HACOP project currently employ people to grow Lucerne (*Medicago sativa*), but also currently pose problems of access to, and ownership of, communal assets from previous projects to other members of the community:

"...they are blocking the community members now to enter into the fields. And also the equipment they are using - tractors, pipes - does not belong to them, it belongs to the community...now that people now want to return back to projects, they are making it a point that they remain in control - they don't want people to be part of that anymore. To the extent that the community was about to be assisted to cultivate tomatoes by Mr D, but they strictly rejected that..." **Respondent 6 (male, elderly, married)**

Currently in the village, there are two on-going projects which are almost exclusively run by women in the village. One project is a poultry project, which targets the immediate village as its only market. The second is a 'stockvel', an organised collective money saving initiative for funerals. Similar to the former, it only serves the immediate village of Fairbairn. The village is also currently developing a proposal for another project that will aim at improving the overall Kat river catchment area management.

6.4.2. Knowledge and leadership

No evidence suggests that there was any pre-project consultation to facilitate bottom-up approaches in the project inception. Responses supporting this claim were given by respondent seven. It was also observed that the youth, who were to participate in the Masimanyane, were left out of the goal setting process, resulting in much discontent with the delayed remuneration. Although the project leaders were well intentioned by making payments only for December, they were unable to factor in the livelihoods and responsibilities that some of the participants bore. This may also support the claim that very little was known of the community's capabilities and values by the project inceptors from the very start. This is one weakness associated with top-down approaches, as well as the complex interplay of power and knowledge, which can at times compromise the sustainability of projects (Wall, 2006).

A comparative study across three different economic contexts by Fraser et al. (2006) showed that the process of engaging people in making management decisions resulted in community empowerment. They further observed that, not involving community

members as stakeholders in decision-making forums, also makes them vulnerable to being viewed as irrelevant by policy makers and other stakeholders. Thus, this negatively affects the adaptive capacity of the community, as it is important that they themselves can approach stakeholders, and also solicit government funding as needed. This ability was compromised by the exclusion facilitated by the initial top-bottom approach. However, in this study, we also observed that the overall lack of education and knowledge of the community members was another barrier to participatory decision-making. This finding is similar to Winkler et al. (2017), who found, inter alia, that the lack of knowledge in rural South African communities, limited participation in decision making in renewable energy potential scenarios. The lack of knowledge in this study was evident in the heavy reliance of community members on proxy agency, initially with the foreman, and then with the succeeding leaders. The succeeding leadership, however, also did not have much, if any, training in management and marketing, and also lacked the political connections and power of negotiation to sufficiently secure a market for the produce, due to low bridging and linking social capitals.

Respondent 12 suggests the problems associated with proxy agency to collective adaptive capacity, which includes feelings of powerlessness and exclusion. Proxy agency is often implemented where the agents themselves do not feel that they themselves possess sufficient knowledge or abilities to take on a specific task or responsibility (Bandura, 1999). This was the case above, in addition to customary roles of village leaders, which was the likely premise upon which candidates were recognized

as the managers of the funded projects. The significant reliance on proxy agency can also be attributed, to an extent, to the history of South Africa, which deprived many rural communities with sufficient education and learning opportunities (Horwitz et al., 2002). This systematically took away their competence to successfully run development projects. This, coupled with traditional power structures, results in top-bottom arrangements, which can constrain collective adaptive capacity, particularly in the above-mentioned situation, which affected the access and control of assets (Adger & Vincent 2005; Jones et al., 2010; Warrick et al., 2017).

It is observed from respondent 20 that there was a lack of forethoughtfulness on the part of the new leaders, which is critical for successful adaptation, encompassing the ability to assess options in light of a complex and uncertain future (Jones et al., 2010; Jones, 2011). It also reflected the low levels of linking social capital that were shown in the previous chapter, which is critical in establishing market networks. Thus, the project lacked clear avenues for knowledge exchange and generation, which are important to adaptive capacity (Biesbroek & Wals, 2017). Secondly, the shadows of South Africa's history are also noticeable, when considering the underdevelopment of communication links to markets that characterize many rural areas in South Africa, challenging the success of any rural agricultural production in the country, reinforcing the geographical nature of rural poverty. The development of South African agriculture has historically depended upon intensive government support, including high capitalization and infrastructural investment, as was observed during the apartheid era with many white farmers (Letsoalo & Robertson, 1982). It was however observed in this study that such

support continues to lack for rural communities in South Africa, limiting the development of rural agriculture, thereby systematically limiting avenues of asset accumulation for rural households, which ultimately limits their adaptive capacity (ibid).

6.4.3. Gender, leadership and participation

It was observed that no women were given any key decision-making or governing roles in any of the major funded projects in the villages, but rather, were restricted to the typical roles ascribed to African women, as participants to rituals and doers of meagre tasks (Robertson, 1987). In a recent study conducted in Malawi, it was also found that underlying gender and cultural norms may affect the ability of women to participate actively in groups, as well as to take advantage of the empowerment potential of groups. Findings suggest that, while farmer groups have the potential to empower women, reproduction of societal gender roles within groups may result in male bias, constraining the ability of groups to empower women (Mudege et al., 2015).

However, at the point that men had actively withdrawn themselves from the projects, women were afforded the opportunity to play leadership roles in the projects. This also coincided with the time that the projects were lacking in funds and most equipment was no longer functional or missing altogether, and participation overall had dwindled. This suggests that no mechanism to address the lack of economic opportunities for women that have favoured depopulation and marginality in rural areas actually exists, as women had no choice but to take over on what was left over from their male counterparts (Alonso & Trillo, 2014). Thus, the participation of women was in some

ways constrained, as they were excluded in the governance of projects, which also affected their wellbeing. This exclusion can compromise the development of adaptive capacity of women, as it disallowed them access to critical assets necessary for adaptation. This evidence from rural South Africa supports the conclusions of Bayeh (2016), who found in Ethiopia, that unless women are empowered and gender equality is achieved, so that women can play their role in economic, social, political, and environmental areas; the country will not achieve sustainable development with the recognition of only men's participation in all these areas.

Often, women were willing to give of their own personal resources, even where there was no guarantee of a return on their investment. This however, does not necessarily increase adaptive capacity, as this can erode personal assets, especially where production is not profitable, as was the case in this project. In this study, it was observed that the women's projects involved low inputs as far as assets were concerned. A lack of bargaining power in the ability of women to be able to access and use the larger communal assets was therefore probable. For example, women used their personal buckets to transport water round their small plot, as opposed to using the hose pipes that belonged to the community, and collected firewood for heating. This scenario is not unique, as de Groot et al. (2017) also found that women in developing countries face a range of barriers when establishing and operating enterprises, including access to energy, as was the case in their study conducted in several developing countries.

Women were also found to be unable to take advantage and make use of communally owned assets. For example, women were set up in very close vicinity, and as such did not use the communal lands extensively, in spite of the open access to land afforded by communal lands. It was also largely observed that, women made use of only small assets that had been purchased using the personal monies of the women's project team. Some of the other assets appeared to have been scavenged from the stocks of the previous projects, and were often not in a good working state. The study's finding thus contradicted to some extent Lecoutere (2017) findings in Namibia, which showed that co-operative membership has a particularly strong positive impact on women's decision making power at the household, group and community levels, which can have positive implications upon their adaptive capacity.

However, the autonomy that this project gave to women contributed positively to adaptive capacity, as this autonomy has been credited for better nutrient intake of households (Huss-Ashmore & Katz, 1990). Furthermore, the findings also support those of Shackleton et al. (2015), who found that although women and female-headed households are generally poorer and more at risk than men and male-headed households, in some situations women may be more innovative in their individual and collective responses to stressors, and may have more social capital to draw from (Chapter 5).

Women displayed higher self-reflexivity, which increases adaptive capacity compared to men, evidenced by how they restructured their projects in such a way that they avoid

the failures and traps of the previous ones. This change can, therefore, be a form of adaptation. Firstly, it was observed that women were running a very small-scale project with chickens. Although this may largely be because the project was mostly self-funded, it may also be an adaptive response based on learning from wasteful overproduction of the previous funded HACOP project, where produce was reported to have rot for lack of a market to which to sell. Secondly, the produce's target market was only the village itself. This may be due to them coping with their lack of transportation assets, which made any external markets inaccessible. Thirdly, it was noted that there was no continual production of chickens for sale on the market, and thus production occurred in waves. When asked, the women responded by saying that they aimed for peak times of meat consumption, such as traditional ceremonies, and other celebrations such as holidays, to produce their chickens. This adjustment was also done to ensure no wastage of their meagre resources, thereby showing high self-reflexivity. However, their low powers of negotiation often constrained their production, as they depended on their direct sales to sustain their production. As people mostly bought on credit, they were often powerless in getting people to pay on time, as payment due dates were neither stipulated nor enforced. This could support the idea that women have frequently been portrayed as "nicer" negotiators than men; and, since niceness does not help one to win, men have typically been credited with being more effective negotiators than women (Watson, 1994). This can have negative implications upon developing the adaptive capacity of women in collective projects, when considering institutions and entitlements (Jones et al., 2010).

6.4.4. Challenges of social fragmentation, external influences, technology and migration to collective action

It was observed in this study that external influences, including funders (respondent 7), made it difficult for the community to serve a common goal during projects. The community has also experienced a lot of bi-directional migration, and has been influenced by technology (dominantly broadcast and social media), which has gradually increased due to the electrification of the village. Most homes now own at least a television or radio set, and in many instances, at least one member of the family owns a mobile phone (Chapter 4). This supports The Department of Telecommunications and Postal Services (2015), who reported that access to telecommunications statistics released by Statistics South Africa in the General Household Survey of 2014, showed that only 4.1 % of households did not have access to either landlines or cell phones nationally. Through these various means and mediums however, has been exposure to differing ideas, which has resulted in social fragmentation, most apparent in the generational expectations reflected in projects (Arceneaux & Johnson, 2010; Malila, 2013). The youth are more exposed to social media, and are more concerned with employment, training and income generation. On the other hand, the older generations reflect the need to retain their identity as farmers, being more concerned with subsistence than with commercialization of their farms. Into the future, this could pose a challenge to the transformational goals that are on the horizon for rural South Africa, given the current discourse on land redistribution. Indeed if the past could be used as an indicator of future success, then it should be pointed out that despite the signing of international conventions and the development of sectoral rural focused programmes,

rural areas remain underdeveloped, with dire effects upon adaptive capacity. Four key reasons for this have emerged: Firstly, there appears to be a lack of a common definition of “rural development”. Indicators of deprivation or lack of access to services are used to attempt to define what is needed in rural areas. What counts as rural or urban is extremely difficult to define. This is especially so given the deep, continuous and intertwined relationships of urban and rural in South Africa. Some academics even attempted to “rurbanize” rural areas (define development of rural areas in urban terms). However, from this study, what people would want out of the idea of development still appears highly contested. What is apparent, though, is that current policies seem to favour the voices of the older generations over that of the youth, by continuing to encourage one form of small holder agricultural production or the other.

Merging diverse self-interests in support of common core values and goals are a prerequisite to successful social efforts to change lives (Bandura, 1999). However, this is not always possible even within single communities, as heterogeneity exists within communities (Alesina & La Ferrara, 2000). In this community, self-interests often manifested as competition between projects occurring at simultaneous times, as the beneficiaries of existing socio-structural practices wielded their influence to maintain their vested interests:

“Since the beginning of the project tensions began with HACOP. Reason is that it looked like everything they (Masimanyane) did was flourishing so some jealously developed. They would fight over land use, fight over the irrigation

*system. So this fields tensions between the two projects.” Respondent 8
(male, elderly, widowed)*

Thus, as a consequence of the above, there was a rise in social fragmentation into separate interest groups, each exercising its own factional efficacy in recent years. This was particularly evident where the women in the community broke off eventually to create their own development project focusing on poultry, where they could have a sense of autonomy.

6.4.5. Ability, motivation and attitude

From the findings, a gradual erosion in perceived efficacy resulted in the withdrawal of agents from acting and ultimately failure of projects. The feeling of being overwhelmed challenges the agency of people (Perkins et al., 2008). The magnitude of experienced challenges and problems undermines perceived efficacy in finding effective solutions (Bandura, 1999). Also affecting self-efficacy and collective action, was insufficient knowledge based on low education levels, which yielded technological barriers to action. Self-efficacy has influence over people's ability to learn, their motivation and their performance, as people will often attempt to learn and perform only those tasks for which they believe they will be successful (Lunenborg, 2011). One specific incident showing this lack of knowledge of technology was observed with issues to do with the repairing of the tractor, which was eventually abandoned and stolen.

Secondly, evidence suggests that the motive for participation in the projects differed, and this limited common goal-setting, and facilitated for self-interests and factions (Respondent 12, 20, 9, 10 and 11):

“I was hoping to plant this vegetables and sell it because I was out of work from that year.” Respondent 9 (male, young)

“It was only to sell the vegetables and eat them.” Respondent 10 (female, elderly)

“No work here except agriculture, why they were joining because they need the food.” Respondent 11 (male, middle-aged)

Thirdly, lengthy delays between action and noticeable results discouraged efforts at socially significant changes, as was observed with the youth group (Respondent 7; Bandura, 1988). Furthermore, those in leadership positions seem to have assumed the reasons for joining by community members, without clear communication between the parties concerned (Respondent 3, 7). This disconnect proved to have been a great challenge towards the sustainability of the initial project, resulting in abrupt goal changes that were not necessarily planned, thus limiting the ability to adapt to uncertain and sudden changes in the future, which led to the demise of the projects, and compromised adaptive capacity development (Jones et al., 2010).

6.5. Conclusions and recommendations

This study investigated how human agency was used within the community projects in Fairbairn, to understand how this was impacting upon the community members' abilities to adapt to stressors and shocks, both at the individual and collective levels. This study showed that agents in the Fairbairn village are willing to engage in, and are capable of, agricultural production. This was reflected in the bountiful harvests that were produced during the projects that occurred in the village. However, this study showed that the historic limitations imposed by land policy and governance of South Africa pre-1994 are still acutely apparent in the current rural Eastern Cape context (Kloppers & Pienaar, 2014). These limitations were evident in the access to and knowledge of markets, project management and finance. Proxy agency was therefore greatly depended upon by the community, as they themselves did not possess the abilities required to manage their own projects. Although this was helpful especially at the beginning of projects, it was often not sustained due to a lack of knowledge exchange avenues in the project. Further, self-interests of more powerful members in the community compromised inclusivity and participation of other community members and also led to project unsustainability.

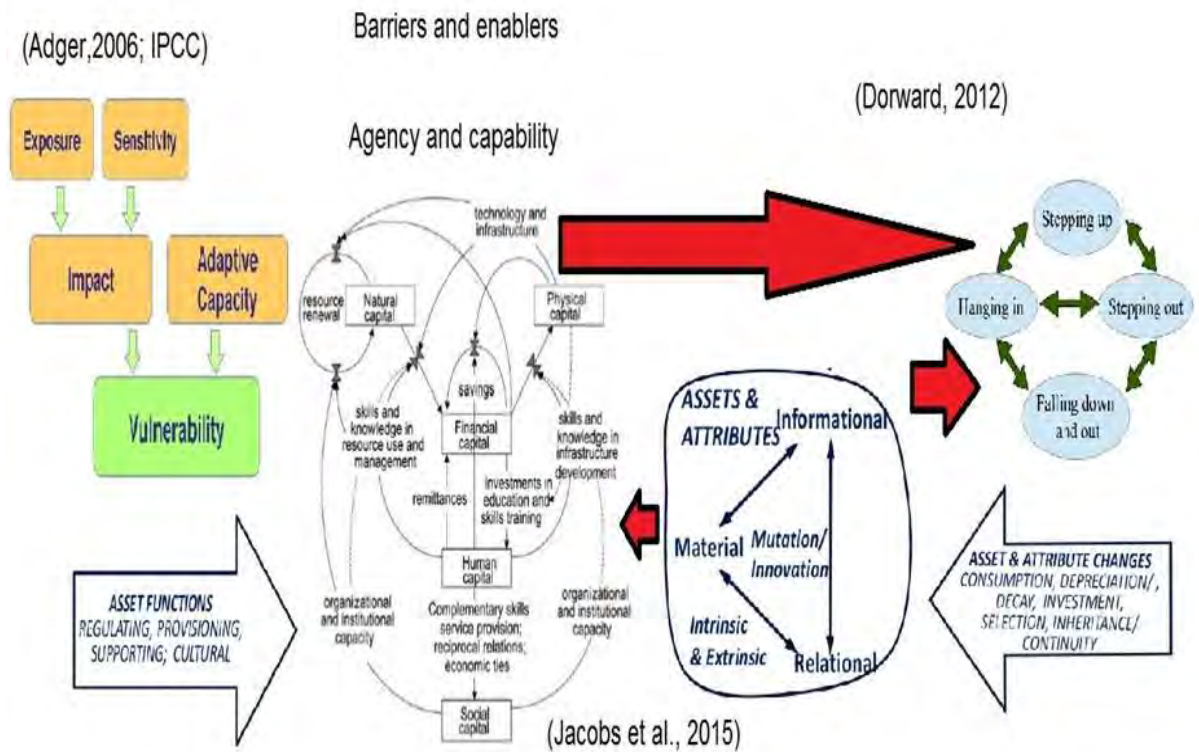
Thus, the institutional environment did not allow fair access and entitlement to key assets, which included land and equipment, negatively affecting adaptive capacity. Furthermore, knowledge dissemination and information to support adaptation activities within the project was also limited due, to the interplay of knowledge and power (Wall, 2006). It was also observed that the asset base for projects, particularly the tractor and

water pumps limited the ability of the community to respond to evolving circumstances, as often the equipment was broken down, and eventually stolen (Zuwarimwe et al., 2016). Lastly, the top-down approach characteristic of project development and decision making did not foster innovation in exploring solutions in order to take advantage of new opportunities (Jones, 2011). Not all groups were given a voice, particularly women, which limited innovation which is an important component of adaptive capacity (Jones et al., 2010).

These study findings show that there is a need for policy intervention into in-building of knowledge dissemination avenues during community projects such as formal training and manuals. Thus, government can facilitate the passing down of knowledge and skills by ensuring that all projects have training and knowledge transfer inbuilt in any development projects that they fund. Succession must be dealt with effectively, with leaders having terms to which they must adhere. Inclusion and participation, especially of women, must be ensured, by better policy implementation during community project development (Zuwarimwe et al., 2016). Policies focusing on affecting gendered development outcomes need to consider inequalities in social institutions as a constraint, and consider promoting ways to reduce gender inequalities. This is important, as farmer group participation may not empower women if underlying social issues that result in gender inequality are not addressed (Branisa et al., 2013; Mudege, 2015). Problems of social cohesion, which result from the heterogeneous nature of many communities, can be potentially overcome by considering decentralised co-operation in project design (Zupi & Puertas, 2010). Finally, this study showed the need

for improving currently underdeveloped communication links to markets for rural communities in South Africa. The digital divide that still characterizes most rural contexts specifically in the Eastern Cape, which limits access to knowledge, also needs to be urgently addressed (Department of Telecommunications and Postal Services, 2015).

CHAPTER SEVEN: SYNTHESIS AND CONCLUSIONS



Conceptual framework highlighting the different frameworks utilised during this study

7.1. Chapter overview

This chapter positions the findings of this study in the broader development nexus, and considers their policy implications upon the future adaptive capacity of rural Eastern Cape households. This chapter therefore reintroduces the problems that this research attempted to answer. The study findings are then discussed as they responded to the initial research problems. It finally relates findings to the context of the rural South African development nexus. It presents possible implications and where applicable, recommendations to developing future adaptive capacity based on the research findings.

7.2. Introduction

The most prominent risks for rural human settlements in South Africa in terms of hazard exposure and bio-physical sensitivity comprise environmental risk, and social vulnerability, the latter which is a deterrent to adaptive capacity (DRDLR, 2013). Thus, this study was justified for having paid specific attention to the socio-economic and political dynamics in understanding adaptive capacity. This study investigated how adaptive capacity was linked to assets and responses in households in the rural Eastern Cape province of South Africa (Chapters 1 and 2). It made an attempt to address the need for regional planning to take into account the local risks and vulnerabilities for rural inhabitants, so as to properly address the contextualised nature of social vulnerability. The study further responded to the urgent need for further research into improving adaptive capacity, particularly at the local level. Furthermore, this study expanded upon the work of other scholars in rural contexts on multiple interacting shocks and stressors

and social vulnerability (e.g. Shackleton & Cobban, 2016; Ofoegbu et al., 2017; Sonwa et al., 2017).

In this study, adaptive capacity was in part defined by the (households') assets, collective physical capital (infrastructure (and services)) and natural capital (ecosystem services) available to people to respond to multiple shocks and stressors, which included the risks of climate change (see Chapter 1). It was further defined by how people experienced hazard exposure; therefore, it reflected the multiple stressors which people experienced such as poverty or unemployment, and how people subsequently responded (Dube et al., 2016; Chapter 1). The willingness and capacity to adapt, net worth, social networks, socio-cognitive aspects, demographic characteristics and migration aptitude all are elements that often determine livelihood trajectories in the face of climate change and other stressors (Pelling, 2011; Adger, 2017). It was therefore rationalised in this study that adaptive capacity is inversely related to social vulnerability, implying that a community with high adaptive capacity will have low levels of social vulnerability and vice versa (see Chapter 2). Therefore, in assessing the adaptive capacity of rural households, certain key indicators of social vulnerability for rural households were analysed. The indicators were chosen to focus on the following aspects of adaptive capacity to climate change and other stressors:

- i) Infrastructure and services: access to water, dwellings and grazing land;
- ii) Livelihood activities: employment and other income generating activities, and;
- iii) Socio-economic vulnerability: asset ownership, household income, household size, gender and age of household head.

7.3. Summary of findings and general discussion

In the introduction to this thesis, and for the purpose of the main discussion henceforth, it was proposed that:

1. Many rural households possess few assets and have low means to accumulate assets. They are therefore increasingly dependent upon state welfare in the form of grants as their primary source of income flow, hence reducing adaptive capacity.
2. Rural households are experiencing multiple shocks and stressors simultaneously. Social capital is an important asset capital in responding to these, but an over reliance on this capital could negatively affect future adaptive capacity.
3. The agency and capabilities of rural communities are often challenged in collective response initiatives such as community projects. This can negatively affect adaptive capacity, as communities find it difficult to take advantage of new opportunities that are concurrent to the adaptation process.
4. There exist clear differences across different households in a single community in levels of vulnerability and adaptive capacity. This adaptive capacity is a product of assets, agency and capabilities which vary across heterogeneous household compositions.

Thus, the summary of findings shall now be presented in response to each of the aforementioned. The study findings supported the first proposition, having found that

more than half of all households were liquid asset poor, which was also an indication of limited means to income flow. Liquid asset poverty was highest in households of seven or more members, followed by households with two or less members. Female-headed households were found to be more liquid asset poor compared to male-headed households. Similar to this study's findings, Falayi (2017) and Sinyolo et al. (2017) also found that there has been a remarkable decrease in wage earnings in the community, which has been overtaken by an increasing reliance on social grants. Findings showed that more than 95 % of all households received at least one social grant, with a range of ZAR0-60 000 per annum per household. It was, however, female-headed households that received the highest amounts of social grants. It was also revealed in this study that no households were illiquid asset poor. In all households, livestock, particularly cattle, represented the bulk of assets owned by households, especially so in male-headed households (see Chapter 4).

With regards to the second proposition, findings of this study agree, showing that households had experienced eight shocks, often experiencing two or more of these simultaneously (Chapter 5). Findings also showed that the most common response was not responding at all, indicating that 35.8 % of households had low adaptive capacity. It was also observed that those that were responding were using more erosive response strategies (23.6 %) than non-erosive strategies (20.8 %). It was further observed that households ran the risk of depleting what was currently their only form of non-erosive response, their social capital, which was predominantly bonding social capital with relatives and friends, due to their over reliance on the capital (Chapter 5).

Study findings also agreed with the third proposition of this study. It was found in this research that the community was often unable to sustain the benefits of projects implemented in the area and were therefore unable to increase, or sustain their adaptive capacity. A series of projects were reported to have been implemented in the community (e.g. HACOP and Masimanyane; Chapter 6). However, due to challenges in the running of the projects, issues with financing and marketing, stemming mostly from a lack of capabilities and agency not excluding education, any successes of the project were quickly enthralled, resulting in conflicts that currently impact collective asset access, control and use (Chapter 6). Due to the conflicts that occurred during the running of these projects, it is reported that other members of the community currently cannot access fields and farming equipment (Chapter 6). This has detrimental implications upon adaptive capacity, as this reduced agricultural productivity for many households, resulting in fewer assets and less adaptive capacity (Chapters 4 and 6). Furthermore, current ongoing projects reflect the impacts of this exclusion, which was found to have more acutely affected women in the community. Women are currently running the only two projects in the community. However, these women do so with no external funding, and thus, tend to use their own assets to sustain the projects (Chapter 6). This shows the lack of opportunities for women enterprising in the community, which limits the development of their adaptive capacity. Women have, however, shown a higher ability to adapt to change compared to their male counterparts, as displayed in their ability to still engage in enterprise in spite of the many challenges that they face.

All findings in this study also showed that indeed, some households were more vulnerable than others. Overall, results suggested that female-headed households, smaller households and households with an elderly head, had the least adaptive capacity. In this study, just over half of all households were female headed, yet findings suggest that the future trajectory of their adaptive capacity looks discouraging, as they on average had less assets, less opportunities and generally were on a trajectory of using erosive coping strategies. Female-headed households that measured below the LBPL as shown in this study are likely to sacrifice resources for food so as to obtain other resources such as transport, making them vulnerable to food insecurity. According to LAC, which was one of the frameworks used in this study to assess adaptive capacity, an asset base composed of a stable base of key assets to allow for response to evolving circumstances is one of five key features that reflect a high adaptive capacity. Findings show that this asset base was on average less in these households, implying a compromised capacity to adapt. Few studies have focused specifically on the social and gender differentiation of capacities to adapt and innovate, more so in the South African rural context, as this study has done. One study by Cohen et al. (2016) found that limits to education, physical mobility and agency meant that women and youth, particularly, felt it was difficult to establish relations with external agencies to access technical support or new information important for innovating or adapting. In this study, evidence of this was observed with the low levels of linking and bridging social capitals in these households. Willingness to bear risk and to challenge social norms hindered both women's and men's capacity to innovate, albeit to differing degrees. This study, in addition to the unwillingness of women to challenge access to

shared assets and taking greater risk in enterprising, it was shown that rural geography was also a limit on its own in terms of how women enterprising could extend its market reach. Thus, this study also brings forth further evidence of geographical poverty traps. This study, however, provides new evidence that women are more innovative and adaptive, using their agency to circumvent the limitations of small markets, through learning from past failures. Women consistently showed greater innovation in using their social capital. Given the prevalence of mobile phones in the community, the adaptive capacities of women could be increased by targeting how these devices could feed more relevant information to women, and also establish virtual support groups for women in the greater region. Applications such as daily blogs that push notifications to mobile users on funding opportunities and financial products could contribute to women empowerment. Virtual support groups could result in greater opportunities for collective investments for women, and start to create an avenue out of geographical poverty traps by 'bringing the markets' to the women instead.

The economic contribution of agriculture in many provinces with large rural populations in South Africa is relatively low, as are levels of income and employment; also observed in the findings of this study (DRDLR, 2013; Satumba et al., 2017). However, the findings contradict the claim of the DRDLR (2013) in part; in that, households are relying much less on arable farming than what is suggested by DRDLR (2013), but much more on grants, which they then convert to livestock. However, it is the acknowledged weakness of studies feeding into rural development strategies and policies at the national level such as that carried out by the DRDLR (2013) that they often overlook such small, but

acutely significant differences that can often determine the success or failure of programmes in facilitating the building of adaptive capacities. This research focused on the implementation processes for adaptation, contributing to practical adaptation initiatives; where by “practical application” means research that investigates the adaptive capacity and adaptive needs in a particular region or community, in order to identify means of implementing adaptation initiatives or enhancing adaptive capacity (Smit & Wandel, 2006). This enables the identification and development of particular adaptive measures or practices tailored to the needs of that community. Context-specificity is necessary to understand adaptive capacity, and even further to understand it from a social justice perspective through analysing differing household profiles; quoting the DRDLR (2013:13) *“Social vulnerability is best measured as close to home as possible; therefore at the household or community level. This is because vulnerabilities are unevenly distributed across societies and communities... but more contextualised analyses are required to inform local planning”*.

From the analysis in this study of the community projects, findings suggest a possible mismatch with national and regional government funding in agriculture and the capabilities of the community. Currently, there is a clear bias in funding and programme implementation on the part of the national government towards arable farming, and this is not taking into consideration the capabilities of rural households in how they choose to accumulate assets for a more secure livelihood into the future (Chapters 4 and 6). Currently, support is given to agricultural projects, with a seeming bias towards monocropping and to some extent, cash crops. Thus, food insecurity being a consequence of

high food prices for example, are not being well-considered; which was a concern expressed by respondents in this study. This same bias also appears to ignore the general food insecurity problem that threatens this rural community (Chapters 4 and 6). This is especially important when considering the Sustainable Development Goals (SDGs) with regards to women empowerment and nutrition goals. With a lingering food security crisis, worsened by increasing food prices, a burden often carried exclusively by women in their respective households (whether married or single); this becomes a critical area needing more attention (Sinclair et al., 2017). Findings in this study suggest that rather, households and the community are more inclined towards home gardening and animal husbandry (Chapter 4; Brooks, 2017). Thus, the research can help the government better define their intervention strategies, in that funding must be directed more to support animal rearing projects and small market gardening initiatives, as opposed to arable farming of mono-crops.

In the study area, findings showed that all funding was targeting arable farming alone; yet the only self-initiated agricultural project that was evident in the area was a form of animal husbandry (poultry rearing), and was an initiative of the women in the community. This shows that although agriculture has been customarily appointed to the young able-bodied male, it is the same male, however, who is also attracted to the seemingly more promising job markets of urban areas, leaving women behind (Rogerson & Letsoalo, 1985; Statistics South Africa, 2012). As approximately half of households in this study were found to be female-headed, this study seems to point towards a remarkably transforming context, with implications for adaptive capacity. This

study therefore shows that the agency and capabilities context of rural South Africa is changing as far as ‘who is doing the farming’ is concerned, and this needs to be better reflected in the rural development policies and programmes of the national government.

In addition to this, rural development programmes are lacking in their training and knowledge development, and are thus limiting the development of adaptive capacity. Not actively funding training and knowledge development in programmes can encourage a ‘dependency syndrome’, as the rural agents of change will lack in self-efficacy, and continue to rely on proxy agency (Matsa & Dzawanda, 2014; Chapters 2 and 6). Further, the government must consider decentralising their funding, in that they should fund multiple groups within a single community, so as to accommodate the heterogeneity within communities (Zupi & Puertas, 2010). This will help ensure that vulnerable groups are given equal opportunities to develop their adaptive capacity, and therefore, will ensure social justice for these vulnerable groups. This study therefore suggests that the government must target specifically women, who are often more enterprising in most rural Southern African settings (e.g. Adam & Shackleton, 2016; Fox & Sohnesen. 2016; Nagler & Naudé, 2017), yet need the most social protection as they are also often the most vulnerable to climate change and related stressors, facing even greater challenges when trying to become entrepreneurs (Green, 2012; Chapter 6).

Since 1994, South Africa has redistributed assets (primarily land), although not in a manner that has reduced asset inequality, and has adopted a range of regulatory measures aimed at addressing race inequality (such as affirmative action, preferential

procurement and Broad-Based Black Economic Empowerment; Mcebisi, 2017). Hence, we know that South Africa's wealth distribution remains highly unequal. It is, however, difficult for government to measure precisely how unequal it is, as most studies implement tools that are well suited to measuring income and consumption, but not very good at measuring wealth. In Chapter 4, this study did not only focus on income from wages and paid employment, and on household expenses, but additionally assessed the value of household, personal assets and intangible assets that contribute to the wellbeing of households (specifically social capital in Chapter 5), as well as collective assets available to households, and also social grants. In this way, a more holistic picture of household wealth was drawn.

Thus, this study attempted to circumvent this complication by assessing levels of asset distribution and control, paying particular attention to land. As was also found in this study, very often in rural communities, natural resources are communally leased from the government (Bottazzi et al., 2016; Hall & Kepe, 2017). Often, management arrangements of these collective capitals can be complex, involving both traditional and conventional leadership structures that govern resources simultaneously (Chapters 2 and 6). As such, management of shared resources occurs at multiple scales, involving multiple stakeholders and, subsequently, various power dynamics (Chapters 2 and 6). Study findings, therefore, also advocate for social justice approaches in determining management and equitable use of this crucial resource to rural livelihoods and adaptive capacity. Redistribution measures must take account of the real factors that exclude the poor and previously dispossessed from accumulating wealth. This includes access to

capital, productive assets (which includes land), skills, markets, and in the context of the fourth industrial revolution – technology, that excludes the poor and previously dispossessed from the means to generate wealth (Mcebisi, 2017).

The continued under-development of rural agriculture in South Africa has been the topic of debate for decades. It was suggested in the 1980's that the traditions and customs underlying the Bantu people's value system, may have much to do with the underdevelopment of rural agriculture for the black majority in South Africa (Rogerson & Letsoalo, 1981). The traditional farming of the black majority was thought not to be market-focused compared to their white counterparts (Rogerson & Letsoalo, 1985). Although this explanation can account for some of the findings of the research, it is however too focused on the market as a natural force, assuming that black farmers did not produce in comparison to their white counterparts (ibid). Evidence from results in chapter 6 for example, show that this is not the entire story. Thus, findings of this study add on to the extensive evidence of historic peasant studies, that support the idea that the State's generous political support and capital provisions for white farmers, as contrasted to the several political and economic discriminatory measures, introduced by the State, historically served to disadvantage black farmers (Lemon, 2016). At the heart of this discrimination was the need for the state to maintain a steady flow of cheap labour for the mines and commercial farms. Subsistence agriculture was also used to subsidise the state welfare system, as rural agriculture was used as an excuse against black women receiving social grants during the apartheid era (Robertson & Letsoalo, 1985; Chikukwa, 2016).

Due to the climatic and soil variations in South Africa, however, many black farmers favoured the keeping of livestock (ibid). However, with the introduction of the betterment plan, each family was given an 'economic unit' which was an area of land viewed as sufficient to afford African farmers a subsistence livelihood (De Wet, 1987). Within each betterment scheme, the number of economic units was determined through a complex procedure which involved calculating both the potential arable productivity and the livestock carrying capacity of the land (Rogerson & Letsoalo, 1985). This, however, limited the number of livestock a family could have, and further imposed arable farming upon the families. Thus, the historic South African rural development policies did not match the capabilities and agency of the rural communities; and this appears to still be the case even with contemporary South African rural development policies (Letsoalo & Rogerson, 1982; Chapters 4 and 6). The findings of this study therefore challenge current policy to make more intentional steps towards considering these, through consultative processes with stakeholders.

Study findings also revealed differences and challenges of differentiated expectations of the 'rural future' of South Africa. Currently, it is difficult to define precisely what rural development is, with some scholars attempting to define rural development in urban terms. As was established in the introductory chapter of this study, the historical context of South African rural development policy not only makes it unique compared to other rural contexts in Southern Africa, but also further contributes to the uncertainty that characterises the future of rural South Africa. Thus, this study cannot ignore this history

in contextualising current issues of social vulnerability that were also apparent in the findings of this study.

The typical reserve seen in other Southern African countries has little resemblance to the South African context. This is a consequence of apartheid policies such as the betterment plan, which took away the typical rural subsistence farming context observed in other southern African countries (Rogerson & Letsoalo, 1981, 1982, 1985). Instead, rural areas were left in a state of limbo as far as development was concerned, in that some infrastructure was provided and households were clustered closer together to facilitate for this development, as is the case with urban settlements (ibid). However, especially communication and market links remained largely underdeveloped compared to urban settlements. Thus, this increased the uncertainty with the rural development trajectory which can take several directions from its current state of semi-development. This means that the government needs to seriously engage in extensive consultative processes in developing the way forward for rural areas in the Eastern Cape Province, for successful policy development and implementation. There needs to be stakeholder buy-in on the part of residents of these rural areas and other key stakeholders, which can play critical roles in the transformation of rural areas for increased adaptive capacity. A significant amount of money from the government is needed for the development of rural agriculture in South Africa.

Study findings suggested that generational gaps are being increasingly widened by the digital divide, posing serious challenges towards coming to a consensus as far as

deciding on the way forward for the future of rural landscapes in South Africa (Chapter 6). Rural development in South Africa is difficult to understand due to differences in expectations of the future (Chapter 6). In this study, where it was observed that others in the community leaned more towards development in the rural context heading towards arable farming of mono-crops and cash crops such as cotton, particularly the men aged between 45-64 years, the elderly were found to have been more inclined to a future that reflected the cultural identities of the isiXhosa as renowned cattle farmers (Rogerson & Letsoalo, 1985). The youth, however, envisioned a future that presented more income-generating opportunities, especially paid employment (Chapter 6). People's belief systems often provide a road map that enables people to achieve desired outcomes and navigate away from undesired ends. Thus, the government is challenged with bringing together these visions such that adaptive capacity is developed, regardless of the direction that the future development of rural South Africa will choose to take in an uncertain future. Thus, drawing from the insights of interviews and focus groups in Chapter 6, in addition to the proposed land redistribution programme that would provide secure land tenure to the older generations who value this asset as part of their identity, vocational training for the youth is necessary so as to increase their chances of employment.

Political capital denoted the position of households within the social sphere and subsequent influences. A household can, however, be disengaged with society in general, thus limiting its ability to influence decision making through power relations and lobbying. This (dis)engagement can be seen in the involvement of household members

in political parties or other social movements, and the consequential relation between these citizens and arms of state, such as the local municipality (Chapters 2 and 4). This shows the households' levels of linking and bridging social capitals. This study however exposed a gap in bridging and linking capital of households, which can also constrain the availability of enterprise support and opportunities from powerful societal actors, such as donors and the national government. Findings also showed that these types of social capital were acutely lacking, more so for female-headed households, who also constituted the most vulnerable group as found in this study. Although participation was found to be predominantly higher in households with adult females, thus including those with married male household heads, decision making and political power to women was found to still need improving in the general study area. In light of the most recent findings of the World Economic Forum, which show that gender inequality is at its highest since they first started monitoring it, with South Africa specifically dropping from first to third in Africa as far as gender equality is concerned; much more needs to be done to ensure a more secure livelihood for women (World Economic Forum, 2017). Thus, the government must consider social justice when establishing stakeholder relationships with rural communities in South Africa.

7.4. Conclusions and recommendations

Secure, sustainable livelihoods, characterised by high adaptive capacity necessarily involve political-strategic aspects; including the capability to intervene into ongoing socio-political, economic, institutional and technological transformation processes, as well as providing transformative knowledge in various political-administrative settings

(O'Brien & Sygna, 2013; Görg et al., 2017). This study, therefore, contributed towards understanding societal dynamics that reduce livelihood security and subsequent adaptive capacity. Government should continue to make efforts towards understanding the local decision-making context for the management of shocks and stressors which influences how communities respond, resulting in differing levels of adaptive capacity. As it was found in this study, determining the level of knowledge about responses is critical in selecting which knowledge is relevant for communities. Further, this study adds that social justice must be considered specifically as part of this understanding, as there are various power dynamics at play that contribute to varying decision-making processes and outcomes (in responses at collective community level and at individual household level) that reflect these. Stakeholder engagement, and equitable representation of these stakeholders in communities, is critical in order to encourage social learning between decision makers/project implementers and communities, so as to determine which information and which intervention is relevant to the development of the local context's adaptive capacity.

In order for the DRDLR to effectively implement their strategies for adaptation, it implemented the Comprehensive Rural Development Programme (CRDP) in 2009 which ran until 2014. It required that all of the following objectives of the DRDLR's CRDP be automatically built on the current adaptive capacity of rural human settlements. Based on the findings of adaptive capacity in this study, this study has provided some insight specifically to the most recently implemented DRDLR's CRDP objectives at the time that the study was conducted .

The capacity and desire to utilise home gardens already exists, thus such an intervention would match with the capabilities of the community. Skills and training development is deeply lacking, and avenues for this exchange must precede any intervention to developing agricultural and industrial centres. Responses to stressors and shocks are greatly eroding assets and subsequent adaptive capacity, therefore, disaster management is a critical need in rural areas. Women have displayed higher capabilities for enterprise than men, and would need more opportunities to empower them as they are also more vulnerable, facing greater and deeper challenges than their male counterparts as a consequence of institutions, entitlements and imposed socially constructed expectations which limit them. To reach the poorest, the government must specifically target women, the elderly and small households. To enhance food production and ensure food security by developing and utilising innovative service delivery models, this study advocates focusing on communication and transport services, as these would immediately and directly positively impact the women enterprise which was poultry. Also, better financial products must be made more accessible to women entrepreneurs in rural areas. When establishing councils of stakeholders, the government must vigorously enforce the need for inclusion and equitable participation, especially of vulnerable groups such as women, who were found in this study to have been acutely excluded in the running of funded initiatives in the community (Chapter 6).

Where to next?

This study employed established instruments of investigation to better understand the state of adaptive capacity for the community. For the most part, this study used a priori assessment of adaptive capacity (with the exception of the women's group), which was one of the overall limitations of this study. Into the future, experimental designs could be beneficial in assessing adaptive capacity, as adaptive capacity can only truly be seen when it is being actively used by individuals making adjustments to cope with a particular change or stressor(s). Furthermore, longitudinal studies are necessary to see how adaptive capacity is changing over time, more so as people's value systems evolve. The work that was carried in this thesis is not designed to be "scaled up" in the sense of generating an aggregate regional or global score or valuation of vulnerability or adaptation. It is, however, possible to "scale up" by conducting comparative studies across communities or societies in order to identify those characteristics of communities and their environments that contribute to or moderate vulnerabilities, and the features of adaptive strategies that are effective (Smit & Wandel, 2006).

Due to the influence of technology, and the rate at which information is now being disseminated, it is uncertain how it will impact the community's expectations of future development. This study showed that even in a community with high bonding capital, expectations of the future can be divergent, and these can influence participation in collective actions that can impact adaptive capacity. More consideration of these expectations and changing values in the research process needs to be given in understanding how adaptive capacity is developing in anticipation of these potential future changes. This study also further showed that values also impact how people will

invest in assets, and this can be influenced by the values of individuals and the community, as well as the specific context. Greater importance needs to be given to how assets are used, and what impacts how they are used that way, with less emphasis on how many assets an individual owns, and who owns those assets, although, this too, is very important. This study hopes to have shown that capabilities and agency should not be assessed in the background of any study that looks into future change and adaptation, but should be at the fore in determining the success of any future action to secure rural livelihoods.

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Fairbairn community members dancing during a stakeholder meeting – ‘imbizo’ [Photo: Mwazvita TB Dalu]

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GENERAL APPENDICES



Study households typically found in Fairbairn, Eastern Cape built with mud and sticks with zinc roofing [Photo: Mwazvita TB Dalu]

9. Appendices

9.1. Appendix 1.

Study questionnaire used in this research study

Annual household survey 1 (A1)

Control information

Task	Date(s)	By who?	Status OK? If not, give comments
Interview			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

Household Selection

1. Map page & generated grid number	
2. North-most household interviewed? Y/N If yes move to 5.	
3. If 'no': Reason for not interviewing North-most household?	1. No houses in grid block (go to nearest house) 2. Refused to be interviewed – too busy 3. Refused to be interviewed – other 4. Never at home 5. Premises empty 6. Deaf/foreign language

	7. Other - specify
4. Final grid number of household interviewed	
5. Is interviewed hh neatly marked on map? Y/N	

Starting time _____ Finishing time _____

A. Identification

Household name & code (Map page & grid no.)	*(name)	(HID)
Village name and code	*(name)	(VID)
Name and PID (see B. below) of primary respondent	*(name)	(PID)
Name and PID (see B. below) of secondary respondent	*(name)	(PID)
GPS reference point of household (UTM format)		

B. Household composition and human capital

1. Personal Identification number (PID)	* Name of household member	2. Relation to household head ¹⁾	3. Year born (yyyy)	4. Sex 0=male 1=female	5. If deceased: What year did s/he pass away?
1	Include surname of household head	Household head = code 0			
2					

3					
4					
5					
6					
7					
8					
9					
10					

Yes	No
-----	----

1. Please give the details of anyone living in the household, and anyone in the household who passed away in the past ten years.

1) Codes: spouse (legally married or cohabiting) = 1; son/daughter = 2; son/daughter in law = 3; grandchild = 4; mother/father = 5; mother/father in law = 6; brother or sister = 7 brother/sister in law = 8; uncle/aunt = 9; nephew/niece = 10; step/foster child = 11; other family = 12; not related (e.g., friend) = 13.

1.b. Are there other households living on this property?

1.c. If yes, how many other people, aside from those in your household, are living on this property?

1. Name/PID	2. <i>Employment status</i> ¹⁾ (Can have more than one, list in order of importance)	3. Level of education ²	4. Other formal or informal training or skills. (Probe – employment or self-employment skills, eg. Welding, nursing, artisan, etc.)	5. What languages can this person speak, other than Xhosa? List all responses None = 0 English = 1 Afrikaans = 2 Other = 3
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

2. Please could you provide more details about the employment status and skills of everyone that has just been recorded in the previous table as part of the household (anyone living in the household and anyone who has passed away in the past ten years):

CODES: 1) Employed full-time = 1; employed part-time = 2; self-employed (farmers in this category) = 3; unemployed = 4; in school or some form of training (apprentice, course) = 5; retired = 6; doesn't work or go to school (eg. disabled, too young) = 7;

2) Illiterate = 1, literate without formal schooling = 2, literate: below primary = 3, primary = 4, middle secondary (grade 9) = 5, secondary (matric) = 6, diploma/course with certificate = 7, graduate = 8, post-graduate = 9.

Less	The same	More
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Please take a moment to remember life in this household ten years ago – when Mandela's presidency came to an end and Mbeki became president and we entered the New Millennium

3. Overall, is the household able to do more, less or the same amount of work (formal or around the homestead) compared to ten years ago?

3.b. If more or less, why the change?

C. Social capital

1. a. How long ago was this household first established in the village?

< 2 years 1	2–6 years 2	6–10 years 3	11–20 years 4	21–50 years 5	51–100 years 6	>100 years 7
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1.b. If less than ten years, why did the household move?

2.a . Do household members participate in any groups in the community? If yes, ask details of the group/organization. If more than one person from the household is a member of the same group, record all of their names.

1. Type of group	2. Name of group	3. Who in the household is part of this group? List names	4. How many hours a week/month does household member participate?	5. Is household member part of a committee for the group? Y/N (List name/s if yes)	6. Has the household ever received any cash benefits from the group? Y/N	7. Has the household ever received any other type of support from the group? Y/N
Church						
Savings						

Farming						
Volunteer						
Sports/ dance/ music						
Health, care or support						
Women's group						
School group						
Lobbying						
Development/ income generating						
Men's group						
Other (specify)						

Area of expertise	Is free advice available to household? Y/N	If no, would it benefit? Y/N	Area of expertise	Is free advice available to household? Y/N	If no, would it benefit? Y/N
Human rights			Building/construction		
Legal advice			Schooling		
Medical advice			Relocate/ move elsewhere		

Veterinary advice			Market and self-employment		
Crop farming advice			Credit and financial advice		

3. Does anyone in the household know anyone who could advise you/them on the issues below without charging? This can be formal (e.g. an organisation) or informal (e.g. a friend). If not, do you feel that the household would benefit from knowing where to get advice on these issues?

4. How strongly do you agree or disagree with the following statements?

4.1 a. People around here are willing to help their neighbours

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
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4.1 b. This is a close-knit or 'tight' neighbourhood where people generally know one another

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
----------------------	-------------	----------	-------------------

4.1 c. If I had to borrow R50 in an emergency, I could borrow it from a neighbour.

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
----------------------	-------------	----------	-------------------

4.1 d. People in this neighbourhood generally get along with each other

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
----------------------	-------------	----------	-------------------

4.1 e. People in this neighbourhood CAN be trusted

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
----------------------	-------------	----------	-------------------

4.1 f. If I were sick I could count on my neighbours to shop for groceries for me

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
----------------------	-------------	----------	-------------------

4.1 g. People in this neighbourhood share the same beliefs, culture and values

1. Strongly disagree	2. Disagree	3. Agree	4. Strongly Agree
----------------------	-------------	----------	-------------------

No / never	Sometimes	Yes / often
1	2	3

5. Does this household, or anyone in the household, take part in community decision making (in ward meetings, community meetings, etc.)?

Less	The same	More
-------------	-----------------	-------------

Please take another moment to remember life in this household ten years ago/ when you first moved here – when Mandela's presidency came to an end and Mbeki became president and we entered the New Millennium

6. Overall, is the household's current involvement in community groups, events and meetings more, less or the same amount compared to ten years ago OR when you first moved here? (circle appropriate)

6.b. If more or less, why the change?

D. Physical capital and services

1. Please indicate the type of main house you have?

1. Number of buildings	
2. <i>Enumerator:</i> What is the approx. area of the main building?	M ²
3. What are the walls of the main building mostly made of? ¹⁾	
4. What is the roof of the main building mostly made of? ²⁾	

1) Codes: mud/soil = 1; wooden (boards, trunks) = 2; iron (or other metal) sheets = 3; bricks or concrete = 4; reeds/straw/grass/fibers/bamboo = 5; other, specify:

2) Codes: thatch = 1; wooden (boards) = 2; iron or other metal sheets = 3; tiles = 4; other, specify:

Yes	No
------------	-----------

2. Do you have a kraal?

3. Please indicate the number of implements and other large household items that are owned by the household members. Please estimate the current value of these items.

	1. Number of units owned	2. Total value (current sales value of all units, not purchasing price)	3. who owns each item
Car/truck			
Tractor			
Motorcycle			
Bicycle			
Cellphone/phone			
TV			
Radio			
Cassette/CD/ VHS/VCD/DVD/ player			
Stove for cooking (gas or electric only)			
Refrigerator/freezer			
Chainsaw			
Plough			
Trailer			
Shotgun/rifle			
16. Wooden cart or sledge			
17. Bed/s			

18. Water pump			
19. Solar panel			
20. Sewing machine			
21. Jo-jo tank			
22. Geyser			
23. Wheelbarrow			
24. Generator			
99. Others (worth more than approx. R500 purchasing price)			
Other			

Yes	No
Yes	No

4.a. Do you have electricity?

4.b Do you receive free basic electricity?

4. c. How much do you spend on electricity each month? R _____

Improved	The same	Worsened
----------	----------	----------

Please take another moment to remember life in this household ten years ago/ when you first moved here – when Mandela's presidency came to an end and Mbeki became president and we entered the New Millennium

5. Overall, has the infrastructure on and around the household's homestead improved, worsened or stayed the same compared to ten years ago OR when you first moved here? (circle appropriate)

5.b. If improved or worsened, why the change?

6.a. Where does the household get most of its water from? ¹⁾	
6.b. Is this source ever inadequate for all of the household's need? Y/N	
6.c. Does the household have access to alternative sources of water? If so, what are they? ¹⁾	
6.d. Has there ever not been enough water at all? Y/N	

(CODES: 1) rainwater tank provided by govt=1; rainwater tank owned/purchased by household=2;
tap on property=3; community taps=4; borehole=5; reservoir=6; dam=7;
river=8; truck = 9; bought=10, other = specify

Yes	No
-----	----

8. a. Does the household recycle/ re-use any water?

8. b. If yes, from which activity/activities is water re-used/recycled, and how is it re-used/recycled?

E. Natural capital

1. Do you have a garden or fields for growing or grazing? If yes, how large is the area and do you use it?

	1. Area (RECORD UNIT - meter, hectare, etc) <i>Measure if unknown</i>	2. Is it fenced ? Y/N	3. Is it used? Yes, no or partly	4. If any part is not used, why is it not used?	5. If partly used, approx. how much (1/2, 1/4, etc.) is used?
1. Garden on homestead					
2. Fields for cultivation					
3. Community grazing land					

4. Grazing land belonging to household					
--	--	--	--	--	--

2. Does the household use the following? If it is not used by the household, is there anything preventing the household from using the resource if they did want to use it, and would the household ever use it?

	1. Is it used by the household? Y/N	2. If not used, is there anything preventing the household from using the resource if they wanted to? Explain if yes.	3. If not used, is there ever a situation where you might use it? Y/N
1. River or dam for freshwater fishing, recreation or cultural activities			
2. Community garden			
3. Grazing land			
4. Forests and trees			
5. Wildlife/bushmeat			
6. Wild fruit and vegetables			
7. Medicinal plants			
8. <i>Willowvale only</i> : Marine products (fish, mussels..)			

Less	The same	More
-------------	-----------------	-------------

Please take another moment to remember life in this household ten years ago/ when you first moved here – when Mandela's presidency came to an end and Mbeki became president and we entered the New Millennium

3.a. Overall, does the household currently use more, less or the same amount of the natural resources mentioned in the two previous questions compared to ten years ago OR when you first moved here? (circle appropriate)

3.b. If more or less, why the change?

Worsened	The same	Improved
-----------------	-----------------	-----------------

4.a. Has the quality of agricultural land (grazing land, soil fertility) worsened or stayed the same compared to ten years ago OR when you first moved here? (*circle appropriate*)

4.b. If it has improved or worsened, why the change?

F. Financial capital

1.a. How much does the household have in savings? (in banks, credit associations, savings clubs or any other place)

R _____

1. b. Is the household saving for anything specific? If yes, what specifically?

Less	The same	More
-------------	-----------------	-------------

1.c. Is the household currently saving more, less or the same amount compared to ten years ago?

2. a. Do you owe money to anyone? To who, and how much is owed? Can have more than one

Don't owe money	Local money-lender	Bank or formal credit institution	Neighbour or friend	Family	Savings club	Loan sharks	Hire purchase (furniture, appliances, etc.)	Other (specify)
R	R	R	R	R	R	R	R	R
								TOTAL R

Yes	Don't know	No
------------	-------------------	-----------

3.a. Could the household access credit for a farming or self-employment venture if it needed to?

3.b. If yes, where from?

Yes	No
-----	----

3.c. Has anyone in the household accessed credit in the last ten years?

Easier	The same	Harder
--------	----------	--------

Please take another moment to remember life in this household ten years ago – when Mandela's presidency came to an end and Mbeki became president and we entered the New Millennium

4.a. Is it currently easier, harder or the same to meet all the household's needs each month compared to ten years ago?

4.b. If easier or harder, why the change?

G. Responses to shocks Event	1. Y/N ?	2. How severe? 0 = no crisis 1 = yes, moderate crisis 2 = yes, severe crisis	3. How did you cope with the income loss or costs? Tick column/s ¹⁾												
			1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13. Other, specify
Serious crop failure															
Serious illness in family (productive age-group adult unable to work for more than one month during past 12 months, due to illness, or to taking care of ill person; or high medical costs)															
Death of productive															

age-group adult															
Land loss (expropriation, etc.)															
Major livestock loss (theft, drought, etc.)															
Other major asset loss (fire, theft, flood, etc.)															
Lost wage employment															
Initiation, wedding or other costly social events															
Payment for sale of hh products arrive later than expected															
Land / forest areas reserved for cultural rites															
Other, specify:															

1 – harvest more; 2 - change farming; 3 – spent savings; 4 – sold assets; 5 – extra work; 6 – friend assist; 7 – organisation assist; 8 – loan; 9 - reduce consumption; 10 – rented out; 11 – did nothing; 12 – concentrated on available land

1) *Codes coping:*

Harvest more natural/wild products or agricultural products

Changed farming/agricultural techniques

Spend cash savings or retirement money

Sell assets (land, livestock, etc.)

Do extra casual labour work/self-employment initiative

Assistance from friends and relatives

Assistance from NGO, community org., religious org. or similar

Get loan from money lender, credit association, bank etc.

Tried to reduce household consumption (food and/or goods)

Rented out land or rooms

Did nothing in particular

Other, specify:

F: Climate change perceptions

1. Compared to ten years ago OR when you first moved here? (*circle appropriate*), have the following extreme events become more or less severe? Tick

Event type	More severe	Same	Less severe
Storms			
Droughts			
Veld fires			
Floods			
Heat waves			
Cold snaps			
<i>Willowvale: Snow</i>			
<i>Lesseyton: Frost</i>			

1. How would you rate the weather's impact on the following aspects of the household? Tick columns

Impact	High impact	Moderate impact	Low impact	No impact
Ability of crops to survive				
Ability of livestock to survive				

Abundance of useful plant and animal species in the area				
Availability of water for the livestock and crops				
Availability of water for the household				
Food security				
Human health				
Damage caused by extreme events				

J. HIV/Aids perceptions

1. How would you rate the impact of HIV/Aids on the following aspects in this community, and has this impact resulted in an increase or decrease of these aspects?

Impact	Inc or dec?	High impact	Moderate impact	Low impact	No impact
Willingness of neighbours to help each other					
Trust					
Food security (people's ability to get enough food every day)					
Labour to undertake activities					
Remittances					
Migrancy					

2. What do you think is needed the most by households living with HIV or Aids?

B. Casual employment

1. Who? Name	2. Type of work	3.a. Was it part of public works programme? Y/N	3.b. If Yes, which public works programme? (e.g. Working for Water, Road Care, etc.)	3. Wage rate (NB indicate daily or hourly rate)	4. Number of days or hours worked (NB record unit)	5. Total income (3x4)

1. Has anyone had any casual work over the past 3 months? Please provide details about this employment.

C. Income from own business (not natural resources or agriculture)

1. Are you involved in any types of business that are not related to agriculture, livestock or natural resources, and if so, what are the gross income and costs related to that business over the past month? For example, hairdressing, spaza, shebeen, lending, child care, taxi or transport service, etc.

	1. Business 1	2. Business 2	3. Business 3
What is your type of business?			
Gross income (sales)			
Costs:			
Purchased inputs			
Hired labour			
Transport and marketing cost			
Other costs			
Net income (2- items3-8)			

Current value of business assets			
Is this business permanent or temporary? P/T			
Over the average year , what are the input costs in terms of purchasing, maintaining and repairing assets?			

Family	Friends	Strangers
---------------	----------------	------------------

2.a. If products are sold in the business, are they mostly sold to family, friends, or strangers?

D. Social protection, grants and pensions

1. Does anyone in the household receive a monthly grant or pension? Please provide details

	1. Number of grants?	2. Who receives it?	3. Total amount each month?
1. Child grant			(R250 p/month)
2. Disability grant			(R1080 p/month)
3. Care dependency grant			(R1080 p/month)
4. Foster care Grant			(R 710 p/month)
5. Government pension			(R1080 p/month)
6. Private/other pension			
Other			

2.a. In the past three months, has the household received any non-cash regular welfare support, such as meals at school for children or free paraffin? If yes, please what did the household receive?

2.b. What was the approximate value of this support? R_____

E. Remittances and gifts

1. Has anyone living away from the household sent any cash, food, clothing, gifts or other goods to the household over the past 3 months? Please provide details and the approximate value.

	1. How many times over past 3 months?	2. How much each time? List each approximate value for each time	3. Who sent/gave it?	4. Where did it come from? (e.g. within village, city)	5. Who was it sent to?
1. Cash					
2. Food					
3. Clothing					
4. Other					

F. Rent

1. Has the household earned income from renting out rooms or land over the past 3 months? If yes, how much did the household earn in total?

R_____

AGRICULTURAL BENEFITS AND COSTS

G. Income from agriculture – crops

1. What are the quantities and values of crops that household has harvested during the past 1 year?

Crops (code-product)	1. Y/N?	2. Total production (4+5)	3. Unit (for production)	4. Own use (incl. gifts)	5. Sold (incl. barter)	6. Price per unit	7. Total value (2*6)
Cabbage							
Spinach							
Lettuce							
Mielie							

Tomatoes							
Beans							
Sweet potatoes							
Pumpkin							
Onions							
Carrots							
Peppers							
Turnips							
Beetroot							
Butternut							
Other (specify)							

Family	Friends	Strangers
---------------	----------------	------------------

1.b. If products were sold, were they mostly sold to family, friends, or strangers?

2. What are the quantities and values of inputs used in crop production over the past 1 year (this refers to agricultural cash expenditures)?

Note: Take into account all the crops in the previous table.

Inputs	1. Used? Y/N	2. Quantity	3. Unit	4. Price per unit	5. Total costs (2*4)
Seeds					
Fertilizers					

Pesticides/herbicides					
Manure					
Draught power/ animals					
Hired labour					
Hired machinery/tractor					
Transport/marketing (only use total)					
Payment for land rental (only use total)					
10. Other, specify:					

3. If any crop failed in the last year, how much of it failed and why? Write the crop on the left, the proportion of the crop that failed, and indicate why it failed by ticking a column.

1. Crop type	2. Proportion of crop that failed (¼, ½, all, etc.)	Disease 1	Pests 2	Drought 3	Too hot 4	Weeds 5	Too cold 6	Soil fertility 7	Don't know 8	Other (specify) 9

H. Income from livestock

1. What is the number of ADULT animals your household has now, who owns each animal, and how many have you sold, bought, slaughtered or lost during the past year?

Livestock	1. Own? Y/N	2. Number owned <u>now</u>	3. Owned by? (man, woman)	3. Sold (incl. barter), live or slaughtered	4. Slaughtered for own use	5. Lost (theft, died ...)	6. Bought or gift received	7. Births	8. Beginning number (3 months ago) (2+3+4+5-6-7)	9. Price per adult animal	10. Total end value (2x9)
1. Cattle											
2. Goats											
3. Sheep											
4. Pigs											
5. Donkeys											
6. Ducks											
7. Chicken											
8. Horses											
9. Other, specify											

2. If any livestock was sold, why was it sold?

3. What are the quantities and values of animal products and services that you have produced during the past 3 months?

Product/service	1. Y/N?	2. Production (4+5)	3. Unit	4. Own use (incl. gifts)	5. Sold (incl. barter)	6. Price per unit	7. Total value (2x6)

1. Meat ¹							
2. Milk ²							
3. Eggs							
4. Hides and wool							
5. Manure							
6. Draught power							
7. Milk products							
Other, specify							

1) Make sure this corresponds with the above table on sale and consumption of animals.

2) Only milk consumed or sold should be included. If used for making, for example, cheese it should not be reported (only the amount and value of milk products).

Family	Friends	Strangers
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4. If products were sold, were they mostly sold to family, friends, or strangers?

5. What are the quantities and values of inputs used in livestock production during the past year (cash expenditures)?

Note: The key is to get total costs, rather than input units.

Inputs	1. Used? Y/N	2. Unit	3. Quantity	4. Price per unit	5. Total costs (3*4)
Feed/fodder					
Rental of grazing land					

Medicines, vaccination, dips and other veterinary services					
Costs of maintaining barns, enclosures, pens, etc.					
Hired labour					
Other, specify:					

Yes	No
-----	----

6. In the past year, did you receive any agricultural inputs, public relief or inputs from a development project?

6.b. If yes, what did you receive? _____

6.c. What was the estimated value? R_____

6.d From who or from what organization did this come from? _____

I. Expenses

1. How much does the household spend on its monthly expenses? If there are other monthly expenses (i.e. buy/pay every month), please provide details

Expense	Amount spent each month	Expense	Amount spent each month
1. Groceries		7. Cell/phone	
2. Transport		8. Furniture/appliance payments	
3. Vehicle installments		9. Money sent to support others	
4. Savings accounts or clubs		10. Alcohol	

5. Insurance policies		11. Cigarettes	
6. Funeral plans		12. Other (specify)	

2. Has the household had any other irregular expenses or contributions over the past 3 months? How much did they cost? If there were any other large expenses over the past 3 months, please provide details

Expense	Amount	Expense	Amount
1. School fees and uniforms		6. Agricultural implements	
2. University/technikon fees		7. Clothing	
3. Medical bills		8. Money or gifts sent to support others	
4. Funeral		9. Other (specify)	
5. Traditional event/ ceremony (initiation, wedding, etc.)		10. Other (specify)	

o. as part of this research, group workshops and individual interviews will also be taking place over the next few months. people will be asked if they would like to participate in these based on certain profiles such as age, gender, source of income, etc. if you or someone in your household match these profiles, do you think that person would like to take part? please note that if you answer yes, there is no guarantee that this person will be contacted to participate, and if they are contacted that person can still choose whether to participate or not.

Yes	No
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Remember to thank anyone who participated for their time, input, and patience!

Natural resource use

Bought	Collected	Both
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1. Was it bought or collected (in the past 3 months)?

2. IF RESOURCE WAS BOUGHT: NB Make sure units are clear for all questions

1. From where? List markets, villages, neighbours, etc.	2. Was it bought from family, friends, traders or strangers?	3. How often over the last 3 months? Show per day/week/month/or no. times over 3 month period	4. How much each time? (Quantity and unit, e.g. 20kg bag, 3 cups, etc.)	5. Cost per unit? (record unit)	6. Total cost
				R	R

3. IF RESOURCE WAS COLLECTED: NB make sure units are clear for all questions

1. Who collects it? List names	2. Where from? (Name of forest, beach, etc.).	3. How long does it take to collect (including travelling there)	4. How often was it collected over the last 3 months? Show per day/week/month/or no. times over 3 month period	5. How much is collected each time? (Quantity and unit, e.g. 20kg bag, 3 cups, etc.)	6. Was any of this sold or bartered? Y/N	7. Was any of it processed at all? Y/N
8. Were there any costs (transport, hired labour, processing, etc)? Give total cost.	9. Do you need a permit to collect? Y/N	10. Was there enough for everyone? Y/N	11. Do you know the price of this product in the community per unit?	12. Total no. of times in 3 months (daily x90, weeklyx12, monthlyx3)	13. Gross value (5x11 or 5x4.3)	14. Net value (13-8)
					R	R

4. IF PRODUCT WAS SOLD OR BARTERED (3.6 above)

1. Where is it sold? List markets, villages, friends, etc.	2. Who are the main buyers: family, friends, traders or strangers?	3. What is the selling price per unit?	4. How often have you sold in the last 3 months? Show per day/ week/month/or no. times over 3 month period	5. How much do you sell each time?	5. Has household always sold product? Y/N	6. If no, when did selling start (year)?	7. Will household continue to sell product? Y/N
8. Why did your household start selling this product?							

5. If resource was processed at all (3.7 above):

1. How much was processed before sale?	2. How much was processed before own use?	3. Who processed it? List names	4. How long does it take to process?
5. If you have any processing costs, please explain in detail what they are (inputs per unit):			

J. Natural resource harvesting

1. Were any of these products bought or collected by anyone in the household in the past three months? Enumerators attach a page (NATURAL RESOURCE USE) for each resource used or collected and by whom

Resource	Bought Y/N	Collected Y/N	If yes for bought OR collected: page no. ____ of ____
Fuelwood			
Wild fruits			
Wild herbs/spinach (not vegetables such as cabbage etc.)			

Wild animals or birds for food (Bushmeat - NB. Tell them answer is secret)			
Fish			
Mussels			
Oysters			
Lobsters and crabs			
Other marine products (specify)			
Insects for food			
Birds eggs			
Poles for housing (note if use poles from plantation)			
Poles for fencing (gardens/fields/home) or kraals			
Wood for household items such as spoons, axe handles, etc (see list)			
Wood for carvings to sell			
Wood for furniture			
Thatch grass			
Grass for hand sweepers			
Twigs for hand sweepers			
Reeds for weaving (mats etc.)			
Reeds for construction (buildings & roofing, etc.)			
Wild honey			

Honey beer			
Medicinal plants			
Mushrooms			
Umuncwane			
Traditional beer			
Sand/Soil/Clay/Termite mounds			
Roots or tubers			
Seeds			
Other (specify)			

9.2. Appendix 2.

a) Interview questions for collective community projects

1. When did the project begin?
2. How is the leadership structured?
3. What is the main aim of the project?
4. How did it come to be i.e. why was it started?
5. How many people participate in the project?
6. Is there a selection process or are there any criterions participants must first meet before they can join?
7. How are decisions made?

b) Interview questions for asset profiles

8. Which assets do you most value and why?
9. How easy or difficult is it for you to access and/accumulate your personal household and /or collective community assets and why?
10. Is there any form of service provision that affects the use or accumulation of personal assets? How does it impact your assets and why?
11. What factors do you think most contribute to the depletion of your assets and why?
12. Do you think there are any differences in how different households value and accumulate assets? If yes, why?

9.3. Appendix 3.

Focus group and interview guides for collective responses: Projects in study area

(HACOP and subsequent projects; women's poultry initiative; women's funeral savings group)

1. When did (name of project) start and how did it come about?
2. What were the main benefits of the project?
3. Are those benefits still tangible now after the project?
4. What were the major challenges that led to the termination of the project?
5. Were there any internal scuffles and how did they affect the project?
6. Were any conflicting goals or other initiatives that competed with the project?
7. How was leadership structured?
8. How were decisions made in the project?
9. How would you describe communication and sharing of information within the project?
10. What were the lessons learnt from this project?
11. In a subsequent initiative, what have you done differently? Has this made an impact on the initiative, whether good or bad?