A social-ecological systems approach to understanding development in a dynamic world: a case study of traditional agriculture in Pondoland, South Africa

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Declaration

I know the meaning of plagiarism and declare that all of the work in the dissertation, save for that which is properly acknowledged, is my own.

Signature:

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Dedications

This research is dedicated to the brave and persevering amaPondo of the Wild Coast.

Acknowledgements

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Abstract

Arguably one of the greatest challenges currently facing humankind is the linking of environmental sustainability with poverty reduction and social justice. These issues all come to a head in the rural smallholder agricultural regions of „underdeveloped" Africa .In these settings climate change and food security are but two of the many challenges faced on a daily basis, compounded by the need for „development". Through a case study of smallholder farmers facing multiple contested development trajectories, this research takes a social-ecological systems approach in order to:

1. investigate the past, present and future dynamics of smallholder agriculture and food practices in mPondo communities of the Wild Coast
2. locate the role of agriculture and agri-food systems in the local development discourses
3. describe the perceived opportunities and challenges which face the local agri-food system

Through semi-structured interviews, informal discussions, workshops and participant observation in three regions of the Wild Coast of the Eastern Cape a trend of rapid cultural erosion was observed. Many traditional crops are no longer cultivated as farmers turn to commercial seeds and modern cooking methods. Three dominant development trajectories are explored for one region, focusing on the AmaDiba community whose history of resisting imposed development is again being tested by contentious titanium mining proposed in nearby Xolobeni. A central finding is that while resisting imposed development in order to achieve a self-defined development which values mPondo traditions and subsistence off the land, these communities – described as possessing strong community agency – are losing the very culture they are fighting to defend. This is made clear through the social-ecological systems approach of resilience theory. In building resilience to imposed development the community has become vulnerable to other disturbances. As this traditional agri-food system continues to face the enduring shocks of global environmental and social change, the communities must recognise their fragilities as well as the threats which have been overlooked in the past. This study therefore suggests that the community exploit this stage of readjustment so as to reorganise, building on local culture and tradition, through an integrated approach to development which combines agriculture, traditional food and tourism.

Table of Contents

List of Figures

List of Tables

List of Acronyms

ACC	AmaDiba Crisis Committee
ANC	African National Congress
ARC	Agricultural Research Council
CBT	Community Based Tourism
CMIP5	Couple Model Inter-comparison Project
DEAT	Department of Environmental Affairs and Tourism
FET	Further Education Training
GEAR	Growth, Employment and Redistribution
GM	Genetically Modified
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HVC	High Value Crop
IRT	Integrated Rural Tourism
MFPP	Massive Food Production Programme
MRC	Mineral Resource Commodities
NDP	National Development Plan
NGO	Non-governmental Organisation
RDP	Reconstruction and Development Programme
SDI	Spatial Development Initiative
SES	Social-ecological System
SSA	Sub-Saharan Africa
STEPS	Social, Technological and Environmental Pathways to Sustainability
SWC	Sustaining the Wild Coast
TEM	Transworld Energy and Minerals Resources
TRACOR	Transkei Agricultural Corporation
UCT	University of Cape Town

1 Introduction

Figure 1: A typical Pondoland landscape on the Wild Coast of the Eastern Cape Province of South Africa (Photo: SA-venues.com).

1.1 Introduction to the Study

Global environmental and social change in the form of climate change, land use shifts, globalisation and political changes, are just one aspect of the many stressors to the traditional agricultural systems of Africa and other developing regions (Morton 2007). Agri-food systems are made up of the production systems of the farmers who produce food as well as the consumers, traders and associated industries across the food chain (Pimbert *et al.* 2003). They are some of the most vulnerable to the threats of a changing climate and the socio-economic impacts of globalisation (Leichenko and O'Brien 2002) associated with fluctuating world prices and changing terms of trade (World Bank 2000). Many rural agricultural regions of Africa are facing high risks of climate impacts, changing market structures and increasing food insecurity. In addition to these challenges there is increasing pressure to undergo „development" with regards to modernisation, poverty reduction and increased welfare (Scoones 1998). In responding to these challenges, a global research agenda has been set, in which agri-food systems are studied as dynamic systems that are set in complex, diverse, risk-prone environments, and pathways of development are explored in resilient and robust systems (Thompson and Scoones 2009). This study rises to this call by investigating some of the on-the-ground dynamics of a complex agri-food system, through the lens of social-ecological systems.

The South African food system is complex and dichotomous, with a formal commercial sector connected to international agribusiness, and a sector comprising poorer, smallholder farmers which are marginalised (Pereira 2014). The rural lands of the Eastern Cape Province, a former Bantustan „homeland" – an expansion on the colonial „Native Reserves" which the apartheid government used to forcibly segregate the African population – contain high levels of unemployment, poverty and food insecurity (Porter and Phillips-Howard 1997). The land is home to the mPondo people, a historically agricultural and pastoral society which has subsisted in the region for more than 500 years (Beinart 1982). The Kingdom of Pondoland was the last to be annexed to the British Government and has a long history of resistance to imposed development (De Wet 2013). Since the fall of apartheid the state of most villages and communities seems largely unchanged, while the pressure to develop economically increases (Bank and Minkley 2005). These historical, political, social and economic factors result in a region of extreme complexity and an ideal case study site in which to investigate the role of traditional agriculture in a rapidly changing world.

This research project takes a case study approach to the empirical analysis of a traditional agri-food system, focusing primarily on the AmaDiba community on the Wild Coast of the Eastern Cape Province of South Africa. It is informed by semi-structured interviews with agricultural communities along the Wild Coast and more in-depth workshops, interviews and discussions in the villages of the AmaDiba community. Recognising the importance of the impact of humans on the environment (Crutzen 2002, Rockström *et al.* 2009) this study takes a decidedly social approach to understanding the social-ecological system, with limited attention focused on ecological aspects of the system. Three major narratives of development are prevalent in this area, and the current resistance to a proposed titanium mining project on community land brings these matters to the forefront. Issues of food, farming and development are addressed as these coalesce into a narrative of insight into new and potentially more sustainable pathways for agri-food systems.

1.2 Aim and Objectives of the Research

The primary aim of this research project is to describe the agri-food system of the smallholder farmers of Pondoland as observed through the lens of social-ecological systems theory. Within this, three objectives are identified:

1. To investigate the past, present and future dynamics of smallholder agriculture and food practices in mPondo communities of the Wild Coast.
2. To locate the role of agriculture and agri-food systems in the local development discourses.
3. To describe the perceived opportunities and challenges which face the local agri-food system.

1.3 Outline of the Dissertation

This research is presented in nine chapters; following the introduction is a review of relevant literature which situates the theory and importance of the study. Chapter 3 is an introduction to the region of the case study. This chapter provides a geographic and historical perspective as well as introducing the three major development discourses. Following the methods chapter (Chapter 4), the results are presented and discussed over four chapters. Chapters 5 and 6 address the first objective and outline the findings of the changing agriculture and food practices respectively. Chapter 7 discusses the role of the agri-food system in local development (in line with objective 2), and lays out the perceived challenges and opportunities which face the local agri-food system (in line with objective 3). Chapter 8 explores the characteristics of the social-ecological system relating to resilience and robustness and the ninth chapter concludes by reflecting on the findings and implications of the study.

2 Literature Review

2.1 Introduction

Arguably the greatest challenge currently facing humankind is the linking of environmental sustainability with poverty reduction and social justice. These issues all come to a head in the rural smallholder agricultural regions of „underdeveloped" Africa characterised by informal and traditional agriculture with low productivity (Scoones and Thompson 2009). In these settings climate change and food security are but two of the many challenges faced on a daily basis (Morton 2007), compounded by the need for „development". „Development" is a relative and contested term with Eurocentric origins (Cowen and Shenton 1995) which has become entwined with agriculture research in Africa alongside numerous programmes implemented to increase Africa's productivity, participation in global market and improve local livelihoods (von Kauffman 2007, Sumberg *et al*. 2013). Sachs (1999) highlights two outcomes of the „development" era: an intensified divergence between rich and poor, „developed" and „undeveloped"; and a crisis of nature as the dominant development path focuses increasingly on production beyond the capacity of the earth system. „Development" discourses can therefore be found to be fundamental to the study of the connections between humans and the environment. Further, in responding to environmental and development challenges, a realisation of the inherent complexity and dynamism of social and ecological systems is required (Leach *et al*. 2010). This chapter will introduce the theories of social-ecological systems (SESs) and explore how a systems approach can be used to manage the challenges of a complex and dynamic world for sustainable „development". The concepts of food security and rural agri-food systems will be investigated as well as the challenges to smallholder agriculture in a rapidly changing world.

2.2 Social-Ecological Systems and the Dynamics of Sustainability

Previous efforts to manage and understand human-environment systems have encountered fundamental difficulties due to their complexity, making it challenging to forecast the future, or to understand the correlations between actions and outcomes (Walker *et al.* 2002). The emergence of the study of social-ecological systems allows for perspective which looks beyond uncertainties and detailed variables and recognises simple features of the system (Folke *et al.* 1998). Through this framework, decisions based on uncertain forecasting can be replaced by a focus on maintaining the coping capacity of a system in the face of external shocks.

A social-ecological system is defined by Gallopín (1991) as a system that includes human and biophysical subsystems in mutual interaction. They are non-decomposable systems which are complexly inter-related; however it is possible to single out components which can then be understood within the greater SES (Gallopín 2006). In the research of SESs three features of the actors and of the systems are predominantly studied; namely resilience (Folke 2006), vulnerability

(Adger 2006) and adaptive capacity (Smit and Wandel 2006). The rate of growth of this field of research has resulted in confusion regarding terminology although more recent literature has sought to clarify their interactions (Gallopín 2006, Janssen 2007, Folke *et al.* 2010).

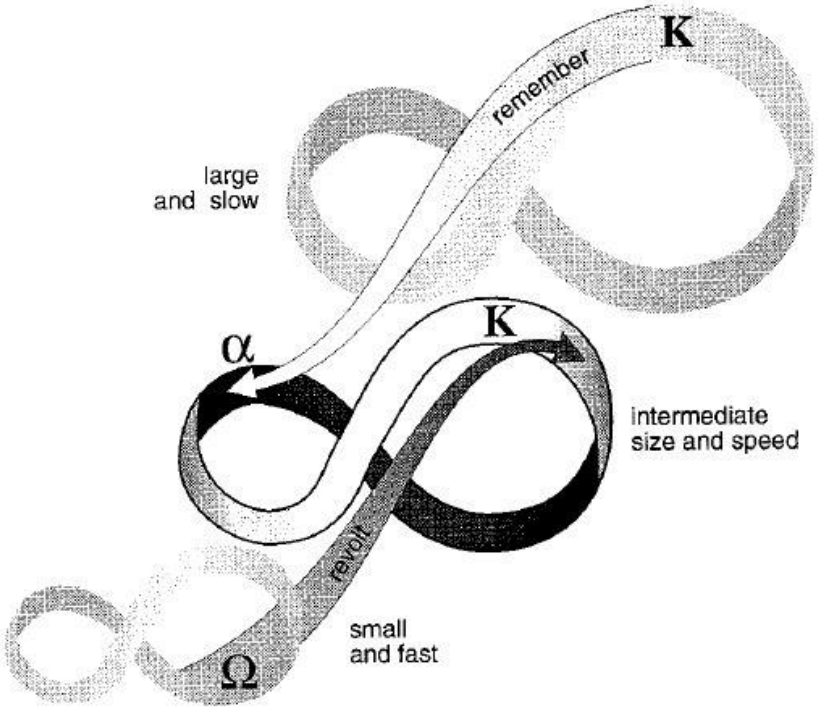

Figure 2: Illustration of the concept of panarchy. Three sets of adaptive cycles are connected by 'revolt', whereby changes cascade up to larger scales, and 'remember', which facilitates renewal by drawing on potential from larger scales (Gunderson and Holling 2001:75).

SESs are theorised as complex adaptive systems which are in never ending adaptive cycles of growth, accumulation, restructuring and renewal (Gunderson *et al.* 1995). This is known as the panarchy, a "representation of the ways in which a healthy social-ecological system can invent and experiment, benefitting from the inventions that create opportunity while it is kept safe from those that destabilise" (Holling 2001:398). These transformations take place in nested sets at various scales () and communication between cycles determines system sustainability. Identifying cycles and their scales allows for an understanding of their vulnerability or resilience and their contribution towards the sustainability of a given system (Gunderson and Holling 2001).

It is argued that the SES is the natural analytical unit for sustainable development research (Gallopín *et al*. 2001). As the challenges facing humans and the earth in this era of the "Anthropocene" (Crutzen 2002) are recognized, the need for sustainability transitions (Clark 2000) which tip SESs in the direction of resilience, robustness and sustainability, is urgent (Leach *et al*. 2010). In this regard the conceptualisation of SESs can be expanded to address the sustainability challenges of the modern world. Systems are understood to consist of social, institutional and ecological elements which interact in dynamic ways (Scoones *et al*. 2007). Work by the Social, Technological and

Environmental Pathways to Sustainability (STEPS) Centre is linking environmental sustainability with poverty reduction and social justice through a dynamic „Pathways Approach". This approach builds on the understandings of complexity and uncertainty understood to be inherent in SESs in order to address the dynamic properties of sustainability (Figure 3) (Leach *et al*. 2010).

Fundamental to this study are the concepts of resilience and robustness. Both terms have origins in engineering but have been applied to additional areas of study such as ecology (Holling 1973), anthropology (Vayda and McCay 1975) and rangeland management (Janssen *et al.* 2004). Ultimately both concepts have become central to the study of SESs with a current drive to align the approaches in the face of global challenges (Anderies *et al.* 2013). As it applies to SESs, resilience classically describes "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker *et al*. 2004:4). In practice resilience can be general – concerned with the resilience of all parts of a system to all kinds of shocks, or specialised – concerned with resilience "of what, to what" (Folke *et al.* 2010). Robustness is closely related to specialised resilience but is applied more commonly to designed systems, providing approaches with which to explore robustness-fragility trade-offs in these systems (Anderies *et al.* 2013).

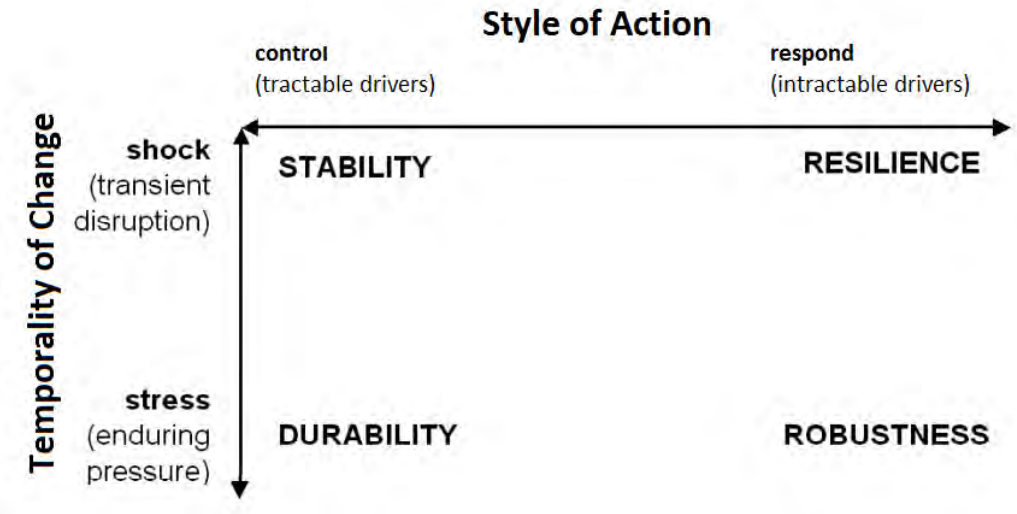

Figure 3: Dynamic Properties of sustainability across time (y axis) and source (x axis) (Leach *et al.* 2010).

Complex systemic relations are easier to conceptualise than to identify, and indeed respond to, in empirical assessments (O'Brien and Leichenko 2000). By making assumptions about the nature of the changes to which the system is responding („temporalities"), and of the type of response („action"), intervention strategies and practical distinctions can be made (Leach *et al*. 2010, Butler *et al.* 2014). Figure 3 shows the space which is created by these properties of sustainability. It is proposed that the properties of stability, durability, resilience and robustness are all necessary, but individually insufficient, for sustainability (Scoones *et al*. 2007). Global environmental and social changes are

intractable drivers and systems responding to enduring pressure or transient shocks will require robustness and resilience respectively.

Norgaard (1984) first described agricultural systems as co-evolved social and ecological systems. By incorporating drivers and responses to change, which contribute to realising sustainable development, this systems perspective has been applied to the agri-food systems of Africa (Ruthenberg 1971, Scoones and Thompson 1994, Janssen *et al*. 2004). Much of this work has responded to dominant narratives of technological change and economic growth for rural agriculturalists. In turn, the complex interactions of ecological, social and economic processes are integrated and a research agenda for rural agri-food systems has been set. This agenda recognises the risk prone environment of rural agriculture and seeks pathways which are resilient and robust (Thompson and Scoones 2009).

2.3 Food Security and the Rural Agri-Food System

Food systems are made up of a set of activities from production to consumption involving both human and environmental dimensions (Ericksen 2008a). The ultimate goal of the activities of the food system is the realisation of food security (Ericksen and Ingram 2005). Food security is defined by four outcomes succinctly summarised by Ziervogel and Ericksen (2010), and is achieved when all four outcomes are realised. *Availability* of food is production and distribution-determined and includes culturally significant foods. *Accessibility* refers to the ability to attain food through socially acceptable means. *Stability* refers to the vulnerability of food production and supply to shocks and fluctuations. Lastly *utilization* of food concerns an individual‟s actual ability to ingest and digest food as well as the quality of the food intake. Utilization additionally refers to the social value of the food and the culturally significant means by which it is consumed, whether these are specific preparations or circumstances that lead to the use of food in traditional or ceremonial ways.

The state of the food system and food security in the rural areas of South Africa is of importance due to the low levels of food security and changing consumption patterns in South Africa (Pereira *et al*. 2014). In many African countries, including South Africa, a trend of de-agrarianisation has been observed (Bryceson 2000, 2002). However, Bryceson (2000) notes that farming is still a major component of rural livelihoods that is valued by much of the African rural population, and there appears to be a renewed interest in cultivating indigenous and traditional food crops (Bichard *et al*. 2005 in McLachlan and Landman 2013). This has implications for health (Jansen van Rensburg *et al*. 2004), indigenous cuisine and culture (Shackleton 2003), as well as climate change adaptation, as some indigenous crops are tolerant of marginal conditions (Allemann *et al*. 2004).

The rural food system in South Africa, which includes subsistence agriculture as well as tight and loose value chains (Aliber 2009), is complex. As households are generally poor and dependent on agriculture as a form of livelihood, these systems are vulnerable to global environmental and social

change (Leichenko and O'Brein 2002). It is understood that "food is central to life, and food systems are intertwined with culture, politics, societies, economies, and ecosystems" (Ericksen 2008b:14). This has inspired the application of the SES approach to understanding the food system. This approach allows for complexity, heterogeneity over space and time, non-linear feedbacks, and the highly uncertain and unpredictable outcomes of interacting social and ecological components (Ericksen 2008a). By applying the lens of SES, linking histories, development trajectories and local experiences of change in an agri-food system, this research serves to fill a gap in understanding these complex systems.

2.4 Smallholder Agriculture in a Rapidly Changing World

Agriculture in Africa comprises multiple levels of complexity as historic, political, economic and environmental forces meet in culturally situated agri-food systems (Conway 2007, Thompson *et al*. 2007). Contemporary work has largely sought to include participatory and social approaches to solving the diverse on-the-ground problems related to vulnerability and adaptation to social and climatic stressors (Smit and Wandel 2006, Butler *et al.* 2014). The dependence of African agriculture on the climate, such as in the example of rain fed crops, increases the vulnerability of this sector to climate hazards (Cooper 2004). Under predicted climate changes many areas in sub-Saharan Africa are expected to experience shorter growing seasons, increased temperatures, decreased rainfall and increased incidence of extreme weather events such as droughts and floods (Hewitson and Crane 2006). The success of subsistence farmers is highly weather-dependent and they are therefore extremely vulnerable to global environmental change (Risbey *et al*. 1999). In response, a large body of work has investigated the vulnerability of rural agriculture to climate change and variability (Challinor *et al*. 2007, Ziervogel *et al*. 2008). The work on vulnerability has been extended to include multiple stressors, with the understanding that developing countries in particular are vulnerable to political, economic, and social changes (Leichenko and O'Brien 2002, Butler *et al.* 2014). Two examples of the additional stressors in African agriculture include the HIV/AIDS pandemic (Edström and Samuels 2007, UNAIDS 2013), and the comparative trade advantages of developed countries (OECD 2014).

The term „smallholder" is used to describe a wide range of rural producers, usually in reference to the amount of land which they access (Cousins 2010). In this thesis the definition is drawn from multiple sources and refers to people that farm small (1-2 hectares) land holdings, draw primarily from family labour and use limited amounts of external inputs such as fertiliser and pesticides (Ellis 2000, Hajdu 2006, Altieri and Toledo 2011). Smallholder farmers usually subsist off their land and depend in some way on agriculture as a livelihood source; at least 70% of people living in sub-Saharan Africa (SSA) depend on agriculture in this way (Hellmuth *et al*. 2007). In South Africa this sector is not as big with

an estimated 2 million smallholder households (Stats SA 2007), producing on 13 per cent of the available agricultural land (Fenyes and Meyer 2003, Laker 2005 in Carter and Gulati 2014).

Traditionally, rural populations produced most of their own food or exchanged food amongst themselves, however poor households in rural areas today are increasingly dependent on purchasing food, paying more for a basic food basket than formal urban households (McLachlan and Landman 2013) and facing higher levels of food insecurity (Aliber and Hart 2009). Food purchased in these areas tends to be bulk, processed grains and non-perishable items as a result of limited electricity supply and the low prices of grains which are achieved through the economies of scale in commercial agriculture (Pereira *et al*. 2014). This has been accompanied by a „nutrition transition" resulting in an increase in stunting, overweight, and metabolic disease risk in rural South African children (Kimani-Murage *et al*. 2010). With the increasing expansion of supermarket chains (D'Haese and van Huylenbroeck 2005), and a decreasing trend in subsistence agriculture, rural households are increasingly exposed to hunger and malnutrition (Aliber 2009).

Devereux *et al*. (2008) argue that much of the conventional agricultural science and policy is unable to cope with the complexity, diversity and uncertainty of smallholder rural farming. It has been recognised that interdisciplinary research is required in order to respond to the complex human-environment interactions related to agriculture and food in the modern world (Scoones and Thompson 2009). Thus Scoones and Thompson (2009) call for the consideration of two strands of thinking in order to foster sustainable agri-food systems. The first involves rethinking agricultural development using a systems perspective which incorporates temporal and cultural variation, complexity and uncertainty. The second focuses on agro-ecological interactions and situated analyses of „people in places". By including cultural histories, development trajectories and on-the-ground investigations, the SES approach of this paper responds to this call and investigates the challenges of complex agri-food systems facing development demands of the rapidly changing modern world.

2.5 Seeds

At the heart of the agri-food system is the seed. The production of crops has continued for centuries through the selection, storage, production and diffusion of seeds by farmers in a locally organised system commonly known as traditional or informal seed systems (Cromwell *et al*. 1992). In contrast to the informal seed system, a formal seed system guided by scientific methodologies has emerged as the „platform for techno-economic transformation of agriculture" (Rangnekar 2001). The formal seed system includes formal breeding stations, commercial seed growers, gene banks and agro-dealers and distributors (Scoones and Thompson 2011). The informal and formal seed systems are commonly associated with smallholder and commercial agriculture respectively, however they can co-exist, as in South Africa where many commercial farmers save and replant seeds and many rural producers purchase seed from the formal sector (Swanepoel 2014).

Biotechnology applied to seed has received considerable focus in recent decades especially following the success of the Green Revolution in Asia (Hazell 2009). It is largely believed that poverty levels in Africa are due to its having missed out on the Green Revolution (Scoones and Thompson 2009). Important to the success of the Green Revolution in Asia was the ability of farmers to share new wheat and rice varieties amongst themselves (Morris *et al*. 1999), however this is no longer legal in many countries, including South Africa, and farmers are prevented from recycling seed for planting in the next season (Collier 2012). Despite these restrictions, genetically modified (GM) seed varieties are seen as a way to meet future environmental challenges and improve productivity (Mannion and Morse 2012). As yet the benefit of GM crops for poor smallholder farmers is unclear (Morse and Mannion 2009) and the required management practices, fertilizer and pesticide regimes have hampered successful adoption of new technologies (Bates *et al.* 2005, Kruger *et al.* 2009).

Recognising the high levels of poverty in the rural areas of South Africa (particularly the former homelands) smallholder producers have been the focus of agricultural development schemes aimed at improving productivity and commercialisation (Manona 2005, Jacobson 2013). Schemes such as the Massive Food Production Programme (MFPP)[1] are largely based on rural mechanisation and modernisation (Hansen 2006). Programmes of this nature are typically enforced in a top-down manner with smallholder farmers having little opportunity to affecting implementation (Jacobson 2009). Further, the focus on external resources such as chemical fertilisers, mechanisation, hybrid (or GM) seeds and pesticides (Hansen 2006, Hajdu *et al*. 2012) have resulted in contested and complex approaches to, and perceptions of, agricultural development schemes and hybrid/GM seed for many of the smallholder farmers of the Eastern Cape today (Bradfield 2011, Jacobson and Myhr 2013).

2.6 Conclusion

This chapter forms the background of knowledge required to understand the local agri-food system, and the climatic and socio-economic challenges facing the communities of the study region in Pondoland, South Africa. Through the focus on resilience and robustness, and attempting to conceptualise the entirety of the local agri-food system as a SES this research serves to fill a gap in understanding these complex systems in South Africa. In line with the interdisciplinary and systems approach suggested by Scoones and Thompson (2009) and drawing on the importance of the role of food in culture, economies and ecosystems, this case study is able to address a situated analysis of „people in places".

[1] The MFPP was an agricultural development project run by the Eastern Cape Department of Agriculture from

3 Pondoland

3.1 Regional Introduction

This research focuses on communities who live along the Wild Coast of the Eastern Cape Province of South Africa, particularly between the towns of Port Edward in the north and Port St Johns in the south. This area is historically recognised as Eastern Pondoland and the seat of the mPondo[2] Kingdom which lies between the uMtata River to the south and the uMtamvuna River to the north (Figure 4). It is the former Transkei „homeland" established during the apartheid government. „Homelands" or bantustans, expanded on the „Native Reserves" to forcibly segregate the African population and served as labour reserves in support of various sectors of the „white" economy (Beinart 1980). This was justified by apartheid ideologies which believed that reserves better represented African cultural systems (King and McCusker 2007). Pondoland has a long history of contention and resistance despite its relatively peaceful annexation by the British Colonial government in 1894 (Beinart 1982).

The mPondo are a historically agricultural and pastoral society which has subsisted on these lands for over 500 years (Wilson 1959). In mPondo society homesteads (*umzi*) make up the household unit. Each *umzi* owes allegiance to a chief (*Inkosi*) who in turn owes allegiance to the hereditary Paramount Chief, or King. *Umzi* are flexibly placed and dispersed with land assigned by the local chief on the basis of need. This traditional system was challenged by „Betterment Planning", carried out in the 1950s by apartheid authorities, who intended to promote land conservation and efficient agricultural practice by reshaping *umzi* into European-like villages, it was met by acute resistance in the form of the mPondo Revolts (McAllister 1992, Beinart 2000).

[2] Mpondo is the name of the tribe, „ama" denotes the collective body of people of the mPondo tribe, and hence amaPondo is the plural version referring to the collective people, their activities or belongings.

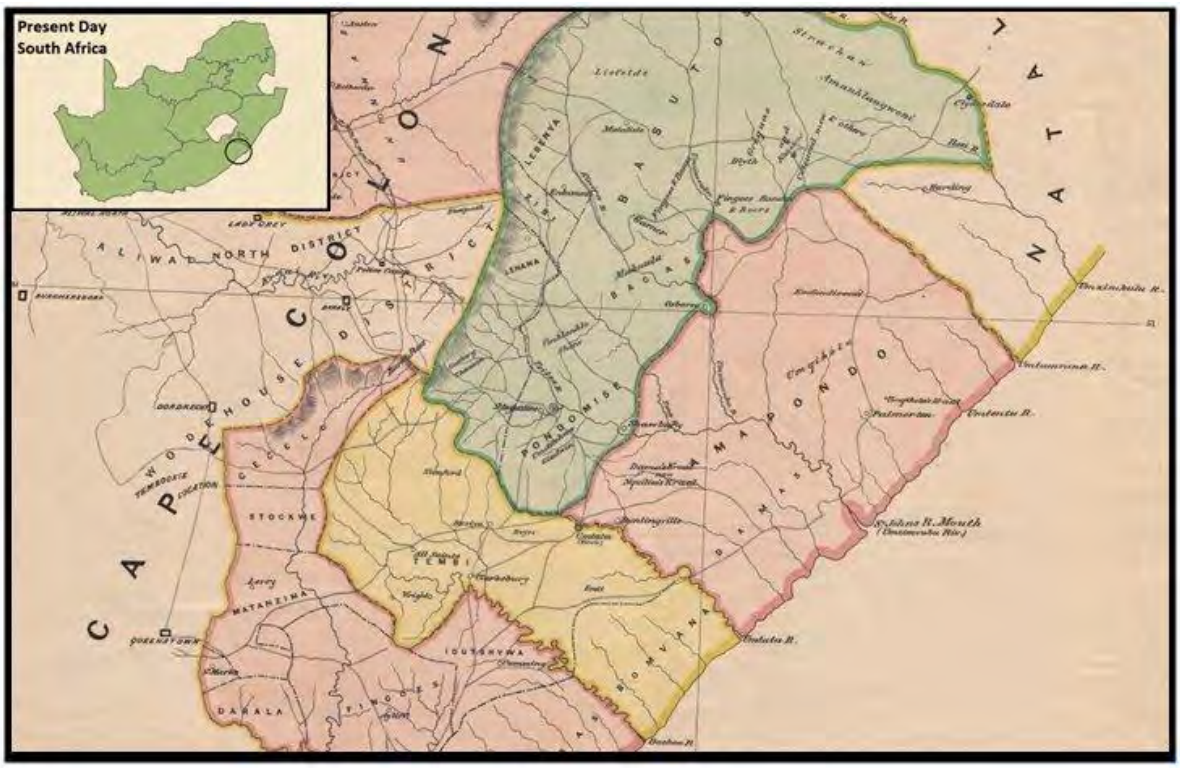

Figure 4: Colonial era map showing historic boundaries of Pondoland (Saul Soloman ca. 1874).

In the last 50 years the communities have been faced with various forms of imposed development and have resisted each in turn (de Wet 2013). An understanding of this region can therefore not be complete without considerations of its agricultural practices, at the heart of the community for centuries, and its responses to and encounters with development. This section aims to briefly introduce these histories as well as some of the relevant challenges facing the region.

3.2 Agricultural History

As far back as 1653, notes and journals of the survivors of European ships wrecked off the Wild Coast describe the self-sufficient agrarian societies of the mPondo (Wilson 1959). These historical accounts describe farming practices whereby women were responsible for agriculture – growing millet, maize, beans, melons, sugar cane and gourds (squashes and calabash) of various varieties – and men the cattle and livestock (Wilson 1959). This form of subsistence continued into the late 18th century as described by the *boer*[3] Jacob van Reenen who wrote of the maize, sugar cane, plantains, potatoes and black beans of the amaPondo gardens (Crampton 2004). The introduced crops such as maize, pumpkins, and sugar cane are conjectured to have been sourced from shipwrecked castaways (Crampton 2004) or by trade with Arabia and Asia (Swartz 2010). Post annexation in 1894 the amaPondo farmers began to make use of new tools such as picks and ploughs and, due to two major cattle epidemics (the Rinderpest epidemic of 1897 and the East Coast Fever outbreak of 1910), crop

[3] *Boer* is the Afrikaans word for famer, referring to one who left the Cape Colony to escape British rule.

cultivation grew in importance (Beinart 1982). This system of subsistence survived in prominence up until the mid-20th century when the growing mining industry began to intertwine with rural production as a result of large scale labour emigrations (Beinart 1980, McAllistar 1992). The migrant labour system reduced household self-sufficiency and increased dependence on a returning flow of wages (Beinart 1982).

Since the 1980s a number of attempts to modernise mPondo agriculture have been made. These include the Transkei Agricultural Corporation (TRACOR) which attempted to replace smallholder practices with commercial farming techniques in order to increase production (Ellis-Jones 1984) and the MFPP which similarly introduced modern agricultural techniques although it included a conditional grant scheme (Hansen 2006). Manona (2005) critiques these programmes, concluding that the schemes replicated functions of apartheid by focusing on arable fields, omitting the majority of communities, increasing the costs of production and level of risk, thus making programmes uneconomical unless exceptional yields were produced and sold at exceptional prices. In addition these programmes contributed to the breakdown of local customs of reciprocity and changed the traditional non-capitalist nature of the people (Manona 2005).

3.3 A History of Resistance

The political history of Pondoland is one of colonisation, resistance and the incorporation of capitalism. As Beinart (1982:vi) , a preeminent Pondoland historian has said, "an understanding of the position in the African reserves had to be located in an analysis of the way in which formerly independent African chiefdoms had been transformed by the development of industrial capitalism in South Africa". Although instances of resistance punctuate the history of Pondoland, colonial economies of trade were accommodated by the mPondo, showing that they were not completely opposed to the opportunities of colonisation. Along with opportunism, the mPondo have proven to be wary of government intervention and resistant to "collaboration with external agents to the detriment of their people" (Beinart 1982:2). This character of resistance has been tested repeatedly, from the policy encouraging the activities of traders proposed in the 1880s (Beinart 1982) to the resistance to proposed mining developments today (De Wet 2013).

The most documented and well known instance of resistance is the mPondo Revolt of 1959-1960 (Kepe and Ntsebeza 2011). The AmaDiba community, in the Mbizana district of Pondoland – an area of focus in this research – played a distinct role in the mPondo uprisings which were a response to the imposition of the 1956 Bantu Authorities Act (Kepe and Ntsebeza 2011). The resistance showed the importance of land to the mPondo communities as the „betterment" areas of the Act set to concentrate settlements, demarcate arable land and divide grazing areas into fenced camps (Beinart and Bundy 1980). The protests were violently supressed and on the sixth of June 1960 unarmed amaPondo peasant rebels were massacred and many arrested by government troops at Ngquza Hill near Flagstaff

(Kepe and Ntsebeza 2011). The story of the uprising has been passed down through oral history, ensuring that new generations understand the importance of resistance to defend livelihoods, and do not suffer at the hands of government (De Wet 2013).

Further attempts to „develop" the mPondo land have been made in the 50 years since the mPondo Revolts. In the late 1970s and early 1980s the government-sponsored Mbizana sugar cane plantation project was met with opposition (IMDS 1986), as was an attempt to develop a gum tree plantation in the late 1990s (De Wet 2013). In both cases the affected communities fiercely resisted imposed development by „outsiders" who had failed to take the wishes of local communities into account, with the communities perceiving the development as undermining their livelihood strategies (De Wet 2013). De Wet (2013) examines this history of resistance in light of the more recent proposed mining (the Xolobeni Mineral Sands Project which will be discussed in more detail in section 3.5), and the accompanying proposed N2 toll road development, on the Wild Coast. He concludes that the locals of this region have defended, and will continue to defend, their understanding of participatory decision-making in the context of development.

3.4 Pondoland Today

The Eastern Cape Province of South Africa prides itself on being the only province which has all of South Africa"s ecological zones, giving it a large amount of diversity as well as high levels of endemism. The beauty of this province is contrasted by the extreme poverty and absence of infrastructure due to the lack of investment it received during apartheid (Bank and Minkley 2005). After the fall of the apartheid government in 1994, democratically elected government, led by the African National Congress (ANC) promised development through the Reconstruction and Development Programme (RDP) (ANC 1994). Leading up to the elections, and following the lift of the ban on the ANC, the party pledged to grow the country through redistribution of national wealth, ensuring equality for all through a mix of Western democratic ideals and European socialist policies (Crush 1995, Peet 2002). The current demand for infrastructure is linked to the promises of national governments which were made over 20 years ago but have resulted in very little realised change for the people of the rural Eastern Cape. Within a few years of coming into power the ideals and promises of the RDP were reneged on and replaced with the ANCs neoliberal Growth, Employment and Redistribution (GEAR) policy, which stressed privatisation, deregulation, and trade liberalisation (Peet 2002). Lahiff (2005) shows that post-apartheid attempts at rural transformation have been through social grants and access to basic services, a mere extension of rudimentary citizenship rights, and have not been through interventions that would fundamentally transform the rural social economy. Referring to the heavy reliance on social grants, Beinart suggests that this has formed the emergence of a rural „pensionariat", rather than proletariat (Bank and Minkley 2005).

The areas and communities described in this study fall under those considered to be economically depressed and experiencing extreme poverty, however the people do not consider themselves to be poor as they value their subsistence and connection to land very highly (Bennie 2010). There are, however, calls for development linked to the earlier promises made via the socialist policies of the struggle-era ANC. The areas lack decent roads, electricity, clinics and schools but what these communities lack in infrastructure is compensated for by social capital in the strong bonds and networks between community members (Neves and du Toit 2008). This is exemplified in the local practice of the weekly tribal authority meeting (*Komkulu*) in which all community issues can be raised and discussed with consensus as the ultimate goal. This practice is an example of the extraordinary community cohesion present in the mPondo tribes (De Wet 2013). Community members devote a great deal of time to this practice which offers substantial benefit in uniting villages and allowing for collective resistance.

The communities also benefit from extended networks, primarily through the support of the non-governmental organisation (NGO) Sustaining the Wild Coast (SWC)[4]. SWC plays an important role in the development of the community while critiquing dominant top-down „development" paradigms[5] and working to "promote sustainable livelihoods that conserve, rehabilitate and protect the natural environment that provides the ecosystem services on which rural people depend"[6]. The organisation is comprised of volunteer professionals who gathered in response to the local people of Xolobeni (the site of proposed mining) seeking support to formulate their own development plans in reaction to the proposed mining and N2 toll road developments. SWC explicitly questions the ability of economic markets to produce „development" that meets social and environmental demands; the organisation works to realise alternative forms of development to those proposed by the mining company. SWC runs in a rather ad hoc format, since its inception it has run various programmes and projects, such as the „development" project known as Simbhademe which aims to support communities through education and micro-project development. These programmes focus primarily on the current needs of community members and have had mixed results; the ability of the NGO to make sustained changes in the communities is yet to be proven.

[4] SWC is a Section 21 Association, not for gain organisation (registration number 2007/012219/08)
[5] Top-down development refers to imposed from above where recipients have little say in the design or implementation of the development programme. It is commonly contrasted with bottom-up development in which local actors participate in decision-making about the priorities and implementation of a strategy in their local area,
[6] http://swc.org.za/purpose.php

3.5 Pathways to Development

This case study was based on research in five villages in the Eastern Cape. Primary focus was placed on the AmaDiba region comprised of the Mtentu, Mtolane and Sigidi communities. The villages of Noqhekwana and Mthambalala were visited and served to create a wider context of the local agri-food system; however they not investigated in as much depth as the AmaDiba community as a result of the immediacy of development challenges which face this region. Both Noqhekwana and Mthambalala played less of a role in Pondoland resistance and are geographically less isolated than AmaDiba with greater participation in agricultural projects, and better access to clinics, roads and schools. Three distinct „development" narratives are understood for the region inhabited by the AmaDiba communities which will be presented in this section. Although specific to this area they represent dominant development narratives across many rural areas.

The most immediate development route in the AmaDiba area regards the Xolobeni Mineral Sands Project which is being pursued by a small Australian mining company, Mineral Resource Commodities (MRC) and its South African subsidiary, Transworld Energy and Minerals Resources (TEM).The AmaDiba community exists on a stretch of coastline known as Xolobeni Sands (Figure 5) which contains the tenth largest deposit of titanium in the world, estimated to be worth R11 billion (Hofstatter 2007). The project, proposed to bring „development", has been rejected by the communities of the AmaDiba who formed the AmaDiba Crisis Committee (ACC) in response. On behalf of the community the ACC argues that the proposed mining development will destroy livelihoods and the local environment and does not serve the form of development desired by the local people (ACC 2001).

A common defence against the proposed mining project is that the environmental degradation that accompanies it will destroy a budding eco-tourism industry. The Wild Coast of South Africa is a popular holiday destination for many South African and international travellers. Through the development of Community Based Tourism (CBT) it is believed that this industry has the potential to improve the livelihoods of the poor while creating development opportunities (Equations 2008). Although this has been attempted in the AmaDiba community with some success, the projects face many challenges with regards to funding, partnerships, benefits for community members and formalisation (Ntshona and Lahiff 2003).

Figure 5: Google Map showing some of the dispersed homesteads of the Mtolane village with Red Dunes of Xolobeni along the coast.

Commercial agriculture is a third development trajectory that has been commonly proposed. In an extensive study by Manona (2005) regarding the possibility of smallholder agriculture as a local economic development strategy in Pondoland, it was found that the available resources (soil quality, water, land, fiscal investment, labour) limit the possibility of development through agriculture with respect to commercial maize production. Further, Manona (2005:v) believes that "the double barrel approach of using agriculture for poverty reduction, on the one hand, and commercialization, on the other, is not working [in Pondoland] and cannot work under the current circumstances". Despite the findings of Manona (2005) and many barriers to involvement in formal markets, there is potential for integration of smallholder farmers into commercial markets in the future (Magingxa and Kamara 2003, Pereira 2014). This possible pathway to development must therefore be considered for the future of Pondoland.

3.6 Conclusion

Eastern Pondoland, and the communities studied in this project, has a long history of subsistence agriculture and pastoralism. Although the history of the mPondo involves extreme cases of resistance such as in the mPondo Revolts, their peaceful succession by the British Colonial Government and the ability to adopt tools, techniques and practices of capitalist trade, show that the resistance is accompanied by an opportunism and adaptability. In recent years, programmes in agricultural modernisation have been resisted as they feature characteristics of imposed development. With the support of the NGO SWC, the communities of the Wild Coast are once again working to resist the

imposed development of the Xolobeni Mineral Sands Project and the affiliated N2 toll road development as well as create alternative options for development. In light of the dominant discourse of development, the three prominent development trajectories of mining, tourism and commercial agriculture were outlined. The history of resistance is thus reflected within the current struggle for self-defined development in these mPondo communities. Contemporary complex social and ecological challenges are thus related to historical-political outcomes which frustrate the search for self-defined development. These links cannot be disentangled from a holistic understanding of the system.

4 Research Methods

4.1 Introduction

The empirical investigation of any complex system is challenging; case studies can be employed to manage this difficulty as they allow for fine grained, context specific explorations of theoretical concepts (Stake 1995). While it is believed that case study results are not generalizable, Burawoy (1998) provides an extended case study method whereby produced knowledge can be applied to society in general. Building on the „extended case method" of earlier anthropologists Burawoy (1998) adds „reflective understanding" allowing for a unity of ethnography and science which includes explanatory and interpretive practices. This is done through the examination of small-scale patterns which are linked to broader societal processes. While time restrictions limited the study to less than the intensity required by Burawoy, the method provides the logic for this study. As such, taking a SES approach, this study links the on-the ground dynamics of an agri-food system at a community level with broader trends of global change and development.

Given the disproportionate influence of humans on the environment (van der Leeuw *et al.* 2000), local actor"s roles and beliefs regarding any system must be taken into consideration. When attempting to understand a SES it is the people inhabiting it that offer greatest insight into its working. A qualitative and social approach was therefore adopted, allowing for the exploration of the complexity of human experiences (Webster and Mertova 2007). This approach lends itself to the production of contextual data obtained through informal and flexible interactions allowing respondents to help set the agenda (Elliot 2005). As this project enters the debate on development, participation and community engagement were a priority (Ferguson 2006). This manifested in the informal agenda of interviews and the attention paid to the interests and needs of the interviewees. Given the importance of the social aspect of this system, limited attention was paid to ecological aspects such as biodiversity, however climate and drought as environmental stressors as well as community perceptions of ecological changes were investigated. The ecological system in the region has been addressed elsewhere (Chalmers and Fabricius 2007, Berliner 2011, Shackleton *et al.* 2013) This research took an open-minded and exploratory approach, attempting to understand a local SES through narratives of food and farming practices guided by local experiences of the system. Data was collected over two trips to the Wild Coast of the Eastern Cape Province of South Africa. The first trip provided a broad introduction to many of the crops grown in the greater region as well as the community of primary focus. A return trip was carried out two months later with the intention of performing finer grained group discussions and workshops with local community members. Throughout the two trips the researcher was assisted by three interpreters acting either individually or in partnership. The

interpreters acted as communicators, community liaisons and research assistants and offered their own insights and opinions regarding the topics on hand.

4.2 Discovering the Context

The project took an inductive approach believing that until experiencing a real system one does not know which theories will help to guide the understanding of the system (Gillham 2000). For this reason an initial trip was made with an open mind where a range of communities were visited in order to understand the local context. In April 2014, the team from SWC provided a local member of the organisation to accompany board member Val Payn, who has done previous work in the region (Payn 2012) and could thus provide valuable insight, and the researcher on a trip which introduced the area, the communities and the overall system. No formal sampling strategy was adopted with informants chosen according to the local facilitator‟s perception of the community members‟ experience and knowledge of traditional and current farming practices. As the facilitator was associated with SWC some bias in the selected participants was inevitable, however the focus of interviews was not on topics associated with SWCs agenda but on food and agriculture.

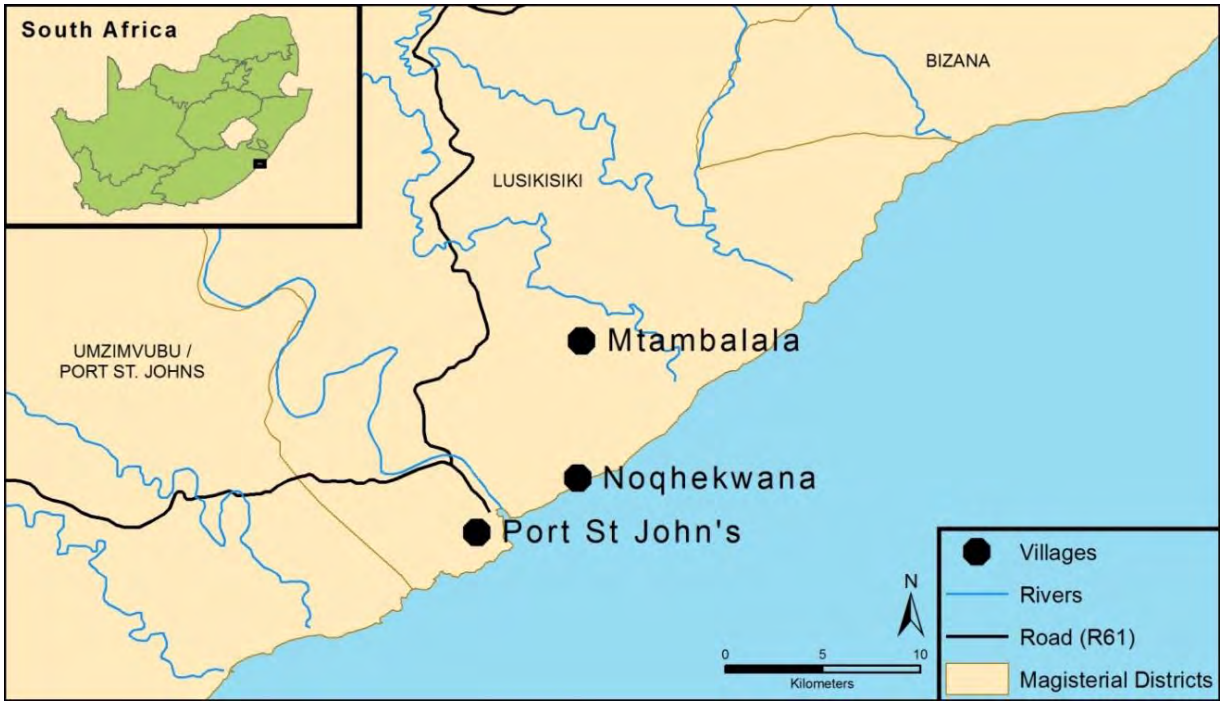

Figure 6: Map of the southern area of the study site showing the two villages visited (Noqhekwana and Mtabambala) and the closest town, Port St Johns.

The villages of Noqhekwana and Mthambalala (Figure 6) in the Port St Johns local municipality were visited in the south of the region near the town of Port St Johns, in the OR Tambo District Municipality. Three homes were visited in Noqhekwana chosen by a local member not affiliated with SWC, while due to time restrictions only one household, was visited in Mthambalala. Information

from these interviews provided a broader context to the agri-food system of the former homeland. Due to the history of contentious development, this research focused primarily on the villages of the AmaDiba area when considering the role of agri-food systems in development

In the north, near the town of Port Edward in the Mbizana local municipality of the Alfred Nzo District Municipality, the villages of Mtentu, Mtolane and Sigidi – in part making up the greater AmaDiba tribal area and community – were visited (Figure 7). Twelve homes were visited, in each case the local member of SWC, was able to connect the researcher with the community members and introduce older farmers who might offer insight on past and current food and farming practices. Time was spent in both semi-formal, semi-structured interviews, and informal conversation about farming, food, desires, development and the changes experienced in lifestyle.

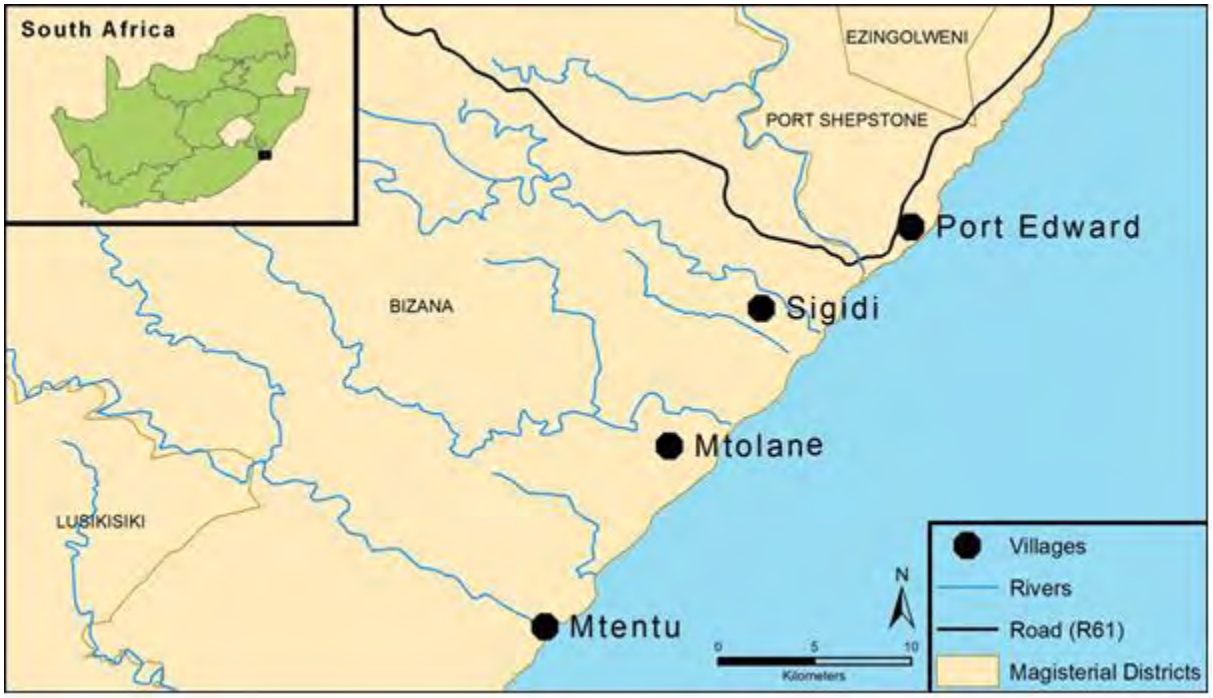

Figure 7: Map of the northern area of the study site showing the three villages making up the AmaDiba region (Mtentu, Mtolane and Sigidi) and the closest town, Port Edward.

Although few households were visited, more than one adult family member was usually involved. Additional research participants were engaged through the workshops (Sigidi) and group discussion (Mtolane), resulting in 48 participants (Table 1) complimented by participant observation, informal interviews with personnel at Mtentu River Lodge, and keen insights from research assistants. Additionally, the emphasis on historical changes demanded a focus on elder community members, reducing the effective population. Lastly, the extreme dispersal and spread of homesteads of the AmaDiba communities (see Figure 5) reduced the possibility of visiting more houses in the short space of time available.

Table 1: Total population of the wards containing the villages of the case study (Stats SA 2011) and total participants from each village, including household interviews, workshops (Sigidi) and informal discussion group (Mtolane). Full informant list and contact dates in Appendix B

Village	Ward	Population	Participants
Noqhekwana	Noqhekwana	1230	8
Mthambalala	Esiphathe B	1314	4
Mtentu	Mngungundlovu	357	12
Mtolane	Xolobeni B	1677	8
Sigidi	Luphithini B	1161	16

4.3 Data Collection and Analysis

Semi-structured and informal interviews were accompanied by participant observations (Bernard 2011) and informal free listing methods (Quinlan 2005). While interviews provided personal, detailed information, group discussions allowed these topics to be validated by community members. Two workshops served to further investigate issues raised during home-based interviews. In addition to the free listing of crops farmed, the themes of each interview, the workshops and group discussion are presented in Table 2.

Non-probability, purposive sampling was used to select participants. Purposive sampling is an efficient way of studying a cultural domain with knowledgeable experts. Despite inherent bias, it has been found to be robust even when tested against random probability sampling (Tongco 2007). Respondents were therefore chosen based on their ability to provide information and not on their representativeness (Maxwell 1998). Access to participants was facilitated by the local guide, through intermediate liaisons or based on his perception of their experience and knowledge of farming and traditional crops. As a result of timing and logistics, a tribal authority meeting (*Komkulu*) could not be attended by the researcher at the commencement of the study; however the local guide presented the study and sought permission to conduct research in the community, on behalf of the researcher.

The empirical aim of this project was to discover experiential information which would elucidate the complexity of a SES and allow for the description of the local agri-food system. Rather than trying to produce certainty this narrative approach investigated the nuances of the system through explanations of the local reality by the respondents as well as the researchers reflexive analysis gained through participant observation and experience of life in the community. It is important to note social science fieldwork under the conditions which are found in the vast rural countryside presents many challenges. Communicating meeting times, transport and locations is just one aspect of the logistics of working in these areas. Above that, time has a different feel and adjusting to the local „mPondo time“ was one of the many challenges faced in co-ordinating research. Once the local time was adjusted to,

it was possible to appreciate the sociability and love for sharing information and stories that makes the mPondo people wonderful to work with.

Table 2: Themes raised in 15 interviews, two workshops and an informal discussion with agricultural villagers in Noqhekwana, Mthambalala, and the AmaDiba region of the Eastern Cape.

		Respondent															Workshop		Discussion
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	1	2	group
Commerce	*Access to Markets*	X	X	X	X				X	X	X				X	X			
	Commercial Competition									X	X	X							
	IsiBaya Project										X	X	X	X	X	X			
Agriculture	*Changing attitude to farming*		X			X	X	X			X	X			X		X		
	Infrastructure and Inputs			X	X		X		X							X		X	X
	Sorghum			X	X	X		X	X										
	Pests				X			X	X		X						X		
	Water supply	X	X	X							X				X	X		X	X
Maize	*Failure*	X	X		X											X	X		X
	Importance	X															X		X
Food	*New Cooking Practices*	X	X				X					X					X		
	Less Traditional Food		X							X	X	X	X				X		X
	Traditional better than new				X		X		X		X	X	X		X		X		
	Health				X		X		X			X							
Weather	*Percieved Change*	X		X	X				X	X		X			X			X	X
	Unpredictable Rain	X		X	X					X					X			X	X

4.3.1 Interviews and Free Listing

Fourteen interviews were conducted during the scoping trip in April 2014, in these interviews researchers were invited into *umzi* and given tours of the smallholder farms (Figure 8); one additional interview in the same form was conducted on the return trip in July 2014. Data provided through these interviews were sorted by „Informant" (Appendix B). Community members shared food and stories and a rich understanding of local farming and food practices was made possible.

Every interview began with a thorough introduction of the researchers and an explanation of the project. Sometimes, without prompt, this immediately invited the listing of all the crops grown by the farmer, and if not then the farmer was asked to list the crops they were currently growing. Responses were rapidly noted and this exercise comprised the fundamental free listing component of the interview. Free listing in this manner is a common technique in the social sciences and is used widely in ethnobiology for its ability to reveal large amounts of cultural knowledge about specific domains or topics (Quinlan 2005). In each case the crops grown were discussed with specific questions regarding how long they had been grown for, how they were used and whether they were sold commercially. A similar approach was used when investigating „old" or „lost" crops which are rarely grown anymore. In some cases the lost crop was unknown in translation or by the interpreter. This opened discussion

on patterns of change in lifestyle, food and expectations (See Table 2for themes and Appendix C for questions). All the interviews with community members were conducted in the local mPondo dialect of isiXhosa and translated to the researchers by the local guide; thorough notes were taken as the interviews were conducted.

Figure 8: Homestead interview in Mtentu (Photo: L. Pereira 2014).

4.3.2 Workshops and Group Discussions

While the initial visit to the region provided an introduction to the local agri-food system, the return trip was aimed at further exploration of the drivers of crop choice looking at the social, economic and environmental reasoning which goes into any farmer‟s decision-making process. In order to delve deeper into an understanding of the recent changes in the local food system, the current status quo and the local understandings and expectations of the future, two workshops were held at a local school in the Sigidi community of the AmaDiba area. Both workshops were held on the same day in July 2014 in order to reduce the impact on community members. These two workshops were open to all members and a mixture of age and gender was encouraged. Twelve local community members participated in the workshops, three males and nine females, who ranged in age from 30 – 80 years old. The workshops were facilitated by interpreters, one male and one female. The first workshop focused on old and new crops, seed sharing and personal connections to crops grown. The second workshop aimed to better understand the relationship of local farming to the environment, with a

special focus on changing weather patterns and local responses. Both workshops were audio recorded and later transcribed and translated into English.

In addition to the workshops, a group discussion was held in the neighbouring community of Mtolane. Five community members participated, with both elder and younger farmers present. This allowed for greater understanding of changing perceptions and patterns in farming and food practices, and further verification of information from the interviews and workshop. The discussions were translated by a different local guide, as well as recorded and independently transcribed and translated after the fact. Broaching the same issues with three different group sizes and levels of engagement (interview, group discussion and workshop), allowed for a greater understanding of the perceptions and agreements between them. Originally plans were made for these issues to be raised in the weekly community meeting (*Komkulu*) – which would afford the researcher the opportunity to observe and discuss practices with a greater portion of the community, however this was not possible. One *Komkulu* was attended during the stay in the community but important local matters, specifically regarding the proposed mining development, preoccupied the focus of the meeting. Roughly fifty community members were in attendance of this vital meeting, giving an indication of the size of the communities of the AmaDiba area.

4.3.3 Further Material and Analysis

In anthropological research, participant observation requires spending long periods of time immersed in a culture (Bernard 2011). To make up for restricted interaction with the community, this research drew on the direct narratives compiled, ideas shared with members of SWC, documentary sources shared publicly through SWC, non-locals working in the area and the research guides. The diversity of sources informed conclusions and understandings. Finally, projected weather changes under RCP 4.5[7] were explored for the years 2020-2040 using the Climate Information Portal[8] in order to contextualise future prospects of agriculture in the study region. Combining data from many different sources, including the intersections of theme across interview, workshop and discussion contexts, allows for a triangulation of data (Flick 2004). This enabled a more robust understanding of the local social-ecological system.

[7] Representative Concentration Pathway 4.5 is a medium range scenario projection used by the IPCC fifth assessment report
[8] cip.csag.uct.ac.za

4.4 Ethical Considerations and Study Limitations

Ethical protocol for work with human subjects of any nature is set by the University of Cape Town‟s (UCT) ethics committee. This protocol was followed based on the „*UCT Code for Research involving Human Subjects*[9]. An additional research ethics protocol, to the benefit of the researchers, NGO and the community, was drawn up and agreed upon prior to the commencement of the field work (Appendix A). Free and prior informed consent was obtained from all individuals and groups who participated in the research activities and anonymity was assured to all. The research, its aims and affiliations were shared at the commencement of all formal meetings and interviews. If photographs or plant specimens of any nature were acquired, permission was given beforehand. Upon completion the entire thesis will be made available to the community as well as a pamphlet summarising the findings of the research in isiXhosa.

No study is completely free of limitations and some of the unavoidable limitations of this study centred on the reliance on participation and memory of community members. Although the available members may not have been completely representative of the community and certainly were not entirely representative of the available memory, the inclusion of as many members of the community as possible, as well as spending three weeks in the field, offered insights sufficient for the scope of the study. Ethnography typically demands that researchers spend extensive periods in the communities which they are studying (Bernard 2011), the relative briefness of time spent in the community is compensated for by the diverse sources which contribute to forming the narrative approach. In addition to the briefness of the stay, the researcher‟s lack of prior knowledge regarding the state of smallholder agriculture in South Africa may be a limitation. A personal bias towards bottom-up development models must be acknowledged, although this is not explicitly a limitation, it frames the approach to the research. The language barrier and dependence on a facilitator who was not entirely involved in the larger project was perhaps the greatest limitations to the study. This was partly overcome through audio recording and translating of the workshops and group discussions and through the relationship and understanding between the researcher and research assistant. The final limitation is that part of the research was conducted during a particularly low-rainfall event July (2014), the existing challenges of this time may contribute towards a bias of participants when discussing weather changes and the challenge of water scarcity.

[9]Available at: http://www.education.uct.ac.za/sites/default/files/image_tool/images/104/uctcodeforresearchinvolvinghumansubjects.pdf

5 Lessons from the Field

Figure 9: A typical homestead in the Noqhekwana village near Port St Johns (photo: D. van Renen[10]).

5.1 Introduction

The villages which were visited to inform this case study contained many culturally derived similarities. These included the structure of homesteads, the prevalence of home gardens and the range of crops cultivated. While each village faced distinct challenges, the similarities allowed for a broad assessment of current agricultural practices. Many of the differences in the crops grown are a result of geographic differences or personal preferences. For the villages in the southern region there are higher rainfall levels and steeper inclines; as a result vegetation is lush and cultivating areas are close to homesteads (Figure 9). In the northern region of the study site, the landscape is composed predominantly of grasslands and gentle slopes with homesteads and fields more widely distributed (Figure 10).

The fifteen homestead interviews, two workshops, discussion group and many informal conversations, allowed for data triangulation and an overall picture of agricultural practices to be formed. Apparent trends in what is grown and the economic importance of agriculture are explored in this chapter. The participants from all communities agreed that the primary goal of agricultural activities was to secure household food provision and both OR Tambo and Alfred Nzo have high levels of food insecurity (81% and 86% respectively, ECDA 2014). The importance of farming in

[10] http://www.panoramio.com/photo/9957078

daily life could be seen in the landscape of home gardens and fields. As a workshop respondent explained "we do buy the food from the shops but we buy it according to 2 ways. So there are years where our crops that we have grown give us good produce then we don't buy food. But when the weather is bad like the current year and we don't have good produce then we buy lots of food" (Sigidi workshop, July 2014).

Figure 10: Traditional landscape of Eastern Pondoland with arable fields and home gardens, parts of the AmaDiba community area are more dispersed (Photo: L. Pereira).

5.2 Crops Farmed

The mPondo farming method typically consists of fields of maize (*umbona*), sweet potato (*ubhatata*) and taro yam (*amadumbe*[11]), and a garden of various vegetables. From Noqhekwana in the south to the villages of the AmaDiba region in the north the farmers were found to grow a core of crops (Table 3). The free listing which took place in fourteen homesteads during the initial trip revealed the prominence of nine core crops, grown in more than half the homes sampled (Table 3). Often plants were seen growing in the gardens and fields of the informants, however if they were not mentioned during the interview they were excluded from the free-listing analysis but recorded for discussion purposes. The free-listing method assumes that items are recalled by informants in an automatic ranking of importance, and this was used to infer the importance of crops to amaPondo farmers. The free-listing analysis (Table 3) was based on the standard method demonstrated by Ryan *et al.* (2010).

[11] *Amadumbe* is the isiXhosa name for Taro Yam; the isiXhosa name is often used in English, and will therefore be used in this text.

The number of crops recalled by informants ranged from 3 to 11 but the high median number (9) recalled indicates that a diverse range of crops are important to local smallholder farmers. On returning to the AmaDiba community the workshop of twelve community members confirmed through discussion the importance of the 14 most commonly recalled crops as identified through the free-listing exercise. In addition to the core crops many farmers grew additional crops according to personal preference.

Figure 11: Above ground storage container full of Maize (Photo: L. Pereira).

Maize (

Figure 11) was found to be the most important crop, and the only crop recalled by every respondent (Table 3). This was echoed in the many conversations and interviews. “We grind the maize to get maize meal, and we use that to make traditional beer. We eat maize, our chickens, goats and cows eat the maize. We sell it too. That is why we grow it always” (Mtolane informal discussion July 2014). Maize is used at almost every stage of its development making it a fundamental crop for year round food security. It is eaten „green“, roasted when harvested early in its development, ground to a fine white powder and used in many traditional dishes (Sigidi workshop, July 2014). It is believed that maize arrived in Africa in the 16th century but only became a dominant crop in the 19th century (Beinart 1982). It is an indigenised crop which rapidly gained popularity. “The culture was that the most important thing was maize and anything else was an addition, you would be judged if you did not have maize” (Sigidi workshop, July 2014). Maize is now central to the lives of many smallholder and subsistence farmers worldwide, and is replacing many traditional crops in subtropical Asia

(ICRISAT 2006) and throughout Africa (McCann 2001). Although a paramount crop in mPondo agriculture, many farmers made reference to its declining success. One farmer explained "we can't just stop planting it even if the weather is bad we have to grow it and then you will get disappointed and get small produce but we cannot stop growing maize because we are dependent on it very much" (Mtolane informal discussion, July 2014). Farmers did admit to growing less maize than previously in favour of sweet potatoes and *amadumbe*. These tubers are said to "not give us problems with the weather changes" (Sigidi workshop, July 2014) and are found to handle variable rainfall better than maize.

Table 3: Informant by Item Matrix based on free-listing of crops grown by fourteen smallholder farmers in Eastern Pondoland. Crops are in order of prevelance (number of homes grown in). Numbers within the matrix indicate the given ranking of a crop by the informant. Species names can be found in Appendix D.

Crop Plant (isiXhosa)	Informant														Number of Homes Grown In (%)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1. Maize (*Umbona*)	3	1	4	4	1	3	4	1	1	1	1	1	1	2	14 (100)
2. Sweet Potato (*Ubhatata*)	1	4	1	3	4	-	1	2	3	6	10	5	4	3	13 (93)
3. Beans (*Imbotyi*)	2	3	3	1	2	1	3	3	10	-	3	3	2	4	13 (93)
4. Taro Yam *(Amadumbe)*	9	2	2	2	3	2	2	4	2	7	6	-	-	-	11 (79)
5. Pumpkin (*Amathanga*)	8	5	5	7	-	-	6	8	9	-	2	4	3	1	11 (79)
6. Cabbage (*Ikhaptshu/Iklabishi*)	5	7	6	6	-	-	8	6	6	5	-	-	5	6	10 (71)
7. Spinach (*Isipinatshi*)	6	8	10	-	-	-	7	-	-	3	8	-	9	5	8 (57)
8. Onion (*Amatswele/Ianyanisi*)	7	6	9	-	-	-	11	-	7	-	11	-	-	9	7 (50)
9. Potato (*Amazambane*)	4	-	-	-	5	-	5	5	4	-	5	-	6	-	7 (50)
10. Tomato (*Utamatisi*)	-	9	8	-	-	-	-	7	5	-	12	-	-	-	5 (36)
11. Carrot (*Umnqathe/Ikarot*)	-	-	-	-	-	-	9	-	8	-	-	-	7	8	4 (29)
12. Beetroot (*Ibhitruthi*)	-	-	-	-	-	-	-	-	-	4	9	-	-	7	3 (21)
13. Calabash (*Iselwa*)	10	-	-	-	-	-	-	-	-	-	-	2	10	-	3 (21)
14. Brinjal (*Ibrinjal*)	-	-	7	-	-	-	10	-	-	-	-	-	-	-	2 (14)
15. Sweet Reed *(Imfe/Imphe)*	-	-	-	-	-	-	-	-	-	-	4	6	-	-	2 (14)
16. Green Pepper (*Ipepile)*	-	-	-	-	-	-	-	-	-	-	-	-	8	-	1 (14)
17. Sorghum (*Amazimba*)	-	-	-	5	-	-	-	-	-	-	-	-	-	-	1 (14)
Number of Plants Listed	10	9	10	7	5	3	11	8	10	6	11	6	10	9	**Median** 9

Previously widespread crops such as sorghum and the sugar cane-like sweet reed *imfe* are grown by few people today. Although *imfe* is still grown by a few farmers who favour its taste, when asked what caused the decline in prevalence, respondents stated "we ran out of it in this region because it is easy to eat and people liked it so much" (Sigidi workshop, July 2014). Sorghum was grown by only one farmer (Informant D) who admitted that despite its difficulty as a crop, his love of its taste ensures that he will always grow it. This love for the taste of sorghum was shared by many of the farmers,

however it is grown by very few. The story of the decline of sorghum has been relayed elsewhere (Rose 1972, Beinart 1982, Jacobson 2013), and was confirmed by many informants. Sorghum grows with an exposed grain, which makes it susceptible to being eaten by birds and small animals. As a result of the decrease in on-farm labour– both as a result of labour migration and increased school attendance by the youth – fields today cannot be guarded and managed as easily as they were in the past. As one informant succinctly noted: "*Amazimba* needs a lot of labour and nowadays children go to school and there is no one to help in the fields" (Sigidi workshop, July 2014). This has forced sorghum, a traditional grain which has historically played an important role in Xhosa culture, to be phased out. It is now only grown by the farmers who have the highest preference and nostalgia for it, or who use it to produce the delicious traditional beer mentioned by informant D. The decline in sorghum as a common crop in amaPondo fields has consequences beyond taste preferences. Sorghum has been recognized as both heat and drought tolerant and is therefore pivotal in agricultural adaptations to the effects of climate change (Reddy *et al.* 2007). In fact, elevated CO_2 levels have been shown to reduce the water requirements of sorghum (Conley *et al.* 2001) and increase biomass under drought conditions (Ottman *et al.* 2001). Despite this, farmers are growing less sorghum in the case study region as well as further afield in the semi-arid tropics of Asia where farmers are choosing to grow maize for its increasing market demand (Singh *et al.* 2011). The rise of maize and the fall of sorghum is therefore a global trend with consequences for local cultures and climate change adaptation.

Figure 12: A farmer displays the variety of beans grown next to a traditional mortar in which beans are 'stamped' (Photo: L Pereira 2014).

5.3 A Distinction between Old and New

While the popularity of maize and the scarcity of sorghum and *imfe* highlight interesting global and local trends, the crops of medium importance draw focus to additional insights and patterns. In almost every interview a distinction between „old" and „new" crops was mentioned. Many of the crops in the first half of Table 3 (crops 1 – 9), except for spinach and onion, are considered to be „old" crops while the remaining crops (crops 10 – 17), except sorghum, calabash and *imfe* are more recent introductions. The commonness of maize, a non-indigenous crop, compared to the scarcity of sorghum, a traditional African grain, is only the beginning of the story of old and new crops for the smallholder farmers of Eastern Pondoland.

Figure 13: A farmer in Noqhekwana showing the bitter herb known as *iselawentaka* used to flavour many traditional dishes (Photo: L. Pereira 2014).

The old crops are believed to have been grown by these communities for hundreds of years based on references to beans and gourds from pre-colonial mPondo encounters (Beinart 1982, Crampton 2004). Crops such as beans (Figure 12), *amadumbe*, pumpkin and calabash require few inputs or labour and are used in many traditional dishes. Dishes such *Umgqnushi* (samp and beans) or *Umgha* (meilie-meal and pumpkin), among others, are described by Rose (1972) and were seen in the homes visited in this case study. Old crops, although not all indigenous, are central to these dishes which were traditionally flavoured with wild herbs (Figure 13) and were staple to the mPondo diet for centuries. New crops refer to those introduced as recently as the last few decades. Seeds for new crops can be bought in nearby towns and are often the cheapest available seeds. In reference to this, a respondent explained

“most of the time we don‟t have enough money and you just see that the amount you have is only enough for those crops and you cannot afford others even though you would like to buy them” (Sigidi workshop, July 2014).

Unfortunately many of the new crops, such as tomato, spinach and green pepper are largely water and input intensive, and do not keep well without refrigeration, an impossible luxury in areas with no access to electricity. This was made clear by one respondent who stated “I would say that the ones that we buy like cabbage, beetroot and spinach need more care like watering and having to go into the garden and take care of them unlike the sweet potatoes. And you need pesticides for them unlike the other old crops” (Sigidi workshop, July 2014). In some examples new crops have directly replaced old, traditional varieties. This is the case with spinach; the „new spinach‟ is water intensive but grows easily, and a respondent admitted “we don‟t use the new spinach a lot but the new spinach grows faster. The old spinach (*isqasholo*) is attractive to pests and you can‟t keep it for a long time. But with the new spinach once you have planted it you can go and pick a leaf once and then go again during the course of the week, so it lasts long” (Sigidi workshop, July 2014). This benefit of the „new spinach‟ seems to outweigh the fact that many farmers need to buy seeds, as they do not know how to propagate and collect the seeds of the new spinach plant. A similar case is found with carrot, onion and beetroot. In reference to beetroot one respondent explained “you can only buy these seeds; we‟ve grown up knowing to buy them” (Sigidi workshop, July 2014). While in the cases of onion and carrot an anecdote told by Payn (2012:88) captures the outlook of many farmers:

“During a field excursion, I was asked whether I knew what carrot and onion seeds looked like, as local farmers had only recently experimented with growing these crops and wished to know how to save the seeds. I pointed out flowering onion and carrot heads, and explained what the seeds would look like once the seed heads had matured. One woman delightedly told me she had left some of the previous year’s carrots to flower, and had now found that carrots had self-germinated in her garden”.

5.4 Seed Sharing

While changes were seen in the vegetables grown, the traditional staple crop, maize, is affected by access to modern seed systems. Hybrid and GM seeds have been introduced through development programmes, such as the MFPP, in many villages in the Eastern Cape (Jacobson 2013); however the villages of this case study still predominantly grow traditional maize. This does not imply that the villages have been unaffected by increased presence of the formal seed system the relatively new occurrence of acquiring commercial seeds from stores in nearby towns may have wide implications as traditional customs of seed sharing are changing. For example buying maize from a community member has become common practice, where as in the past, seeds where shared or exchanged more freely. In bad years when “seeds will be rotten and not usable, or sometimes you might not have

produced enough during harvest so you eat all the maize you got" (Sigidi workshop, July 2014), respondents admitted that "a lot of us will keep seeds from our own produce and then if it is not enough then you will buy from someone else" (Sigidi workshop, July 2014). These statements infer a new commercialised approach to maize within the community; however, some customs of seed sharing remain. Pumpkin and calabash seeds are easily shared - the different approaches were summarised by one workshop attendant: "It‟s been like this since long. Before people would share their crops, some still do but it‟s rare. The other reason could be that you cannot eat the pumpkin seeds unlike the other crops because sometimes you can give someone maize for planting and then they eat the maize but with pumpkins you have to grow them before you can eat them" (Sigidi workshop, July 2014).

Most informants (91% of Sigidi workshop participants) indicated a preference for their traditional maize, however one woman admitted that she had bought some from a shop (implying genetically modified, non-traditional maize) and had found it to grow quicker than maize she had grown before, however she stated that she preferred to buy it from neighbours as it costs less. As maize seeds acquired from the formal seed system are largely hybrid or genetically modified, propagation may be impossible or even illegal (Collier 2012), however this was not the primary consideration of farmers interviewed. Many of the new crops grown by community members were chosen on the basis of price as well as flavour with seemingly little regard for required inputs or labour. Many of these seeds were additionally supplied by the infrequently seen Department of Agriculture whom community members believed "support newer ways of farming like fertilized crops, traditional ways of farming are never on their agenda" (Informant P, December 2014). As a result many community members, although eager to accept seeds and seedlings, were wary of the hybrid seeds and „modern" forms of agriculture. Despite this cautious approach it appeared as though many „modern" aspects of agriculture – hybrid seeds and a commercial approach to seed exchange – had become common in the mPondo villages of the Wild Coast.

5.5 A Growing Local Economy

A farmer in Noqhekwana told of how on his return to his village after working in the mine, he realised that farming could be profitable because he recognised that he could grow the vegetables that he saw in shops. This sparked his interest and he began growing many of the „new" crops which could be sold to the grocery store in nearby Port St Johns. In the Noqhekwana village water is available, soil is fertile, and the expense of taking produce to a store does not outweigh the profit which can be made by selling vegetables. In addition to these factors, work with development trusts has set up systems which have been so successful that grocery stores are now collecting produce from the local farmers. The case of the AmaDiba community is a bit different. Access to water is less reliable, formal markets are many tens of kilometres away, on impossible roads, and there is very little option for transport.

This is a generalizable pattern recognised by Omamo (1998) who used a transaction cost approach to determine a household‟s decision to participate in formal markets. It was shown that more land is devoted to cash crops and less to food crops the closer a household is to markets. Although Omamo‟s model has limitations (Makhura 2001), it highlights a key feature of local trade in the mPondo villages of this case study.

In the case of the Noqhekwana village spinach, green peppers and beetroot as well as fruits appeared to be dominant „cash crops‟. Farmers conceded a trend towards eating less of their own produce than previously with meals constituting of rice and surplus produce "when it is fresh and doesn‟t keep for long" (Informant M, April 2014). The AmaDiba community, with limited access to formal markets was found to have a lively informal trade of surplus produce within the communities which focused on maize and sweet potato as well as excesses of new crops which are difficult to store and keep. Famers agreed "we sell what we can"; in a region with few options for an income, all produce is potentially for sale. This was formalised in only two instances, the first is excess produce which was sold to the Mtentu lodge, a popular eco-retreat at the mouth of the Mtentu River. The lodge had not been running for long but had already encountered challenges with continuity of fresh produce supply (Informant Q 2014). The second was an entrepreneurial trade which involved a single „bakkie‟ (a single cab truck such as in Figure 14) and a trailer which collected *amadumbe* and sweet potato from local homesteads and distributed the produce to informal traders in the nearby towns and the city of Durban. The pattern recognised by Omamo (1998) was evident even within the AmaDiba community as farmers in the Sigidi region, closer to the main access road the R61 (see map on page x), were found to be more involved in the trade of surplus produce with nearby towns than those in the villages of Mtolane or Mtentu.

Many farmers showed interest in engaging with formal markets and cited barriers to their involvement which echo those of other rural agricultural producers in South Africa (Makhura 2001, Mpandeli and Maponya 2014). Barriers included access to markets, price of inputs, access to water, and cost of transport. Farmers also showed interest in formalising local trade and the possibility of holding markets on pension pay out days. Formalising local trade in this way could have many benefits for local farmers such as encouraging cultivation of productive and higher value crops and stimulating cash flow within communities but would be unlikely to result in substantial inflows of new capital. This could also potentially allow for easier integration to commercial markets in the future, a worthwhile prospect as evidence for the benefits of market-oriented agriculture to smallholder farmers grows (Magingxa and Kamara 2003).

Figure 14: Entrepreneurial farmers of the Sigidi community sell their yam and sweet potato to a distributor who then sells them to informal traders in nearby towns (Photo: L. Pereira).

In search of more lucrative, reliable and productive options, many farmers were turning towards fruit farming, albeit on a small scale. This is a result of the High Value Crop (HVC) programme introduced to the OR Tambo district of the Eastern Cape by the Is'Baya Development Trust in partnership with the Agricultural Research Council (ARC) of South Africa. This was the result of the realisation that smallholder farmers can benefit from production of high value-added products (Jaffee and Morton 1995). Recognising this, the Is'baya project sells fruit trees to rural farmers at very low prices and offers training in value adding skills such as jam making. Overall the project's objectives of improving quality of life through mitigating the effects of food shortages and poverty are believed to have been met (Jakavula 2013). Noqhekwana was one of the 50 villages targeted by the programme and two interviewees from the village referred to their involvement. One offered positive feedback, as he was successfully selling marmalade (Figure 15), while the other mentioned the high cost of jam production which requires large quantities of sugar, as well as the problem of quality standards imposed by grocery stores which demand barcodes and expiration dates on all their products. The complexity of this situation highlighted the need for a fine-grained narrative approach in order to draw out individual experiences. Given the rapid rise of supermarkets in Southern Africa, especially those willing to engage with smallholder farmers (Weatherspoon and Reardon 2003), development programmes such as these may contribute to greater economic integration for smallholder farmers. However a blanket approach cannot be applied as this case study showed that each farmer's experience with commercial markets is distinctive.

Figure 15: 'Noqhekwana' jam produced by a respondent and sold to resorts and guesthouses near Port St Johns (photo: J. Visser[12]).

SWC approached the Isʻbaya Development Trust at the beginning of 2013 with the hope that the AmaDiba community could benefit from the project. Isʻbaya held meetings and discussions with the community in April 2013 and a few members showed interest in working with the programme. However, it did not appear as though the project has been implemented locally, despite the initial motivation and momentum (SWC 2013). Although many AmaDiba farmers have banana, orange or guava trees, the administrative requirements of being involved in projects, including forming committees and holding meetings to ensure community engagement, seemed to have hampered the execution of the HVC programme in the AmaDiba communities. This was exemplified in a conversation following an interview in the Mtolane village of the AmaDiba area. The farmer was interested to know where he could get help with growing new crops like apples, oranges and carrots. The translator, who worked with SWC, replied:

"we have them in Mtentu, I'm not sure if I would ask them to come here I don't know if they would get lots of people because they don't want to deal with 3 people they want more people and they give out the seeds for free. And they love communities that are proactive. So if you could form a committee of 12 people and then when the trust comes the committee will call a meeting with the community and then you can fill in forms as a committee because without a committee signing those forms they will not be able to give you the seeds".

This interaction highlighted the level of administration and effort that is required from communities if they hope to be involved in development projects.

[12] http://www.farmersweekly.co.za/article.aspx?id=24887&h=Sweet-success:-from-miner--to-jam-maker

5.6 Conclusion

The communities visited were similar in many ways, and face some of the same challenges; however it is evident that the different communities function in very different ways. While similarities are found in what they grow and eat, their differences extend to their interactions with their natural environment (such as the availability of water, or the number of sunny days in a year) and the access to markets, economies and networks. All communities identified a core of important crops. Maize was considered the most important by almost all farmers despite its declining success. This was due to its central role in traditional dishes and as fodder for livestock. A key distinction was noted between „new" and „old" crops, as new crops have been introduced in a wave of interest in reviving local subsistence agriculture. The use of new crops – linked to „modern" farming – was accompanied by apparent erosion in traditional sharing practices of farmers as seeds became commodities. Agricultural development projects aimed at High Value Crops and value adding skills had reached the communities of this case study offering optimism for a growing local trade in surplus as well as exportable products.

6 From Sorghum to Rice, Changing Food Cultures

6.1 Introduction – Questioning Cuisine

Questioning the crops grown by smallholder farmers in the study region gave insight into some aspects of the current lifestyle of the amaPondo, as well as the changing nature of this system. Taking this investigation further, questions regarding the crops that are no longer grown were asked and the impact of this change was explored. The conversations around these „lost crops" invariably sparked discussion on the changing food habits of the people of the Pondoland rural villages. Questioning old crops was enlightening as well as challenging as many of these crops have traditional names which local translators did not know the English translations for. The extremity of this challenge is illustrated in Jansen van Rensburg *et al* (2007) who list at least 15 names in various local languages for the leaves of three subspecies of „ordinary" pumpkin (*Cucurbita pepo*) (such as in Figure 16). Due to this complexity, the research into the current status of these crops and any cross referencing with other studies was limited for this thesis as it required a botanical analysis. The stories and information gathered about crops was none-the-less informative of local trends and important changes in mPondo food and culture.

Figure 16: A traditional variety of pumpkin (*amathanga*) displayed on an *isithebe* traditional woven food platter (Photo: L. Pereira).

6.2 Forgotten Crops and Flavours

The first crop that was mentioned in discussions of old crops was the infamous „*usenga*". *Usenga* was described as similar to a calabash or a pumpkin but as "much tastier than other squashes and easier to cook" (Informant M, April 2014). A farmer from Noqhekwana could not explain why he stopped

growing this delicious gourd, but admitted to having a few seeds of the tasty plant in storage. The risk of losing a seasons harvest to unstable rains had held him back from planting them. He believed that if he were able to once again grow this plant the only thing preventing him from selling it commercially would be that it would get eaten by the local villagers before it could make it to a shop. This indicated the desirability of the crop, as well as the very real challenges facing farmers. Exploring the possibilities, and even reviving, these lost crops may be a lucrative endeavour both for the local farmers and any commercial entity which recognises the potential. Global interest in „lost crops" (NRC 2006) has increased in recent years, both for intrinsic traditional value and as a diverse source of plant genetic resources (Padulosi *et al.* 2002).

Figure 17: Community liaison holding a sample of the rarely seen *imfe* (*Sorghum drummondii*) (Photo: L. Pereira 2014).

Many traditional beans and calabash varieties (such as in Figure 18), and of course sorghum, seem to have been lost in these communities in the last few decades. Elder community members remembered them with longing and many younger members recalled names and properties. In most cases it was difficult to be sure if a crop was truly lost, as many farmers were aware of someone who might still grow them. *Inhlubu* is a mysteriously absent plant, described as a peanut-like bean which grows in the ground, cooked in a similar way to most beans and sweet to taste. A woman said "we used to have them when my grandmother was still alive, I haven't seen them since" (Sigidi workshop, July 2014). This bean may be the widely known bambara groundnut (*Vigna subterranea*) which is similarly described as a legume growing beneath the ground like peanuts. The Zulu name for groundnut is *inhlubu* (NRC 2006), however this does not conclusively confirm that the bean is groundnut as *ndlubu* is also the Zulu and Ndebele word for Cowpea (*Vigna unguiculata*). This overlap in regional naming of crops with little attention to variety is a great source of confusion in determining the distribution or

extinction of traditional crops. If the locally referred to *inhlubu* is in fact Bambara Groundnut, the local farmers would be happy to discover that it has a thriving distribution in central Africa which is likely to grow as its nutritional value and ability to tolerate drought are recognised (Zondi 2012, Al Shareef *et al.* 2014, Muhammad 2014). On the other hand, the local disappearance of *inhlubu* points to a need for enhanced efforts for local seed sharing networks and building community seed banks (Lewis and Mulvany 1997).

Imfe (Figure 17), a sugar cane-like plant known historically as „sweet reed" (Hammond-Tooke 1958), was known to grow in some villages and was therefore not entirely „lost", in fact it was grown by at least one study respondent. Where it was not grown it was remembered with almost as much nostalgia as the lost crops. Similarly many plants were not yet lost but were scarcely seen or grown and were declining in prominence, like the previously wild savoury melon „*ụbece*", and watermelon „*ịkhabe*". These unlikely natives once grew in the fields of Pondoland and between stalks of maize. *Ubece* the bitter melon (Jansen van Rensburg *et al* 2007) had become unpopular and a woman stated "it takes a lot of time and energy to prepare and cook and only a few people still like eating it now" (Sigidi workshop, July 2014). Convenience therefore forms an important basis on which crop choices are made. *Ikhabe*, the more common sweet pink-fleshed watermelon was differentiated as "nicer than *ubece* and you don't have to cook it, you just eat it raw" (Sigidi workshop, July 2014). Respondents explained simply that these melons were not grown "because we ran out of seeds" and another interviewee stated that "it was too easy to eat" (Sigidi workshop, July 2014).

Figure 18: A traditional variety of calabash (*iselwa*) in a respondent's home in Eastern Pondoland (Photo: L. Pereira).

The farmers, although missing these lost or diminishing crops, were unable to explain the mechanisms by which these once favoured crops were lost. Most responded that "it just ran out", but links to changing consumption patterns were clear in other instances. Although not indigenous, soya beans were once a popular crop in the Sigidi village, however one workshop attendant explained "no one still grows it now, we used to use it to make sour milk but now we got sour milk from cow milk or we can buy it from the shops and people stopped growing them because we did not have to wait for soya beans to grow, we could just buy sour milk them anywhere and anytime" (Sigidi workshop, July 2014). This highlighted the important impact that access to commercial products has had on crops the crops farmed in these communities.

6.3 Implications for Food and Health

Many of the lost crops once played a vital role in local cuisine and during field work this was regularly mentioned when discussing old crops. Past generations survived entirely off their land and the nature of their cuisine was directly linked to what could be grown and how they could process this produce. Staple meals were maize and beans, prepared in many different ways but with similar results. Rose (1972) describes the daily eating habits of amaPondo families in the Eastern Cape (then known as the Transkei) remarking on the fondness for bitter tastes and the general monotony of dishes. Maize forms the basis of most dishes and is eaten throughout its growth cycle, either „green" such as in *ibhanqa* (boiled fresh maize), pounded to produce samp (*ikaluka*), or ground to a course powder called maize-meal to produce a variety of dishes such as *isigwanmpa* where wild leaves, or *imifino,* are added for flavour and a thick green porridge is created. A traditional maize based drink was also common; *amarhew* is a porridge which is allowed to ferment overnight and was served in many of the homes visited in this case study. With increased access to stores and income from pensions and off-farm activities, the prevalence of store bought staples such as commercial maize-meal and rice appeared to be increasing. In reference to the increasing dependence one informant stated that he could taste the difference between *amarhew* made from traditional and commercial maize-meal. Indeed, *amarhew* from each household tasted unique as a result of the varied mix of traditional and commercial maize-meal. In areas proximal to markets more produce was sold and bulk-bought rice and maize-meal were the basis of daily meals.

As a result of the deregulation of agricultural trade, maize could be purchased at very low prices (Manona 2005). This shift in maize consumption and production in the rural Eastern Cape began as long ago as World War II when local maize was undermined by competition from the industrial "Green Revolution" amongst white farmers in the former Orange Free State and Transvaal provinces. Maize prices decreased and traditional mPondo varieties began to decline (Beinart 1982). In this study the shift away from eating mPondo varieties was apparent as younger people considered processing and cooking traditional maize to be difficult and time consuming while store bought, largely

genetically modified and processed, maize cooks in less than half the time. This was considered lazy behaviour by the elder farmers, as one man put it "nowadays people want food that they can cook quicker, eat quicker, and then they die quicker" (Informant N, April 2014). Older farmers also pointed to a difference in taste between the store-bought maize especially in *amarhew* and traditional beer *umqombothi*. *Umqombothi* is a traditional African beer made with maize, sorghum and yeast (as well as millet elsewhere in Africa). It has low alcohol content (typically less than 3%) and contributes substantially to sustaining nutritional welfare throughout Africa (Nanadoum and Pourquie 2009). The desirability for this tasty beer was attested to by the one interviewee in this case study who was still growing sorghum. He admitted that birds are a great problem and that he "grows a lot and gets very little from it" (Informant D, April 2014) yet he perseveres in order to make his favourite beverage.

The low price of maize and the difficulty in growing sorghum was responsible for an earlier shift in staple grain. This shift is thought to have had consequences for the health of the rural population. It has been hypothesised that the fungus *Fusarium* does not flourish in sorghum as it does in maize, leading to an increase in cases of squamous carcinoma of the oesophagus in males of the rural South Africa (Isaacson 2005). There is also emerging evidence that flavonoids present in sorghum may contribute to the prevention of colorectal cancer (Yang *et al* 2014). Although not specifically referred to, the changing health patterns of mPondo people were recognised by respondents in this case study. "Young people are not interested in farming and easy cooking makes life too easy, so there is less exercise and less healthy people" (Informant N, July 2014) said an interviewee.

Figure 19: A mPondo woman grinding maize with a moulded stone and stone crusher (Photo: V. Payn in Payn 2012: pg).

Farmers who pointed to the apparent declining health of community members were also wary of the introduction of rice to contemporary diets. This corresponds to a more recent shift, as sorghum was replaced by maize so rice seems to be replacing maize as the staple grain in mPondo diet. Maize was no longer considered a staple but was still used to make *umqombothi* and *amarhew*. The nature of maize eaten was also found to be shifting as the people interviewed expressed their desire for maize mills closer to their villages in order to achieve maize-meal "as fine as White Star" (Informant B, April 2014) a popular commercial maize-meal brand. Traditionally maize was ground with stones by mPondo women (

Figure 19) and included the hull and the germ of the kernel, while industrial maize-meal produces usually remove these parts producing a finer powder.

While maize is a relatively recent addition to the fields of the Wild Coast, African rice was grown long before that and many members of the Sigidi community attested to its superiority over store bought rice. Some respondents remembered their old traditional rice as looking the same as the store-bought rice but expanding much more when cooked explaining it "was the same in the eye but when you cook it you can put one cup but it would expands into a lot more than what you put in" (Sigidi workshop, July 2014). As with other lost crops the means by which it has disappeared were unexplainable beyond "no one still has it, it just ran out". Rice was therefore not new to the mPondo; however the recent surge in popularity was difficult to explain. It apparently failed when compared to the African rice and cost almost twice as much as maize-meal per kilogram, R13.95 for rice and R7.39 for maize in rural areas at January 2014 (NAMC 2014). A few older members of the community were quick to dismiss the trend of commercial rice eating, preferring maize, and one old lady commented that she does not like eating rice as much as the youths do saying "the grains run around my mouth too much" (Informant O, April 2014). This simple story, the rise of rice, was told repeatedly and indicated the rapidly changing food practices in the mPondo villages of the Wild Coast. These patterns are inextricably linked to what is now grown in the fields of the farmers.

A point never missed in the discussion of changing food patterns was the prominence of cooking oil. "People want to use this new cooking oil, and so they grow plants that you need cooking oil to cook!" (Informant N, April 2014). These statements were often chuckled at by the translators or farmers present but always agreed upon. Previously food was cooked with animal fat or oily plants such as the *inhlubu* bean provided the oil in dishes. Many farmers mentioned the links to changing health which they attribute to changing diet. The most obvious example given was new spinach which is now prepared with large quantities of oil. Elders believed that the end of old ways of farming and the changes they were seeing in food habits directly contributed to cases of poor health and shorter lifespans in their generation.

As farmers realised that they can grow crops that have a commercial demand, so too have they realised that they can grow the crops they would otherwise buy from a store. When SWC implemented the aid and development project known as Simbhademe, they asked what would best help them. Among infrastructural requests such as materials for fences, farmers requested seeds for onions, carrots and peppers. When these choices where questioned in interviews for this study farmers responded that they wanted to grow the crops they normally would buy in town. A clear shift in tastes can therefore be seen as newer crops replace old crops. This trend is visible throughout rural South Africa (Dwebe and Mearns 2011). Just as *ubece* is enjoyed less and seeds mysteriously disappear, the introduction of new crops is changing the nature of food diversity for the culture of the amaPondo. The declining use of traditional flavours in dishes is lamented by some who see the youth as "changing over" to new ways and abandoning their history and culture.

6.4 Conclusion

A noticeable shift in crops farmed, and therefore food eaten, was seen in the communities in the study area. Many of the older farmers believe that they are the last generation to farm "in the old way" and fear that their children will not be able to live off the land the way their families have for many generations. This appears to be largely driven by the desire to eat new foods in new and different ways. A clear generational line was apparent as elders worried about the health implications of this „modern" diet. This sentiment was captured by a mPondo women quoted in Payn (2012:102) "youth don"t like to eat the traditional foods anymore and want to buy stuff from the grocery store. Young people want to eat rice and spaghetti, not maize." The changing food patterns recognised elsewhere in the Eastern Cape (Dwebe and Mearns 2011, Payn 2012) were thus confirmed by research in this section. Choices in crops and flavours will undoubtedly change over time but the implications for local crop diversity and the ties to history and culture may be at risk of being lost.

7 Challenges and Opportunities for the Future of the Wild Coast

7.1 Introduction – Looking Forward

Projecting from the past actions of the mPondo of the Wild Coast, it can be assumed that imposed/ top-down development will be continuously contested in the region (De Wet 2013); yet „development" is still desired by these communities who want decent roads, clinics, schools, electricity and running water. However, for them it must be a „self-defined" or „bottom-up" form of development. This call for development is clear in an article on Politics Web by the ACC, Xolani Ntuli and Others (2014) which outlines a community submission for consideration in the National Development Plan (NDP). Given the need for self-defined development, perhaps building on the traditional strengths of this community will have the greatest success in achieving a sense of

development accepted by this wilful community. This section looks at the lessons learned while conducting research in the field with regards to the possibilities of smallholder traditional agriculture in the modern world and further explores the trajectories of development outlined in Chapter 3. This section is the extension of discussions based on the state of agriculture and the many conversations with locals regarding their ideas about tourism, farming and the future. Issues of expectations of government aid and dependence are discussed.

7.2 Agricultural Difficulties

The current state of agriculture is based largely on home food provision with aspirations for market integration and increasing the profitability of farming. Although some farmers are already involved in market related agricultural projects, such as Isʻbaya which runs in Noqhekwana, farmers in more geographically isolated regions, such as the Mtolane village, do not see farming as a profit generating activity, as shown earlier. In these areas farming is a home-based chore which is part of life, it is personal and only discussed informally between friends. If agriculture is to persist and achieve these goals it will have to become a focal point of the community. One farmer admitted he "wants advice on farming more than anything" (Informant O, July 2014) but said that he hardly ever shared knowledge with community members or spoke about farming experiences at the weekly *Komkulu*. In order for a successful agricultural future, this barrier to knowledge sharing must be overcome and farming challenges, threats and opportunities must become a priority. The rapid disappearance of seeds, avoidable through communal sharing and local seed banks (Pautasso *et al.* 2013), attests to this suggestion. These issues are further exacerbated by the lack of support from official agricultural extension officers. In Manonaʻs (2005) study on the viability of commercial agriculture, she found a deterioration of soil quality and heavy reliance on inputs. Many farmers referred to the declining quality of the soil as well as a dependence on a product known as "Blue Death", a mixture of three different chemicals: carbaryl carbufuran and campechlor. Though clearly still in use, campechlor has been banned in South Africa since 1970 (Department of Agriculture 1999 cited in Heeren *et al.* 2003), and a high correlation has been found between exposure to pesticides and certain birth defects among the children of rural South African woman (Heeren *et al.* 2003). Apart from these health hazards, a reliance on pesticides reduces the economic feasibility of agriculture. SWC has recognised these problems and assisted their own local extension officers with training in permaculture practices and organic farming (SWC 2013).

Agriculture in the rural Eastern Cape is traditionally rain-fed and farmers build their practices on the arrival of the first summer rains. In the last decade farmers have found the rain to more erratic and less predictable. "The weather used to be kind" (Informant K, April 2014) one man told me, as a way of conveying the difficulties he faces now, while another stated "now it rains a lot once it starts raining and our crops gets destroyed, even when the sun comes it becomes too hot until the crops are

destroyed" (Sigidi workshop, July 2014). Farmers admitted to growing more sweet potato than maize as there is a market for sweet potato and it handles variable weather better than maize. Other crops do not handle the apparent weather changes as well and a workshop respondent stated "beans we haven't been growing them well because when it rained it gets damaged and also when there is too much drought. The same as maize, this is one of the reasons we have been growing less and less of it". As noted, maize is proving problematic to many farmers. A woman explained "when it comes to maize we can't just stop planting it even if the weather is bad we have to grow it and then you will get disappointed and get small produce but we cannot stop growing maize because we are dependent on it very much" (Informal Discussion, July 2014). The overall reliance on maize for traditional dishes and as fodder is high and many farmers believe it would be impossible to not grow it.

The farmers' experience of rainfall changes is difficult to verify as detailed climate records only begin in 1997. However it is possible to look forward to projected weather changes using the coordinated Couple Model Inter-comparison Project (CMIP5) which is responsible for producing the global scale climate projections for the Intergovernmental Panel on Climate Change Fourth Assessment Report. This dataset has been statistically downscaled for Port Edward, just north of the study region. The Global Climate Model projections show noticeable rainfall decreases in April, June and October and increased rainfall expected for January, March, September and November (Figure 20).

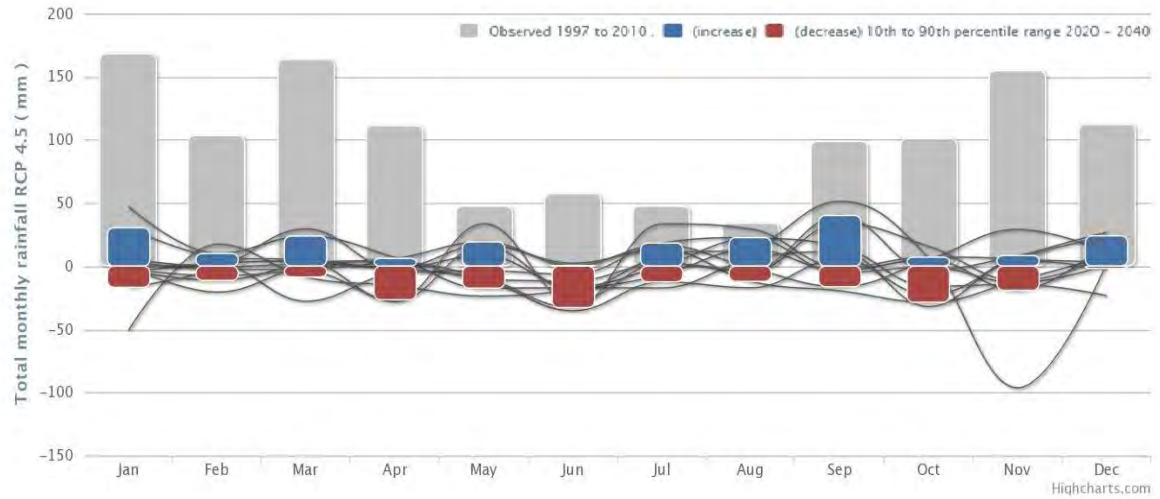

Figure 20: The range of projected total monthly rainfall (mm) changes from 2020-2040 for Port Edward across 10 different statistically downscaled CMIP5 Global Climate Models for RCP 4.5 (cip.csag.uct.ac.za).

It is customary to begin the summer planting as the rains begin, and some farmers are altering their planting times in order to minimise risks. Many farmers feel that although the weather is changing, it is a formidable constant that is out of their control saying that "there's not much we can do when the weather is like that, all you can do is to just go and get some water from the river to water your plants but even so if the weather is bad not much difference can be made" (Informal Discussion, July 2014). This means that they continue with the practices they are used to, despite the apparently noticeable

changes in weather over the last decade. If projected rainfall is realised, farmers may start planting in September only to be met by drier months in October and November (Figure 20). Without any way of predicting a season‟s rainfall, many farmers are left with a failed harvest and no way of changing their crops once the season has begun. Feeling as though this problem is out of their control, farmers showed interest in the possibility of developing infrastructure such as pumping water for irrigation as a way of mitigating the effects of variable rains. As this was discussed, the possibility of drought resistant crops was suggested; however most farmers showed a preference for infrastructure rather than having to change the crops they grow. Farmers‟ choice of crop cultivar has been recognised as an important strategy in adapting to changing climate conditions (O‟Brien *et al.* 2000, Thomas *et al.* 2007) but the difficulty of changing away from favoured or traditional crops is often overlooked. Studies such as Kurukulasuriya and Mendelsohn (2008) and Seo and Mendelsohn (2008) emphasise the importance of taking crop switching into account when making projections regarding the effects of climate change. However these studies assume that because farmers grow crops suited to their current environment, they will switch to better suited crops in the case of environmental change. Although this is possible, Greig (2009) found that a number of factors determine a farmer‟s choice of crop and that subsistence farmers place a great emphasis on the taste of the crop. The case of the communities investigated in this research highlight these issues related to crop choice. Farmers demonstrated their willingness adopt new crops based on taste and cost with apparently little consideration for required inputs, an important consideration in crop switching as an adaptation to climate change.

As suggested for similar systems, combining traditional and modern practices to conserve agrobiodiversity will contribute to the sustainability of this agroecological system as well as aid the community in coping with the impacts of climate change and other environmental change variables into the future (Wilson 1999, Kotschi 2006). Together with strategic agricultural practices, local trade and distribution of produce out of the region would be required in order to support the feasibility of agriculture as an income for each homestead, and in turn as a likely development option for the community as a whole.

7.3 Expectations and Dependence

The poverty and absence of infrastructure in the former homelands is evident when driving through the Eastern Cape Province, and the people of these lands have expressed their deep concern for the lack of support and development they have received from the national and provincial government. Vocal discontent is apparent across the province from villagers in the former Ciskei in the west, to the locals of the AmaDiba community in the east (Bank and Minkley 2005). More recently, and locally, the people of the AmaDiba community have spoken out through a contribution to the debate of South Africa‟s National Development Plan (NDP) (ACC *et al.* 2013). In this submission the expectations of

development are outlined, including access to running water, electricity, housing, clinics, pre-schools, high schools, a Further Education Training (FET) college, tourism, agricultural support and so on. This list of demands to government is indicative of the expectations that were set by the RDP Programme (ANC 1994) which has since been replaced by neo-liberal GEAR policies and now the NDP[13]. This shift in ideal has been felt by the AmaDiba community, as exemplified by one local who stated in an informal conversation that "government have made promises, they set expectations, we keep voting, every four years, a long time ago we weren't voting we were just depending on ourselves". The faith in the promises of the ANC government has not paid off and it appears that much of the self-reliance of the past is being replaced by expectation and dependence.

7.4 Development Pathways Revisited

Over the years of contentious development, it appears that the meaning of development has been confused. As the NDP submission by community members' states "We are told that this road is bringing development to us. We need to know what kind of development this is. Why is this development not discussed with us so that we may see if this is the kind of development we want? We do not know who owns this development and whose interests it will be serving. It is our right to discuss and decide on what kind of development that is brought here" (ACC *et al.* 2013: web article). These statements call for an understanding of development and its interpretations by those wishing to develop the region (governments, private sector, NGOs) and those who are expected to receive said „development". Specifically, the narrative of „development" surrounding the proposed mining project does not engage with the desires of the local communities. Members oppose this imposed development discourse while requesting development in forms which do not interfere with their agricultural traditions and cultural link to the land (Bennie 2010, de Wet 2013).

The complex relation between development and the environment, and resistance to development, in the case of the AmaDiba community, has been examined closely (Bennie 2010, De Wet 2013). In addition it has been the subject of much local and national media and documentaries[14]. The proposed project sparked the formation of the AmaDiba Crisis Committee which, along with the decades of resistance to imposed development, has prompted De Wet (2013) to define the community as having a collective consciousness which he conceptualises as collective agency. Despite this collective agency many of the members of the community are divided on the matter, causing conflict and occupying the majority of the attention of most community members. The participatory approach to development, which is fast being recognized as the best and most sustainable form of development (Cock and

[13] http://www.gov.za/sites/www.gov.za/files/NDP-2030-Our-future-make-it-work_r.pdf
[14] www.shorebreakmovie.com
http://www.iol.co.za/news/south-africa/aussie-firms-ready-to-strip-transkei-beaches-1.120641#.VLzbjkeUeBL ,
http://www.timeslive.co.za/businesstimes/2014/11/22/coastal-residents-fear-mining-impact

Webster 1996), is not met by this proposed project, and as such it is unlikely to be sustainable and meet the needs of community members.

The people of the AmaDiba community largely show an interest in tourism as evident in my interviews as well as the submission to the NDP (ACC *et al.* 2013), where the community "request from the government for assistance to build lodges at Mzamba, Mnyameni and Mtentu so that our area can be developed by tourism". Since 1996 tourism has been a key focus of the Department of Environmental Affairs and Tourism (DEAT) implemented locally through the Wild Coast Spatial Development Initiative (SDI). However the nature of the tourism industry in this region has been challenged as aligned with capitalist neo-liberal forms of development which "prioritise the environment over the development of communities, and external private companies over community owned cooperatives or micro- and small locally owned tourism establishments" (Giampiccoli 2010). This is exemplified in a quote from the Tourism Planning Framework for the OR Tambo District Municipality which states that outside of designated tourism „nodes" "overenthusiastic development of „restaurants" or other stop-over points by community members should be guarded against, because they could disrupt the trail's „wild" ambience" (Norton 2003:20). Community Based Tourism (CBT) is thought to offer solutions to the problems of externally imposed tourism initiatives. However, Giampiccoli (2010) shows that the potential of CBT is threatened by private investments and misunderstandings of the original notion of CBT in which bottom-up structures, autonomy, the promotion of community cohesion, protection of the environment, and the enhancement of the health and educational well-being of communities are the primary goal of tourism projects. The danger that tourism becomes another form of imposed development is thus apparent, and a careful and community based solution must be found.

Integrated Rural Tourism (IRT) has been proposed for the rural spaces of Europe (Saxena *et al.* 2007). In this context it is recognised that rural spaces are no longer purely agricultural and that opportunities in speciality food production and consumption, among other socio-economic activities, exist. A fine line exists between utilising tourism to create opportunities for income and development in rural communities, and seeing tourism as "providing access to ethnic groups and the natural and cultural assets of which they are custodians" (Christie and Crompton 2001:37). In the latter view, discussed in depth by Giampiccoli (2010), private companies would seek to exploit rural tourism in order to perpetuate the ""wild" ambience" (Norton 2003:20) of the Eastern Cape, restricting and defining the form of development as suits the tourist. By applying the ideals of IRT, while exercising caution in partnerships and investments, it may be possible for progress in development to be made for the people of the Wild Coast. This has begun slowly with the Mtentu Lodge which works in partnership with the community. With this path traditional agricultural practices, as linked to cultural cuisine, will receive support as the very foundations of the local culture. Systems which support this form of integrated and community based tourism are beginning through the work of SWC which has

organised seed sharing and food fairs. These events explore the marketability of local cuisine and culture and serve to connect communities normally separated by history and logistics allowing for intra-communal education. They were met by excitement in the community and according to an SWC board member elders saw it as a way to "educate the young ones about their heritage"[15]. These events are celebrated by community members and by integrating tourism and agriculture in this way, development may begin from within the community and largely imposed development may be avoided.

Looking at the history of agricultural „development" schemes in the Eastern Cape and following from Manona"s (2005) assessment that much of the area would be unable to sustain commercial agriculture, the possibilities of this development trajectory seem grim. However through a critical discourse analysis of the Massive Food Production Programme (MFPP), Jacobson (2013) offers some hope for the future of agricultural development in the province. In a definite break with previous policies, the (then) most recent strategic plan (ECDA 2010) recognised the role of historical inequalities in producing current widespread poverty and low agricultural productivity and did not lay the blame on the mind-set of smallholder farmers. Both in the 2010-2014 and the 2014-2019 strategic plans (ECDA 2010, ECDA 2014) the one-sided focus of former policies stating that smallholders should become commercial farmers is retained. Jacobson (2013:213) concludes that "to truly benefit smallholder farmers, agricultural policy must not only be targeted at mitigating historical inequalities, but it must also acknowledge social and ecological realities and adapt technology and practice to suit local conditions. If future development interventions do so, they are much more likely to reduce poverty levels and raise levels of agricultural production than if large-scale farming as a blueprint is retained". Given the simultaneous desire for self-defined development and resistance to attempts imposed development, this finding applies to the villages of the AmaDiba area considered in this case study.

7.5 Conclusion

In this section some of the current and future challenges which face the mPondo communities of the Wild Coast have been explored. Smallholder agriculture is vulnerable to threats from climate change, high reliance on often dangerous inputs, and a shift to dependence on store bought staples. These factors were found to be important in the villages of this case study as mentioned during interviews, workshops and discussions. Locally these challenges are deeply embedded in society and appear contradictory at first, such as the quest for self-defined development sitting alongside an expectation of developmental aid from government and NGOs. When considering the three dominant development discourses the characteristic resistance to imposed development of the mPondo must be taken in to account. Mining does not appear to meet the desired form of development of the local

[15] http://www.swc.org.za/Newsletters.php

community, while new developments in tourism (such as IRT) and agricultural policy could allow for the self-defined development which this rural community is striving for.

8 Insights from a Social-Ecological Systems Approach

8.1 Introduction

As the society and culture of the mPondo are inextricably linked to their environment, an SES approach is useful for understanding the system and finding sustainable and dynamic development pathways. Just as SES systems are linked, food and agricultural systems in mPondo communities are inseparable, and the systems perspective of this approach is fundamental to setting the agri-food system in the development discourses of this rural area. New work in the realm of SES theory calls for systems to attain resilience and robustness in the face of intractable drivers in order to achieve dynamic sustainability (Leach *et al* 2010). Previously, SES work largely emphasised resilience (Folke, 2006) or robustness (Anderies *et al.* 2004). However, as a result of the rapid nature of global change and the rising vulnerabilities of populations and ecosystems, Anderies *et al.* (2013) calls for an alignment of the concepts of resilience and robustness, as these characteristics may contribute to achieving more sustainable SESs.

8.2 Assessing Resilience

In order to be recognised as resilient, a system, having experienced a perturbation, must maintain its function or state. It is therefore possible that a highly resilient system can reside in undesirable states (Folke 2006). The various states that a system may occupy can be imagined in a three dimensional space, divided by boundaries across what is known as a stability landscape (Holling 1973). Four crucial aspects of resilience – resistance, precariousness, latitude (Figure 21), and panarchy (Figure 22) defined by Walker *et al* (2002) – can be investigated in a stability domain in order to understand the state of the system of mPondo farmers of the Wild Coast.

Resistance refers to the ease or difficulty of changing the system. The resistance of the amaPondo, and especially the people of AmaDiba, is well known (Kepe and Ntsebeza 2011; De Wet 2013). Thus, with a high „R" (Figure 21) the system is less likely to be altered to a different state. This resistance will be continually challenged as the future demands „development"; however, embracing aspects of change may serve this system. Such is the case with „modern" agricultural developments, which for example, could help to ameliorate the stressors of projected rainfall change discussed in section 7.2. Although most community members resist these subtle, modern forms of imposed development, technology which complements traditional practices may prove useful in the face of a changing climate. Although it may be difficult to determine which „developments" to adopt, those which create conveniences, contribute to personal health or allow for education, will serve the people of this agri-food system. One example of this is the increased use of cell phones in the rural areas of South Africa. As Payn (2012) found, in the AmaDiba community young people are choosing to build new homesteads based on cell phone reception rather than the traditional priority of worm castes which

indicate soil fertility. Understanding which development to resist and which to embrace will be vital for the survival of this agricultural society.

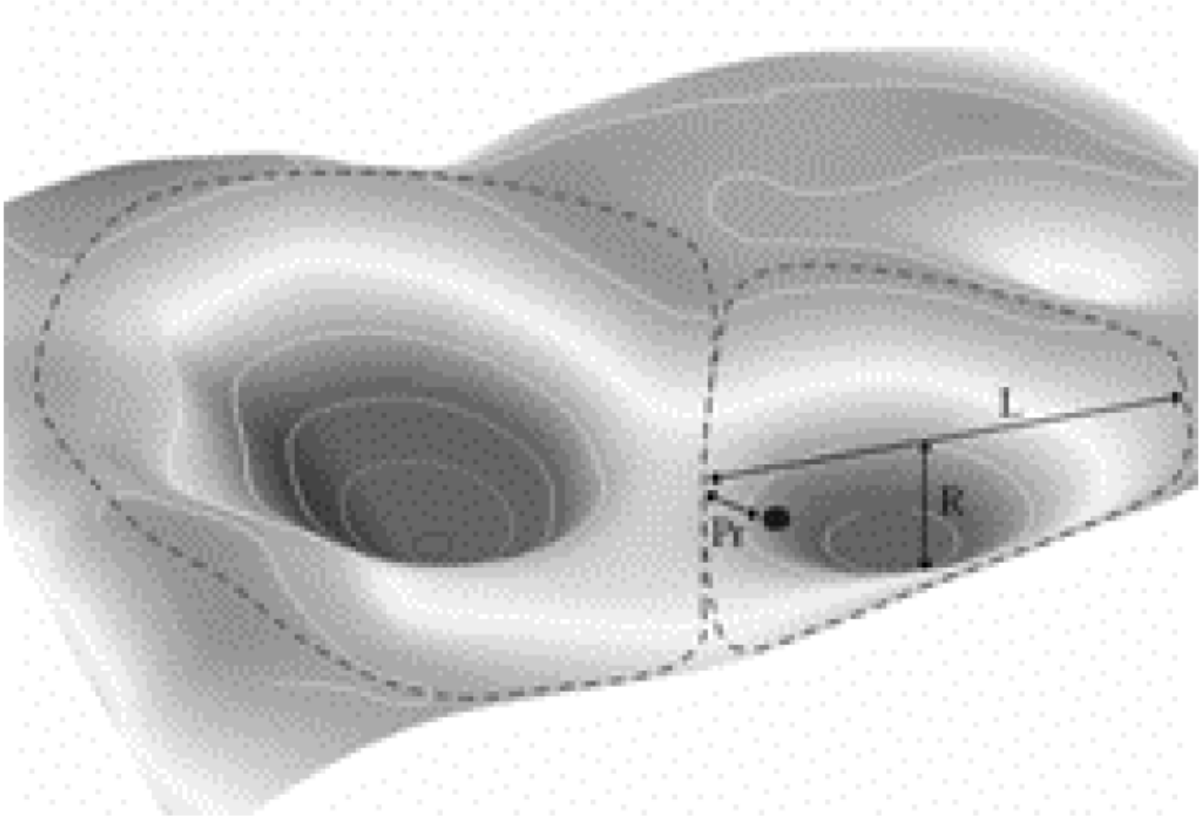

Figure 21: Three dimensional stability landscape with two states (outlined by dotted lines) in one basin, the current position of the system (black dot) is shown as well as three aspects of resilience, R (resistance), Pr (precariousness) and L (latitude) (Walker *et al.* 2004).

The second aspect, precariousness, refers to the proximity of the state to a threshold, the dotted line in Figure 21. This is crucial for the amaPondo farmers; as this case study shows the rapid pace of modernisation and the changing climate seem to be pushing the system into a new state. Cultural shifts are already apparent as the staple grain in meals changes and traditions of seed sharing are replaced with monetary exchanges. Proposed development projects – commercial agriculture, mining or tourism, will undoubtedly expose the community to environmental and economic changes. As the pressure to „develop" builds, the social and ecological state of this region grows more precarious and the possibility of crossing a boundary to a different state is high.

Latitude, the third aspect of resilience, refers to the amount the system can be changed before losing its ability to recover. This case study described a system undergoing rapid change, essentially moving quickly across the stability domain towards a boundary (Figure 21). Looking back more than a century, the communities" battle to recover from extreme changes imposed by colonisation and the arrival of foreign value systems, is clearly described in chapter 2. Having faced the massacres of the mPondo Revolt, the consequences of a migratory labour force and the proposition of titanium mining,

this community finds itself in the throes of turbulent change. However, despite the communities" preoccupation with contesting mining, combined with a strong urbanisation trend, interest in agriculture and in marketing local agricultural produce remains evident, even in some of the youth who participated in this research. Given the nature of the changes facing the system, it is unlikely that the system will be able to recover and to return to its previous state. Its ability to recover to a desirable altered state is still being negotiated and the nature and components of the pathway of the transformation which the system is undergoing, will be essential in determining overall system resilience (Folke *et al.* 2010).

Lastly one must consider panarchy (Figure 22), the levels above and below which influence the dynamics of the system. The dependence on external development to cope with climate variability is one example of how coarse global level changes can affect the communities in this case study. Reliance on national government (as in the article regarding the NDP, ACC *et al.* 2013) and even the association with SWC, are connections at higher institutional scales, which alter the dynamics of the agri-food system of amaPondo farmers. Similarly the changes in local food and crop diversity are two examples of feedbacks to systems at levels below the level of the SES on which this study focused (i.e. at household level). Due to its complexity, these changes may have unpredictable effects on the dynamics of the cultural and ecological systems, triggering surprise events and regime shifts.

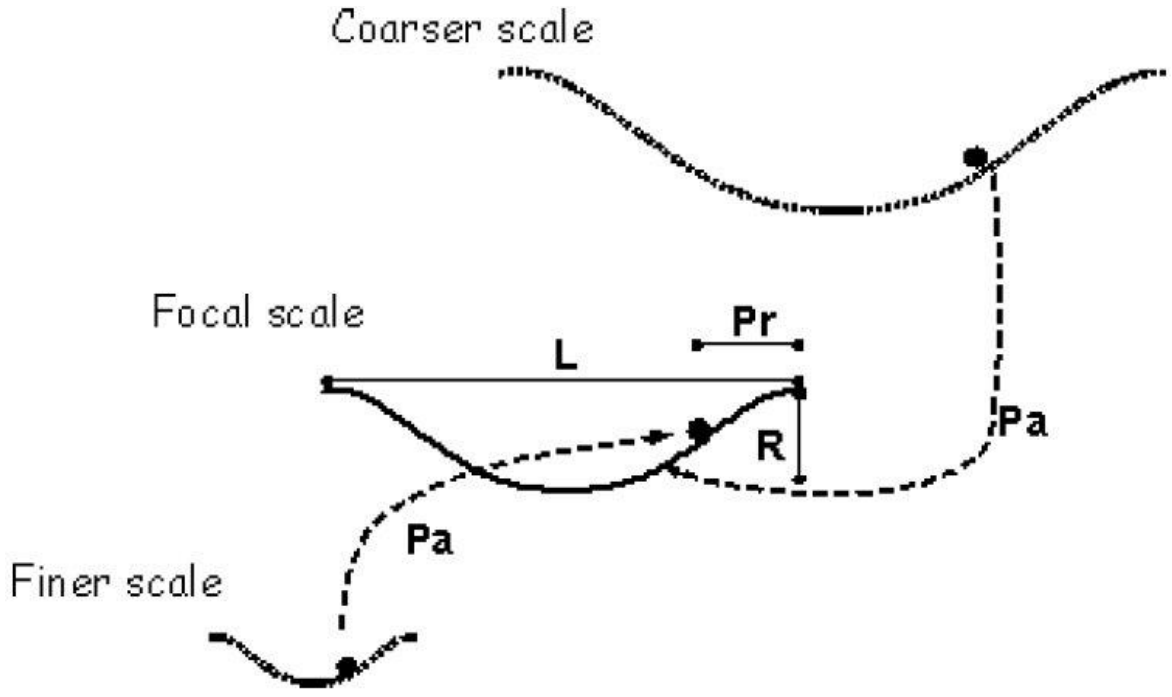

Figure 22: The fourth aspect of resilience, Panarchy (Pa), the influence of the states of systems at levels above and below the level of focus which affect the other three aspects (Figure 21) (Walker *et al.* 2004)

Assessing these four elements of resilience, it is clear that the AmaDiba community and associated agri-food system, while resilient, are in a state of transformation with some aspects of the system breaking down as evident in the cultural erosion found in this case study. According to the adaptive renewal cycle of development theory proposed by Holling (1986), this is just one of four phases of development. In this heuristic model periods of exponential change are followed by periods of growing stasis, and then periods of readjustment and collapse are followed by a stage of re-organisation and renewal (Figure 23).

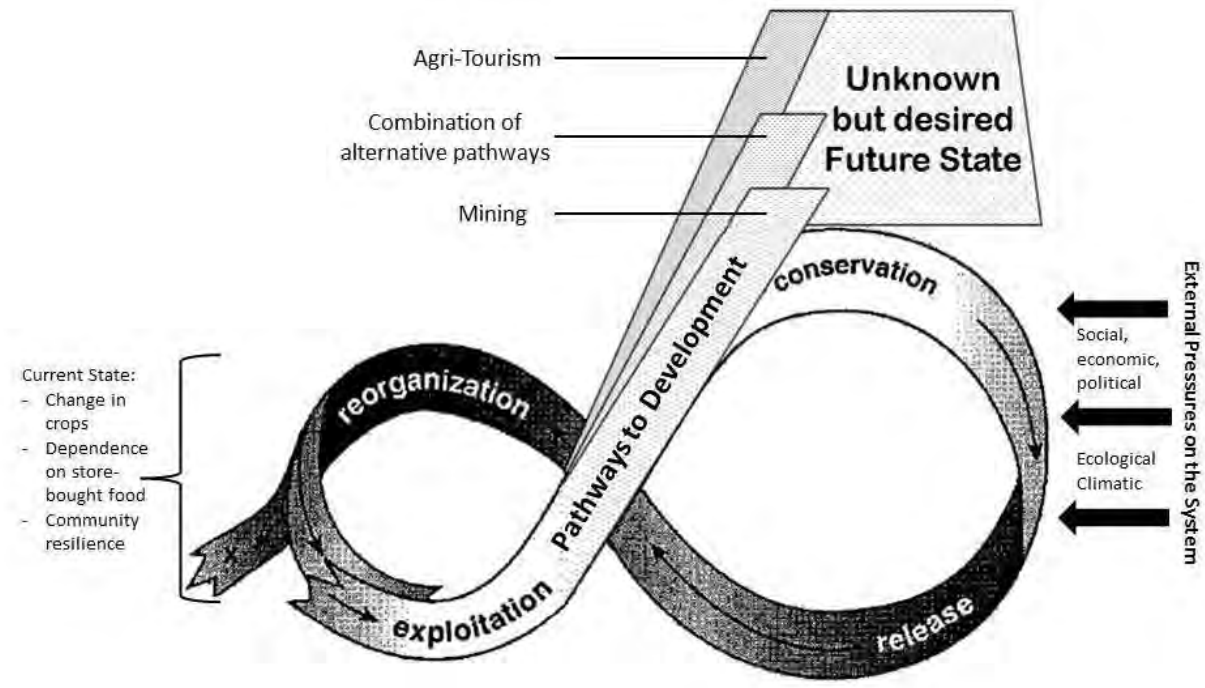

Figure 23: A representation of the local agri-food system identified in this case study in the form of the Adaptive Renewal Cycle of Holling (2001). Large arrows to the right depict external pressures applied to the system as described in Chapter 3. Three example potential pathways are shown leading to a desired but unknown future state. Pathways are elaborated on in Section 7.4.

This agri-food system is in a state of readjustment following the shocks of the past such as the mPondo Revolts and cases of imposed developments as discussed in Section 3.3 (depicted as external pressures on the system in Figure 23); this presents the opportunity to exploit the apparent crisis of the current state and reorder. With the strong desires of the local community, the different pathways can lead to a future state, either through building on and maintaining traditional values, or merging with the current dominant neoliberal system which seems to be imposed by higher order systems. By examining the past external pressures and the current state of the system, opportunities can be exploited, drawing on the learning of the past and considering the plurality of alternative pathways which may lead to the realisation of the goals and ambitions of the local community.

8.3 Expanding Resilience, Considering Robustness and Transformation

The connection and community spirit of the amaPondo, labelled as collective agency by De Wet (2013), as well as the deep connection that is felt with the land, creates a remarkable resilience that has manifested in multiple movements of resistance to externally defined development. This characteristic is two-fold as the inevitable call for progress demands development in some form for the rural lands of Africa. If sustainability of development and progress is to be achieved resistance alone will not be sufficient (Leach *et al* 2010).

Folke *et al.* (2010) differentiates between general and specified resilience. General resilience does not define the boundaries of the system, nor the shocks it might endure, but encompasses uncertainty in all ways. This distinction is important as many groups who work towards resilience focus on specified resilience (Folke *et al.* 2010) and on novel, poorly understood disturbances (Anderies *et al.* 2013). Cifdaloz *et al.* (2010) warns of the dangers of specified resilience as increasing resilience of particular parts of a system to particular disturbances may result in reduced resilience in other ways. As the AmaDiba have grown in resilience to the specific shock of imposed development, articulated through mining, they are in danger of losing resilience to other disturbances. This was already apparent as vulnerability to changes in environmental, economic and social conditions threatens the community. Specified resilience is closely related to robustness (Anderies *et al.* 2013); however the principles of robustness tend to be applied to designed systems which are easier to define than SESs. Nonetheless Leach *et al.* (2010) emphasise the importance of this characteristic for SES which face enduring stressors as a result of uncontrollable drivers of change. Although a robust system may not perform as efficiently with respect to a chosen set of criteria as its non-robust counterpart, its performance will not drop off as rapidly (Freeman and Anderies 2012). In the case of the AmaDiba community this would translate, for example, to a focus on varying crops farmed based on projected climatic changes. In the face of uncertainty this leaves the communities with a wider range of pathway options as changes occur. A broader example would be diversified livelihood strategies (Ellis 2000) which may reduce the reliance on agriculture for income generation and food security.

In order to attain general resilience and properties of robustness, the communities of this case study will need to address hidden and observable fragilities in the system, which may induce transformation. As transformation may be inevitable, an awareness of possibilities, threats and fragilities can result in desirable changes and avoidance of undesirable states. Transformation is considered to have three phases: preparation for change, navigating change and creating opportunity out of crisis, and building resilience in the new regime (Olsson *et al.* 2004). By focusing on experimental learning at smaller levels, becoming aware of possibilities, fragilities and threats, the communities of the AmaDiba area, and Pondoland at large, can move beyond the dangerous specified resilience and incorporate aspects of general resilience into the local agri-food systems. One example

of this could be through the development of community seed banks and exchange systems (Pautasso *et al.* 2013) recognising how easily seeds have been lost (fragility… vulnerability?) this would build the resilience of all community farmers to climatic hazards which threaten seed security.

The collective agency of the people of AmaDiba (De Wet 2013) plays an important role in the communities‟ ability to respond to shocks. The role of agency in enhancing or undermining SES resilience has received some attention in recent years (Chapin *et al.* 2010, Olsson *et al.* 2014). However the primary focus has been individuals, organizations or networks. In these cases the role of actors in facilitating transformation is highlighted. Results from this case study indicate that agency is important in the resilience of rural communities. This result should be further investigated in order to meet the challenges of poverty reduction and social justice at the complex sites of rural development.

8.4 Conclusion

Resilience, although necessary to overcome the transient shocks of mPondo history, may not be enough to ensure a sustainable future. In building specified resilience to one type of perturbation (namely imposed development) the communities have lost resilience to other shocks and have become vulnerable to cultural erosion, which this study has shown has already begun to take place. In order to deal with the enduring stress of global environmental, social, economic and technological changes, the system must now be managed for general resilience and robustness. The SES approach is inherently complex and can be difficult in empirical work. By utilising the Pathways Approach proposed by the STEPS Centre (ref) and considering the features of agency, transformation and history of the system, the difficulty of analysing this complex SES was lessened making it possible to include temporal and cultural variations in rethinking the development pathways of this region.

9 Conclusion and Recommendations

9.1 Introduction

This study responded to Scoones and Thompson‟s (2009) call to rethink agricultural development using a systems perspective which incorporates temporal and cultural variation, complexity and uncertainty in situated studies of „people in places‟. In studying the smallholder and subsistence farmers of the Wild Coast this research sought to investigate the past, present and future dynamics of smallholder agriculture and food practices in mPondo communities, to locate the role of agriculture and agri-food systems in local development discourses and to describe the perceived opportunities and challenges which face the local agri-food system.

9.2 From Farming to Food

Research on the past, present and future dynamics of smallholder agriculture and food practices in mPondo communities resulted in the discovery of important trends. Maize was found to be the most important crop as it contributed to traditional dishes as well as fodder for livestock. Maize has largely replaced sorghum in the fields of smallholder farmers, confirming the research of Rose (1972) and Beinart (1982), and it was found that sorghum has further declined from a less common grain to one farmed only by those with a particular love for it. While still cultivating traditional staples such as beans and pumpkins, new additions such as onions and green peppers have emerged creating a clear line between „old‟ and „new‟ crops. Seeds for new crops are bought from nearby towns and, the dominance of hybrid horticultural and GM maize seeds in the formal market have led to diminished instances of propagation and seed saving of traditional, open-pollinated varieties. Seeds are bought with primary considerations of taste and price – buying the cheapest seeds in order to eat „new‟ vegetables – with little consideration of required inputs and labour. Farmers agreed that new crops are more difficult to grow than traditional varieties because they require fertilizer and are water intensive. However, in some cases the introduction of new crops has allowed for commercialisation of farming activities, as with the jams and preserves sold by Noqhekwana farmers. Despite the difficulties, farmers showed an interest in marketing their produce through more formal channels.

Great shifts in the staple grain of the amaPondo meal can be seen, first from sorghum to maize in the mid-20th century, and now from maize to rice. This has been accompanied by a perceived deterioration in the health of community members with the recent shift to rice strongly criticized by the community elders. Literature confirms the health impacts of the first major shift in staple grain, however the more current shift is largely speculated upon by community elders. Older community members believe the changing crops and declining dedication to farming are indicators of a transformed culture defiant of traditions and aligned to material wealth. Food is more often store-bought than home-grown. The convenience of processed maize-meal was found to be superseding the

taste, and accompanying inconvenience, of processing home-grown maize. The introduction of cooking oil to the cooking practice of farmers was often blamed for decreasing health as it has replaced unprocessed sources of fat such as from the lost *indhlubu* bean. Although store-bought food may allow for greater dietary variety and more home-produce available for sale it is also resulting in an erosion of cultural practices.

Shocks to the system are not only social, but also environmental. Some farmers expressed a belief that weather patterns are changing with harsher droughts and less frequent, higher volume rainfall events becoming more evident. Despite recognising the change and adjusting some crop proportions in response, farmers believed the change to be out of their control. When questioned about the impacts of a continued change in weather farmers explicitly stated a preference for aid and infrastructure rather than altering the crops they farm. As rainfall patterns are projected to change, and crop switching as a climate change adaptation strategy is investigated, this resistance to change must be considered. In order to continue subsistence or commercial farming, future climate must become a focus in local agricultural development.

9.3 Development Discourses

In locating the role of agriculture and agri-food systems in development discourses, three development paths for the Wild Coast were examined with the possibilities of commercial agriculture, mining, tourism and independently analysed elsewhere (Manona 2005, Bennie 2010, Giampiccoli 2010). A strong objection to mining by the community was apparent. With the understanding that participation and support are integral to successful development, this study disregards mining as a viable development option. In order for the agri-food system of this mPondo community to be robust and avoid transformation to an undesirable state, it must prevent the ecological system on which it depends from moving into an unsustainable state or causing long term human suffering (Freeman and Anderies 2012). This would clearly be challenged in the case of strip mining the Wild Coast. Commercial agriculture too has been resisted by the community as imposed development and subsequently attempts to commercialise smallholder agriculture to address poverty and „development" have been found to be unsuccessful (Manona 2005, Jacobson 2013). This study therefore suggests an integrated approach to development which combines agriculture, traditional food and tourism and builds on the cultures and traditions of the local communities. In this way desired development can be achieved while safe guarding the traditional foods and crops of the mPondo people. As the system goes through the process of collapse initiated by the proposed mining project, the elements of culture that may contribute to a desired future state, as in through tourism developments, must be built on and carried through for managed transition into the new system state.

9.4 Challenges and Possibilities

The greatest challenge facing this community is the continued attention that imposed development demands as resistance consumes the time and economic resources of all members. The silent threat of a changing climate and an eroding culture may be more easily noticed were it not for the dominance of the mining debate and the associated development discourses. In order to move the community into a sustainable and empowered state these issues can no longer be ignored. With governmental policies shifting and agricultural aid development projects such as the ARC‟s Is‟baya project showing promise; possibilities for „development‟ in these communities are improving. This case study illustrated the strong associations of history and culture to development pathways, these links should be carried forward in order face the challenges of environmental sustainability and poverty.

9.5 The SES Approach

Just as SES systems are linked, food and agricultural systems in mPondo communities are inextricably linked, and the systems perspective of this approach was fundamental to the setting of agri-food systems in the development discourses of this rural area. The AmaDiba community was found to show characteristics of specified resilience, namely towards the threats of imposed development, however this focused resilience has left the agri-food system vulnerable to other variability, especially on larger scales, such as shifts in rainfall and dependence on external aid. Therefore, in order to deal with the enduring stress of global environmental, social, economic and technological change, the system must now be managed for general resilience and robustness. This can be done by recognising threats and system fragilities and focusing on experimental learning at smaller levels, allowing successes to cascade to higher levels, while lessons of failure are passed down. In applying the SES approach some of the cycles and their scales of the local agri-food system have been identified along with some of their vulnerabilities and resilience, this knowledge can be used to exploit the on-going transformation for a move towards a sustainable and generally resilient system.

9.6 Final Conclusions

The agricultural society of the mPondo offered a case study in which to explore the dynamics of global environmental change as they intersect with the need for development in rural communities. Given the social, historical, political and environmental complexity of smallholder agri-food systems in South Africa, the incorporation of cultural traditions and the need for self-defined development are essential to discourses of development. The amaPondo have developed resistance to the shocks of imposed development throughout the last century but changing attitudes towards farming and food show unmitigated erosions in traditions and cultures despite collective agency and resilience. This specified nature of resilience to imposed development from mining and commercial agriculture in these communities has led to a reduced resilience to other shocks and stresses such as the slow erosion

of traditional agriculture and food practices. The continual loss of this diversity could bode ill for reorganising the system into a desirable transformed state.As this system continues to face the the enduring shocks of global environmental and social change, the communities must come to recognise their fragilities as well as the threats which have been overlooked in the past.

This study has touched on the importance of community agency in resilience and „development", a topic which should be built on in further work to understand the processes of rural development and the actors involved. Many studies on resilience, as well as adaptation and vulnerability, do not take the need for self-defined development into account. This characteristic, ignored by the many attempts to impose development, is fundamental to the resilience of rural and „undeveloped" communities. This case study highlights how overlooking this aspect of life greatly undermines the focus of a community as seemingly obvious threats are surpassed by the overwhelming threat of imposed development. Additionally this research showed the importance of a fine-scale narrative approach which focuses on the complexity of „people in places". This should be taken forward to avoid blanket generalisations about rural development in South Africa and allow for the plurality of alternative solutions which become visible when looking beyond dominant development pathways. This case study elucidates the approach of Leach *et al.* (2010) whereby the goals and ambitions of particular groups of poorer or marginalised peoples may be realised through alternative pathways. Finally this study points to the importance of the state of traditional systems as indicators of change. Building on this could lead to a better understanding of the impact of „development" programmes on rural communities in Southern Africa and beyond.

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Appendices

Appendix A: Ethics Protocol for Research Work in mPondo communities of the Eastern Cape Province by Students of the University of Cape Town, Environmental Geographical Science Department

This document outlines the ethical guidelines and practices for research activities of the projects entitled "The Agri-Food System of Smallholder mPondo Farmers in a Rapidly Changing World", to be conducted by University of Cape Town (UCT) postgraduate Masters student Kristen Kennedy. This protocol is required to ensure that research is carried out with a defined code of conduct, clarifying expectations from the researchers (from UCT) and the local community (people of the villages where research is conducted).

The following are the principles to be adhered to prior to, throughout, and following the research activities:

GENERAL GUIDING RESEARCH PRINCIPLES

1. Active participation of the community will be represented through a local guide, Mzamo Dlamini, by way of approval and discussion of research methods, an ethics protocol, technical matters, logistics and other considerations from the researchers. The community is also one of the beneficiaries of the research as the information gathered and results will be shared with them.

2. The researchers will respect and remain conscious of the culture, traditions and beliefs of the local people and will avoid doing anything that may cause disruption to these.

3. Wherever possible, the research activities will be conducted in the local language, isiXhosa. Once agreed to by the community members, this protocol will be made available to the local community as a record of the ethics protocol.

PRINCIPLES FOR FIELD WORK, COMMUNITY PARTICIPATION AND COLLECTION OF INFORMATION

4. Prior to any research activities taking place, consent will be sought from the community in a manner that is culturally appropriate and understandable to them to enable meaningful consent.

5. Prior to the research activities individual participants will be provided with a brief introduction of the project and this research protocol, in the local language. The methods of gathering information, namely, note taking, photographs, audio recording, participatory mapping, and any other method used will be explained to participants.

6. Prior informed consent will be sought from individual participants in the local language before their involvement in any research activity. Participants have the right to say “no” or leave at any point during a research activity if they feel it goes against their cultural, individual, or communal interests. This will be explained before any research activity begins.

7. Culturally sensitive areas and sacred sites will be respected and research activities avoided in these areas. The researchers will rely on community representatives to inform them which locations must be avoided.

8. Wherever possible, local persons from the community will be employed to assist with research fieldwork, coordination and facilitation, therefore contributing to local livelihoods. Capacity and skill building will be passed on to the field assistants wherever possible through the research process.

9. Safety of participants and researchers will be given utmost importance when carrying out research activities. Fieldwork will be interrupted if an unsafe situation arises.

POST-RESEARCH PRINCIPLES

10. The information gathered will be used for the purpose of completing a minor dissertation in contribution to a Masters degree by the UCT student and providing information regarding the agri-food system of Pondoland.

11. Information gathered during research and results will be shared with the community through the production of a poster and providing any community members with digital copies of the produced thesis, on request.

12. Participants and the community will be credited for their tangible and intangible contributions according to their preference.

13. No information gathered will be placed in the public domain without the consent of the community.

Appendix B: List of Informants

Table 4: List of informants from the case study in Pondoland

Informant	Interview Date (2014)	Location
A	25-Apr	Mtentu
B	25-Apr	Mtentu
C	25-Apr	Mtentu
D	25-Apr	Mtentu
E	25-Apr	Mtolane
F	25-Apr	Mtolane
G	26-Apr	Sigidi
H	26-Apr	Sigidi
I	26-Apr	Sigidi
J	22-Apr	Noqhekwana
K	23-Apr	Noqhekwana
L	23-Apr	Noqhekwana
M	23-Apr	Noqhekwana
N	24-Apr	Mthambalala
O	26-Jul	Mtolane
P	Multiple	Various
Q	20-Jul	Mtentu

Appendix C: Interview and Workshop Questions

FREE-LISTING

What crops do you currently grow?

Which crops have you recently stopped growing? Which crops have you recently started growing?

DRIVERS OF CHANGE IN CROP CHOICE

When and why did you stop growing those crops?

Why did you start growing new crops? Where did you get the seeds for new crops?

Which crops do you grow to sell?

AGRICULTURAL ISSUES

What are the main challenges to farming today?

What do you think the attitude to farming is?

FOOD

What do you eat? How has this changed in your lifetime?

WORKSHOP 1

What are the most important crops that you grow?

Discussion regarding environmental, economic and social reasons

How are seeds chosen and kept for the next year‟s harvest?

Discussion on seed selection and storage, issues of failed harvest, buying seeds

Which crops are no longer grown?

Discussion on seed loss and buying food rather than growing it, importance of maize

WORKSHOP 2

Has the weather changed in your lifetime? How has it changed?

Discussion on effect of rainfall on different crops

How has this affected which crops you chose to grow?

Discussion on importance of maize and crop hardiness

How do you respond during drought/heavy rainfall?

Discussion on planting times and previous extreme weather events

Discussion on aid and crop switching

Appendix D: Plants mentioned during case study

Table 5: List of plants discussed by farmers in the villages of the case study

English/ Common Name	Isixhosa Name	Binomial Name
Maize	Umbona	*Zea mays*
Beans	Imbotyi	*Phaseolus vulgaris*
Sweet Potato	Ubhatata	*Ipomoea batatas*
Taro Yam	Amadumbe	*Colocasia esculenta*
Potato	Amazambane	*Solanum tuberosum*
Sweet Reed	Imfe/ Imphe	*Sorghum drummondii*
Sorghum	Amazimba	*Sorghum bicolor*
Pumpkin	Amathanga	*Cucurbita pepo*
Cabbage	Ikhapetshu/ Iklabishi	*Brassica oleracea*
Beetroot	Ibhitruthi	*Beta vulgaris*
Spinach	Isipinatshi/ Ispinage	*Brassica rapa*
Calabash	Iselwa	*Lagenaria siceraria*
Carrot	Umnqathe	*Daucus carota*
Green Pepper	Iipepile	*Capsicum anuum*
Tomato	Utamatisi	*Lycopersicon esculentus*
Brinjal	Ibrinjal	*Solanum melangena*
Onion	Amatswele/ Ianyanisi	*Allium cepa*
Bambara Ground Nut	Inhlubu?	*Vigna subterranea*
Cowpea	Inhlubu?	*Vigna unguiculata*
Savoury/Bitter Melon	Ubece	*Citrillus lanatus*
Watermelon	Ikhabe	*Citrillus lanatus*