

Changing Livelihoods Workshop, Manchester, June 2000

***‘Where is the life in farming’: Agricultural livelihoods in
Molopo and Barolongs Compared***

CHASCA TWYMAN, DEBORAH SPORTON AND DAVID THOMAS

(Department of Geography, University of Sheffield, UK)

This paper reports preliminary findings from an ongoing project that seeks to identify the links between policy frameworks, grassroots natural resource management practices and flexible adaptations in a cross-border region of southern Africa. By embracing both inter-dryland environmental variability and inter-country policy contexts, simultaneous investigations of both key physical and key policy influences on natural resource use and rural livelihoods allows insights into the constraining and enabling factors facing rural people in their daily lives. Farmer cropping strategies, soil fertility management, financial constraints and opportunities, and alternative livelihoods pathways are situated within these contexts. This paper examines case study material comparing the agricultural livelihood strategies of both commercial and subsistence farmers in the Molopo District of NW Province, South Africa and the Barolong farm area, Southern District, Botswana.

Changing Livelihoods Workshop, Manchester, June 2000

‘Where is the life in farming’: Agricultural livelihoods in Molopo and Barolongs Compared

CHASCA TWYMAN, DEBORAH SPORTON AND DAVID THOMAS

(Department of Geography, University of Sheffield, UK)

Introduction

This paper presents preliminary findings from an ongoing project that seeks to identify the links between policy frameworks, grassroots natural resource management practices and flexible adaptations of livelihoods in cross-border regions of Southern Africa. The wider project, covering three areas of southern Africa (Figure 1), addresses these key debates through detailed analysis of primary and secondary data with the ultimate aim of producing best practice guidelines on a range of key themes for policy makers and practitioners. The results presented in this paper are drawn from one study area and focus on the sustainability of agricultural livelihoods in the mixed farming region of south east Botswana and northern South Africa. Here, the issue of the sustainability of farming livelihoods in this region in the current policy context is addressed by examining in detail the flexible adaptations and livelihood diversifications that people are making in response to changing environmental policies and social institutions. We examine the ways in which farmers have changed their cropping strategies in response to policy and environmental change. We also investigate the constraints of credit inhibiting both small and large scale farming in both countries, and the dependency scenarios facing some of poorest and most marginalised households. These issues are explored through detailed case studies of farmers and farming households in settlements across the region.

The PANRUSA project

The PANRUSA project, funded by the UK Department for International Development (DFID), aims to investigate public policy impacts on sustainable natural resource use and poverty in cross-border dryland regions of three southern African countries within the context of the aims of the United Nations Convention to Combat Desertification. The historical legacy of ‘top-down’ policies in southern Africa has both directly and indirectly overloaded the natural resource base in southern African drylands. The 1994 UN Convention to Combat Desertification (CCD) (among other international initiatives) recognised the importance of ‘bottom-up’, as well as ‘top-down’, approaches in both combating the effects of degradation and desertification in drylands, and in improving the livelihoods of rural populations¹. The key to effective policy implementation is now seen as the involvement of local communities, and in particular the empowerment of local people (including the young, women, marginalised groups), in the development process. This is leading to increased community consultation about, and awareness of, policy, with both positive and negative outcomes. The PANRUSA project is investigating these issues in three

¹ UN (1995) United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly Africa. Text with annexes. Geneva: UNEP/CCD.

cross-border dryland areas. Figure 1 shows the location of the paired study sites. Cross-border scenarios were chosen with broadly similar environments and people in each country, but where very different current and past policy contexts occur. By comparing policies and livelihood practices in cross-border situations the project aims to highlight both good and bad policy outcomes, as well as highlight more clearly the chains of communication important in the policy implementation process. This paper focuses on Study Area 3 which covers the Barolong region of south east Botswana and the Molopo region of northern South Africa.

The policy context of agriculture in southern Africa

Southern African agriculture encompasses both extensive and intensive arable and pastoral farming practices. The agriculture sector of most countries in Southern Africa remains strongly dualistic, with a relatively small number of large commercial farms and a large number of diverse smallholder farms. Typically the commercial farms occupied the most favourable areas, were highly mechanised, and enjoyed subsidised inputs (particularly in apartheid and colonial eras). Conversely smallholders typically occupied communal areas in more fragile and marginal environments, with poor extension services and reduced levels of subsidies². Botswana differs slightly from South Africa as it has a small-scale but well established indigenous commercial farming base.

The suitability of different areas of Southern Africa for rainfed crop production varies enormously, with rainfall being the most important limiting factor. Soil quality and topography are also important variables in different areas. The population density in the individual countries of Southern Africa is very variable and can reflect historical factors as well as agriculture productivity. Critically, even within countries with low overall population densities, unequal distribution of land and people means that there are areas of acute land pressure³. Commercial and subsistence livestock production faces similar problems with rainfall again being the most important limiting factor. In some communal areas pressure on rangeland resources has resulted in compositional changes to the natural resource base (e.g. from perennial to annual grasses) which causes acute problems in low rainfall years, but does not necessarily effect overall productivity in average (or good) rainfall year⁴.

Recent severe droughts have undermined smallholder resources across Southern Africa and left many of the poorer households without cattle. This has had knock on effects on draught power, land cultivation and fertility maintenance. Policies for smallholder support have been largely founded on the transfer of technology approach which views Western scientific methods as the key to progress. More holistic and participatory approaches (such as the farming systems approach or the farmer-first strategy), which recognise local knowledge and expertise, have been incorporated into

² Whiteside M (1998) *Living Farms: Encouraging Sustainable Smallholders in Southern Africa*. Earthscan, London.

³ Whiteside M (1998) *Living Farms*.

⁴ Dahlberg A C (1996) *Interpretations of Environmental Change and Diversity: A study from North East District, Botswana*. Dissertation No 7, Department of Physical Geography, University of Stockholm. Abel N (1997) "Mis-measurement of the productivity and sustainability of African communal rangelands: a case study and some principles from Botswana" *Ecological Economics* 23:113-133.

policy formulation more recently⁵. This echoes a wider shift across policy spheres towards these types of approaches. For example, policies to encourage stock reduction during droughts through livestock food subsidies tied to livestock sales have only been partially successful in countries such as Namibia. In areas where wealth is viewed through cattle numbers, and with rising population levels, severe problems still occur and thus fresh approaches to these problems need to be considered.

What is clear in Southern African agricultural policy is that there is a move to commercialise small-scale production, open up markets and integrate more effectively (black) rural areas into the national economies of the countries. This paper presents material from south east Botswana and northern South Africa on the current dilemmas facing small-scale arable and mixed farming in South Africa and Botswana.

Researching agricultural livelihoods

A mixed method approach was adopted for this research integrating environmental and social research methods. This has involved policy reviews and discourse analysis; assessment of changes in, and the sustainability of, the natural resource base (combining remote sensing, physical and ecological assessments with social surveys); community and household assessments using questionnaires, selected PRA techniques and case studies; and in-depth interviews. In each of the three paired study sites a range of these techniques have been adopted.

During July-August 1999 a series of semi-structured interviews were conducted in six settlements across the Molopo/Barolong cross-border region (see Figure 2). Settlements were selected in consultation with local NGOs and researchers, and represented characteristics relevant to the region and to the project. Logageng was in the process of making a land claim for its nearby former location Mosita and thus was an interesting case of livelihood change and land reform policy. Mathateng was described as the poorest settlement in NW Province⁶ and provided a contrast to the comparatively well organised semi-commercial and subsistence farmers of Logageng. Tlhapeng represented a community close to the Barolong region in Botswana and closer to the urban centre of Mafikeng; it also demonstrated a different set of livelihood profiles which became evident through the research. In Botswana, Mokatako represented a mixed farming settlement comprising both commercial and subsistence farming operating side by side. Hebron was a slightly drier settlement in terms of environmental conditions and illustrates well local level livelihood diversity. Madingwane on the other hand illustrates an area severely affected by a series of dry years and one where households were beginning to turn away from reliance on agricultural livelihoods.

Over 70 semi-structured interviews were carried out across the area focusing on livelihood dynamics and change. In particular, discussion was prompted about key policy constraints and key features of policy empowering people or facilitating livelihood security or anti-poverty pathways. After initial analysis of the data, three settlements were selected for further case study work in November 1999: Logageng, Mathateng and Mokatako. In-depth interviews were carried out with five case study

⁵ Whiteside M (1998) *Living Farms*.

⁶ James Drummond (pers.comm.), statement originally from a speech by Geraldine Fraser, South Africa's Minister for Welfare, Mafikeng, 1997.

households in each settlement. These interviews focused on soil fertility management and knowledge transfers about farming practices and issues. Soil nutrient data from samples taken in the first round of fieldwork formed the focal point of more informal discussions surrounding farming practices. These discussions revealed the priorities and concerns of farmers, some of which had not come to light in previous discussions.

Agricultural Livelihoods in Molopo and Barolong

The conceptual framework we use in this study to consider the sustainability of agricultural livelihoods in the Molopo and Barolong area is based on the sustainable livelihoods approach developed by Scoones⁷ and others⁸. This framework focuses on the different types of capital and assets needed for an individual, household or other unit to make a living. This approach brings together the notion of well-being, security and capability with sustainability, and specifically aims to be sensitive to poverty, vulnerability and resilience, as well as natural resource sustainability. The sustainable livelihoods approach is now the key framework informing DFID activities and interventions. At the heart of the framework is the identification of five different types of assets, or capitals, which are useful concepts for structuring analyses (see Box 1). The aim here is not critically evaluate this schema but to use it loosely for viewing the different livelihood scenarios people follow and to draw out the specific links to policy and natural resource use which influence the sustainability of livelihoods and the absence or not of poverty and vulnerability in these situations.

Box 1: Capital assets⁹

Natural Capital: natural resources (land, water, wildlife, biodiversity, environmental resources)

Social Capital: social resources (networks, memberships of groups, relationships of trust, access to institutions)

Human Capital: skills, knowledge, ability to labour, good health, physical capabilities

Physical Capital: infrastructure (transport, shelter, water energy) and production of equipment

Financial Capital: financial resources (savings, credit, regular remittances, pensions)

Agricultural livelihoods in Molopo

The Barolong Farm region in Botswana and the communal farming area of Molopo District in South Africa are shown in Figure 2. Traditionally this cross-border area was the chiefdom of the Rolong group of the Tswana and it has had a varied history of colonial, apartheid and independent rule. The shifting international boundary over the last 150 years, detailed in Drummond and Manson¹⁰, has framed the political

⁷ Scoones I (1998) Sustainable Rural Livelihoods: A Framework for Analysis. *IDS Working Paper 72*. Institute of Development Studies, Sussex.

⁸ Carswell G (1997) Agricultural Intensification and Rural Sustainable Livelihoods: A 'Think Piece', *IDS Working Paper 64*, Institute of Development Studies, Sussex. Johnson C (1997) "Rules, Norms and the Pursuit of Sustainable Livelihoods", *IDS Working Paper 52*, Institute of Development Studies, Sussex. Carney D (ed) (1998) *Sustainable Rural Livelihoods. What contribution can we make?* DFID, London.

⁹ Carney D (ed) (1998) *Sustainable Rural Livelihoods. What contribution can we make?* DFID, London.

¹⁰ Drummond J and Manson A H (1991) "The evolution and contemporary significance of the Bophuthatswana - Botswana border landscape", in Rumley D and Minghi J V (eds) *The Geography of Border Landscapes*. Routledge: London: 217-242.

discourse of nationality, ethnicity and family. It has at times split villages, prevented families from attending funerals, stopped migrants from returning to work and curtailed the import and export of goods across the border. However, since independence in Botswana and the end of apartheid in South Africa new policies of land reform and agricultural development have emerged as both countries have restructured and re-oriented their political frameworks.

The present rural economy of NW Province cannot be viewed in isolation and both the regional political context, and the history of the area, must be taken into consideration. In 1884 the area north of the Molopo River was partitioned off to become part of the Bechuanaland Protectorate, and the area south of the river became part of the Crown Colony of British Bechuanaland (later to be incorporated into the Union of South Africa). The Rolong chiefdom was physically divided because of the need to have a feature, i.e. a river, demarcating the border and no thought was given to the immediate and long-term consequences of this divide for the Rolong people. The area south of the Molopo then followed a radically different path from its northerly neighbour. The ethnic segregation fostered in South Africa in 20th century reached its radical nexus with the creation of ten 'homelands' in 1959. Bophuthatswana was one of these 'homelands' and was later granted 'independence' in 1977. One of the ways in which Bophuthatswana tried to proclaim its independence was to promote agricultural policies which would lead to self-sufficiency in food production¹¹. Through 'betterment' programmes, agriculture in the communal areas was mechanised and traditional patterns of land use and resource allocation transformed. However the links between the white commercial farming sector and the 'homeland', through the labour market and agri-businesses, remained critical, propping up these dual economies. These links have remained key to the integrated agriculture economy today¹².

Rural farmers in NW Province are now operating in a different context again. They are facing the challenge of a transformed government which has inclusive and empowering policies. These are attempting to incorporate even the smallest farmers into the national agricultural economy. However, many of the elements of these policies, which have the potential to improve livelihoods and empower small-scale black farmers, are proving not to translate effectively into practice on the ground. This leaves rural livelihoods, and rural farming livelihoods in particular, in a vulnerable situation. At the centre of these transformed policies is the government's Land Reform Programme which has powers to return land to the dispossessed, redistribute land and enable others to purchase land through grant and award systems¹³. This process is changing the landscape of the rural area, albeit slowly, and is probably the key policy to have affected rural livelihoods over the last decade. It all other respects rural development policy in South Africa lacks co-ordination and efficacy, and this means small-scale farmers are having to diversify away from farming in order to support their families and prop up their farming livelihoods.

¹¹ Drummond J (1990) 'Rural Land Use and Agricultural Production in Dinokana Village, Bophuthatswana' *Geojournal* 22 (3): 335-343

¹² Francis E (1999) 'Learning from the Local: Rural Livelihoods in Ditsobotla, North West Province, South Africa' *Journal of Contemporary African Studies* 17 (1): 49-73.

¹³ Republic of South Africa (1997) *White Paper on South African Land Policy, April 1997*. Johannesburg, South Africa.

The three study settlements for this project need to be viewed within this context. Each has been shaped by different aspects of history and policy to different degrees and quite different livelihood and farming strategies have emerged. A brief profile of each settlement is given below and the key livelihood and policy situations are highlighted.

Logageng

The settlement of Logageng was created in 1968 when the residents of Mosita, a black settlement in an area surrounded by white commercial farms, were relocated into the main Molopo Native Reserve. Since then, Logageng, like most compensatory areas, has been highly developed in terms of infrastructure and government initiatives have continued to develop services such as a school, clinic and roads. The settlement has increased in size as people have settled there from surrounding farms and established families have grown. The majority of households interviewed in the research are small scale commercial farming households, combining arable with livestock production. They principally grow cash crops (maize and groundnuts) which are sold through co-operatives and agricultural companies in the nearby centres of Setlegole and Gemsbok. Farming is supported by non-farm activities (remittances, small businesses), livestock sales or formal loans from agricultural banks or companies.

One of the key issues at present in Logageng is the award of their land claim on Mosita. Different and diverse opinions regarding the land claim have emerged through this process. There is no doubt that the community as whole are celebrating their successful land claim, but despite their initial arguments in the claim process, older people are more likely to stay at Logageng. It is their children, the younger generation, who are likely to be the ones resettling in Mosita. The rationale behind this scenario is that those who were moved from Mosita in 1968 have built houses, cleared fields for cultivation and invested in the land in Logageng and they do not have the energy or inclination to do this again. However, they report a shortage of land, both arable and grazing, particularly for Logageng's younger generation wanting to start farming. There are few alternative livelihood options available within these settlements and thus access to land is critical. Thus the younger generation are willing to move to Mosita to build new houses, clear fields and establish themselves in a new settlement. Logageng will still retain close links with Mosita, through extended family, and visits to ancestral sites. The two villages will also share a chief. In terms of livelihoods, the restitution of Mosita is providing a new generation with new livelihood opportunities. At the same time it is re-establishing cultural and emotional links for others. However, the long-term viability of small-scale agriculture in these settlements is a critical question which needs to be addressed.

Mathateng

Mathateng has been described as the poorest settlement in NW. It is a long established settlement at one time being a satellite of Tshidiamolomo and Masamane, but now being recognised as a separate location. Most residents have grown up in Mathateng or Tshidiamolomo, and many households conduct some form of subsistence or semi-subsistence farming, combining arable and livestock production where possible. There is a perceived shortage of land in Mathateng and newcomers to the settlement, or those wanting to start farming, have great difficulty in securing access to land. New farmers report their frustration of seeing allocated land unfarmed

and some have tried to form *ditele* (share cropping) agreements with land owners, but have not been successful. Those who have approached the chief for land allocations have invariably been told that there is no more land to allocate. There are therefore a number of households relying on non-farm activities as their main livelihoods. Farm work however does still remain one of the key employment opportunities in the settlement, and on the white farms nearby.

For those who do have access to land, farming falls roughly into two categories, mechanised and non-mechanised. Those with access to tractors (own or hired) tend to grow crops for commercial sale, though few farmers have had significant harvests in recent years. Others rely on draught power from donkeys, usually ploughing smaller areas of land less frequently, resulting in less income derived from crop sales. Smaller farmers, and those wanting to start farming, cite the lack of donkeys as a further constraint. Donkeys across Bophuthatswana were culled in 1983 under the guise of an anti-degradation policy, but a more likely reason was to force farmers to mechanise and thus increase food production in the 'homeland'¹⁴. The current lack of co-ordination on rural development and agricultural policy has important implications for the livelihoods of farmers in Mathateng. Without adequate support structures and extension systems the poorer farmers and the landless are becoming more marginalised. Mathateng demonstrates the wider links with the farming economy but farming livelihoods in this settlement remain vulnerable.

Tlhapeng

Tlhapeng lies further east from the previous two settlements, close to the border with Botswana. It is also close to Mafikeng, the regional centre of NW Province. Tlhapeng is another long established settlement with most residents born in the village. However it differs quite significantly from the other two settlements in its livelihood profiles. Like the others, the majority of residents depend on farming for a living. However, in Tlhapeng a large proportion of the land is farmed by just four farmers. Three of these farmers are 'outsiders' having moved into the settlement within the last twenty years, and they farm through share cropping agreements with the land holders. These three commercial farmers own no land in the settlement yet have the capital necessary to invest in farming. The other commercial farmer is from Thlapeng and owns 400ha. Other land holders are dependent on the employment opportunities offered by seasonal farm work in the settlement, and the proportion of the crop they receive through the share farming agreement. These dependent livelihoods are complemented by reliance on pensions and remittance payments from relatives working in Mafikeng and Johannesburg.

The circumstances which led to this dependency scenario are explored more thoroughly later in the paper. What is important is the overall lack of livelihood opportunities in this settlement and the difficulty with which some households struggle to make a basic living. Compared to Logageng, there is low self esteem and little innovation in terms of livelihood diversification.

¹⁴ Jacobs N (1999) 'The Colonial State and African Environmental History: British Bechuanaland through Bophuthatswana in Continental Perspective' paper presented at the Journal of Southern African Studies Conference, St Antony's College, Oxford.

The above three profiles highlight two key policy themes, first that of the significance of the land reform process which has given land to a new generation and improved self-esteem of rural dwellers farming in difficult conditions; and second, the overall lack of any effective and co-ordinated agricultural or rural development policy operating in these rural areas. This means that those relying on agriculture livelihoods are struggling with changing input and output prices and have little security in times of drought or shortened farming seasons. This insecurity means access to credit is problematic, with some unable to repay existing loans and others unable to secure credit at all. Increasingly agriculture livelihoods are being supported through other means, either through labour (on nearby commercial farms) or through remittances from relatives, pensions or piece work. Institutional changes are also emerging, with young people no longer able to earn the capital necessary to start farming because of high unemployment in South Africa and particularly in NW Province. Links with the white commercial farmers remain with many people from these settlements working on the farms. These links are also used by farmers to gain knowledge about farming practices (cited in particular in Logageng) and to gain access to machinery (borrowed or bought second hand) and sometimes access to land for ploughing. Tlhapeng demonstrates a situation where small-scale farming livelihoods have failed and basic livelihood strategies are dependent on the few commercial farmers coming in to plough in this region.

Agricultural Livelihoods in Barolongs

The Barolong Farms in south east Botswana were at one time regarded as the ‘granary of Botswana’¹⁵. This reputation evolved at a time when Botswana was concerned with food self-sufficiency. Botswana was opposed to South Africa’s apartheid regime, yet it was dependent to a large extent on food and other imports from its neighbour. Relations were strained further when Botswana refused to recognise Bophuthatswana as an independent nation and Mangope (Bophuthatswana’s President) effectively closed the border with Botswana. This happened at a time of severe drought in Botswana (early 1980s) and awareness of the need for national food self-sufficiency was heightened. Therefore, arable farmers, and those in the Barolongs in particular, received favourable input and output prices and mechanised farming was encouraged through favourable rates of interest on loans. Arable agriculture operated at both commercial and traditional levels side by side, with policies and programmes tailored for both. However, this led to further polarisation between large and small scale farmers and overall began a trend of lowering total production output¹⁶. Within the last decade there has been a significant decline in the amount of land under cultivation and overall yields for the areas such as the Barolong have dropped significantly¹⁷. There are several reasons that may account for this decline.

Within the last decade Botswana has shifted from a policy based on food self-sufficiency to one of food security. Botswana now freely imports much of its grain

¹⁵ Silitshena R and McLeod G (1993) *Botswana: A Physical, Social and Economic Geography*. Longman, Gaborone.

¹⁶ Carugi C and Gareebine D (1996) *Barolong Farms Needs Assessment Survey*. BF-OSSCA Barolong Farms One Stop Service Centre for Agriculture, Good Hope, Botswana

¹⁷ Carugi C and Gareebine D (1996) *Barolong Farms Needs Assessment Survey*

from South Africa and as a consequence gives less support in subsidies and overall encouragement to its own farmers in dryland areas. These farmers cannot compete with the South African market and thus less land is being cultivated under traditional crops (white maize and sorghum) and farmers are starting to diversify away from cereal production.

The small-scale farmers in the Barolongs faced further problems when the National Development Bank (NDB) recalled agricultural loans taken out in the 1980s to buy farm machinery. These loans had mainly been used to mechanise small-scale production in Botswana at a time when Barolong agriculture was being strongly promoted. However, with the change in economic climate in the mid 1990s, NDB recalled their loans in 1995 and where necessary confiscated tractors and other farm machinery from farmers defaulting on their loans. Payments on many loans had ceased following drought in 1992 and again in 1994. Most farmers had not kept up their donkey or oxen plough teams and thus most farmers were unable to plough after the confiscation of their tractors. This had severe effects upon their agricultural livelihoods and has possibly led to greater reliance on state support systems and remittance payments from nearby towns and cities.

The change in focus of the Agriculture Policy, combined for many with the loss of farm machinery, considerably increased farmers' vulnerability to shocks and stresses. Drought is endemic to the region and both major and minor drought incidences have had severe impacts upon small-scale farming livelihoods. The three settlements chosen for our research in Botswana highlight some of the key policy changes and the impact they have had on local level livelihoods.

Mokatoko

Mokatoko lies in the west of the Barolong farms. It contains a range of farming and non-farming households including large and small-scale mechanised commercial farming operations as well as subsistence farming. Much of the land in Mokatoko was originally allocated through 10 ha plots and these have been extended or added to in subsequent years. The large-scale farmer, Baboloki Moshu is the only farmer to have share cropping agreements (*ditele*) in the settlement, though in Hebron and Madingwane share ploughing as a means of access to farming land is more common. The mixture of farming households in Mokatoko is reflected in the range of farming practices and strategies that farmers undertake. Farmers plough with both donkeys and tractors and the principal crops grown are maize and sorghum (no groundnuts) with some beans and melons grown by the smaller farmers.

Most households do not rely solely on farming for household income. The semi-subsistence farmers tended to supplement their income through piece work and remittances, while the more commercial oriented farmers often have small business in the settlement. Farming over the last few years has been severely affected by the recall of agricultural loans by NDB. Those who have lost their tractors and other machinery now either hire tractors or are trying to revert back to ploughing with donkeys. Farmers are now struggling to recoup their costs and re-establish their farming livelihoods, a difficult task at a time where they have experienced poor rainfall for several years running.

Hebron

Hebron, like most of the settlements in the Barolong area has had strong links with South Africa's mines. For many men this was the main form of waged employment, as migrant workers, and provided the necessary capital for farming enterprises during and after employment. With the changing economic climate in South Africa and retrenchment in many primary industries, employment opportunities in South Africa are now poor and few people now migrate outside Botswana. The lack of employment opportunities in South Africa and Botswana severely limits access to the capital inputs necessary for farming for many households.

Further financial difficulties have been faced by Hebron's farming households with the recalling of the NDB loans and the confiscation of tractors. Some households have diversified their labour activities and now hire themselves out as tractor drivers and request payment in kind with the use of the tractor to plough their own land. In the mid 1990s the government paid tractor owners to plough 5ha plots for each farming household as part of a relief package in order to get farmers (with no capital inputs because of the failed crops the previous years) back into farming. This provided much needed cash for those with tractors to plough their own, and others', land.

Others have attempted to return to farming after the crises of the early to mid 1990s by hiring tractors or through share cropping agreements. However there are few opportunities for young people in the settlements, and there are many reports of women moving away to seek domestic jobs in Lobatse and Gaborone. There is also an interesting case of two young men attempting to break into farming. Their strong family links supporting their efforts are essential, as is their determination to succeed. One young man (*de facto* head of household) has made good contacts with the regional extension office in Good Hope and has secured grants for donkeys, ploughs water tanks and fencing. He has little cash input and is paying off his contribution in labour.

What distinguishes Hebron from other settlements is the degree of livelihood diversification that is apparent. The more educated households have shifted away from mixed arable/livestock production and have started small fruit or vegetable growing business with government Financial Assistance Programme grants. Irrigation is from private boreholes, often financed through the grants and produce is sold at the government market in Lobatse. These trends suggest that farming livelihoods are declining in importance and that instead people are diversifying their natural resource based livelihoods.

Madingwane

Madingwane presents another example of a mixed settlement combining highly successful farms with those who have turned away from farming altogether. On the outskirts of the village is a female farmer who has established strong links with the National Agricultural Research Centre at Sebele. Through these links she is able to participate in seed trials, provide certified seed for them to sell to other farmers and receive up-to-date advice about farming methods and techniques. Overall this means that she can sell crops at significantly higher prices than at the local Marketing Board. Despite the current economic climate in farming which she admits is not good, she

still feels it is possible to farm profitably and that young people are not prepared to put the necessary capitals (particularly social capital i.e. labour) into the farming.

Contrasting strongly with this case are many farmers in the settlement who have not ploughed for several years principally because of lack of rains. All say they receive substantially less rainfall than Mokatako and usually less than Hebron and other places. Many of these farmers have also been severely affected by the NDB confiscation of tractors leaving them without the means to plough. Few have oxen or donkey plough teams together, neither do they have the finances to raise a team. Drought schemes providing ploughing (or labour for some) have been the only means through which many people have been able to plough at all over the last six to eight years. For those who have donkey plough teams the lack of rains has severely affected their cultivation. With poor rains soils remain too hard to plough with donkeys and thus farmers cannot prepare land prior to full rains which usually has significant benefits for moisture retention and overall cropping strategies. There is a general consensus among the smaller scale farmers that farming is no longer paying and does not provide a living.

The profiles outlined in this section show how very different farmers have been affected by changes in policy and how their differing levels of vulnerability make them more or less susceptible to variability in the environment. These cases illustrate the complexity of the sustainability debate within these farming systems on both sides of the border. The next section draws out four themes which cut across the settlements and investigates these through case studies of different farmers. The themes are, farmer cropping strategies, soil fertility management practices, financial constraints and opportunities, and alternative livelihoods pathways.

‘Where is the life in farming?’: flexible adaptations to policy and environment

Understanding livelihood dynamics is critical to understanding people’s vulnerability to change, whether they are policy- or environmentally-driven. Many people are adapting their natural resource practices flexibly in response to changing circumstances and may also be diversifying their overall livelihood portfolios. These may be short-term changes in response to particular events, e.g. a prolonged dry season, or more long-term shifts associated with changes to regional economic policies. This section of the paper looks in details at four areas of rural livelihoods and practices where these changes are occurring: farmer cropping strategies, soil fertility management practices, financial capitals and non-farm livelihood pathways. Some of these changes are broadly similar across the two regions, and some are distinctly different. The ways in which different people and types of households respond also vary depending on their capital assets as well as the prevailing social, environment, political and economic conditions at the time. These are explored through a series of case studies across the region.

Farmer cropping strategies

A range of cropping strategies have been developed either side of the border as farmers adapt to cope with changing policy contexts and the variability in the

environment. These strategies are shaped to varying degrees by the social institutions surrounding farming such as transfers of knowledge and traditional versus modern farming practices (human capitals), as well as more obvious constraints such as late or absent rainfall. Two key strands which demonstrate these flexible adaptations and practices in response to policy and environment are farmers choices of crop types, and the timing of crop planting. Two case studies have been chosen to illustrate these issues.

Crop type: Despite environmental similarities, the crops grown vary either side of the border. In Botswana maize and sorghum are most widely grown, with beans, melons and some sunflowers as additional crops. Most farmers follow some form of crop rotation but crop soil preference often determines cropping patterns (e.g. sorghum does better on soils with higher clay contents). When asked why few if any farmers grew groundnuts, most responded that it required high capital inputs (i.e. labour and different machinery). Furthermore the poor market in Botswana for groundnuts was seen as a constraining factor and export to South Africa was not possible.

In South Africa groundnuts are widely grown. Most farmers declared this was not a new phenomenon and that their forefathers had all grown these crops. Labour inputs were also not a problem and payment was either in cash or a proportion of the crop harvested. However, white commercial farmers suggest that groundnut production on the former 'homeland' areas is more recent and largely a results of 'copying' white commercial farming practices (le Roux pers. comm. 1999). Extending this argument, Mr le Roux predicts that black farmers will follow white farmers again and start growing cotton. This he says would be extremely problematic as cotton production needed to be carefully controlled for pests, and uncoordinated or unregulated planting in communal areas could jeopardise larger scale production. This suggests some tensions still exist between the communal and commercial farming systems.

Very few farmers kept their own seed for planting. Most would buy from recognised seed suppliers. In Mokatako a particularly proactive government extension worker was working closely with several small farmers, giving them free seeds to conduct seed trials. For one farmer this free access to seeds was critical to the profitability and success of his small scale farming system. At the other end of the scale in Botswana, several farmers were sub-contracted to produce grain designated for seeds by the Seed Multiplication Unit (SMU) under the Agricultural Research Unit of the Ministry of Agriculture. Contract prices for the eligible farmers are twice the price offered by the Botswana Agriculture Marketing Board (BAMB). This has the potential to skew overall income distribution in the area and further reduce the land dedicated to food production. However it increases the profitability of farming for the commercial farmers which ultimately secures livelihoods for people as farm labourers.

Timing: The timing of ploughing is critical. Farmers often wait for the first rains before ploughing, but this can have both positive and negative consequences. One farmer in the Barolongs reported that one year he ploughed and planted late and his crops missed the best of the early rains. They did not establish well and were not strong enough to survive through a slack rainfall period in the middle of the growing season. Other farmers who had planted early had good harvests. However, the same farmer reported that another year he planted half the field in one month but the rains stopped and so he decided to wait a few weeks before planting the remainder of the field. The first crop died while the second, later crop, flourished with the good rains.

Late ploughing can be attributed to a number of reasons. Farmers in South Africa said the late arrival of loans for diesel and seeds was the main constraint to the timing of ploughing. Others who had limited access to labour either had to wait until neighbouring farmers had ploughed their own fields before they could hire tractors, or they had to wait for the end of the school term for children to return. Seemingly small events can significantly increase the vulnerability of farming households, and different forms of capital can inhibit different types of farming households to different degrees.

Case 1: Mr Motsebi from Mathateng (South Africa)

Seseng Motsebi was born in 1957 in Matloding, close to Mathateng. Like many young men, he went to work in the mines but he also tried to keep up his farming while he was away. The farm suffered too much and so he decided eventually to concentrate on farming alone. Seseng has one field of 15 ha which he cleared in 1991, he plans to share crop a further 8 ha with his brother. He plants groundnuts, maize and beans. Because he is not working he rarely has money to buy fertiliser and so far he has not considered using manure. He may do so next year but usually he just rotates his crops. Seseng hires a tractor for his ploughing and planting. He has experimented with planting his crops at different times, partly in response to rainfall but mainly depending on when he can hire a tractor. Seseng gains most of his knowledge about farming from his close friend Mr Mopane. He advises him on which crops to grow and they discuss the best times to plough. Recently he has tried inter-cropping beans and maize which has been very successful. Seseng has 18 cattle and 15 sheep and goats. These help finance the farming. His wife is learning to knit and hopes to be able to start a small business within the next few years.

Case 2: Mr and Mrs Tsaro from Mokatako (Botswana)

Michael and Kenelwe have a 15 ha plot in Mokatako which they acquired in 1986. Michael says he does not borrow any extra land because he ploughs with donkeys and they are very slow. Both have vegetable gardens which they water, one by the house and another by the field. Through an agricultural scheme Michael has built a rainwater storage tank on his farm which he can use to water his donkeys during ploughing. This means his ploughing is more efficient and he can take more advantage of rains when they come. 'In the past I have harvested 200 bags from the field but now there is no money so even if it does rain there is no money for fertiliser' he says. They usually plant a variety of crops on their field: yellow and white maize, two types of sorghum (phohu and mahube) and several types of beans. He gets some seeds free from the agricultural extension officer which saves him money and allows him to experiment with different varieties. Because of the recent poor harvests and the lack of grazing in the surrounding areas for his cattle, he is considering planting crops specifically for cattle feed next year. He is currently financing his farming through livestock sales.

Both case studies give an insight into the farming livelihoods of semi-subsistence farmers in South Africa and Botswana, illustrating the environmental and policy constraints under which small-scale farmers are operating. These farming households

are similar in that they each farm approximately 15 ha and each have a relatively small nuclear family to support. Assets such as cattle and sheep are similar, but Mr Motsebi has more cattle and goats and Mr Tsaro has donkeys as well. Both farmers also demonstrate experimentation in their farming practices, Mr Motsebi getting advice and ideas from a fellow farmer and Mr Tsaro from a dynamic extension officer. Despite this both farmers have little cash available to invest in their farming, and must rely on alternative livelihoods to support their farming. In both cases financial capital comes from livestock sales. For small-scale farmers ploughing at the right time and finding low cost ways in which to improve their farming practices are vital. Through trial and error Mr Motsebi has become more flexible in his approach to planting, ensuring crop success by plating at different times, and working with the biophysical needs to plants to improve harvests. For Mr Tsaro an innovative extension officer has introduced him to different types of crops and helped him develop his small farming system more appropriately, such as the decision to plant fodder crops.

The key question is to what extent are these detailed strategies adopted by different farmers policy or environmentally driven, and what consequences do they have for the sustainability of the farming livelihoods in these two regions? In terms of capitals, three stand out as important in farmer cropping strategies. The human capital of skills, knowledge and ability to labour are clearly important in both cases. Knowledge is transferred through various forms of social capital; the networks, friendships and relationships of trust that have developed between farmers and with extensions workers. The two cases studies differ significantly here as in Mathateng the extension worker is not highly regarded whereas in Mokatako he is seen as trustworthy and empowering, helping both small and large scale farmers. Both farmers have difficulty in raising financial capital and rely on alternative means to support that farming livelihoods. This is widespread in both areas and is now becoming a feature of rural agriculture in Africa¹⁸. Finally, in this case both farmers' practices are driven to a large extent in response to environment variability. Their ability to adapt flexibly depends on these capital assets and also on the rural economy and prevailing policies.

Soil fertility management practices

Soil fertility management practices have evolved in the two regions based on both organic and inorganic fertilisers, and practices which directly or indirectly address wind and water erosion problems. With an altitude of 1250m and a relatively flat surface, big problems of field erosion are avoided in the Barolong and Molopo region and the effects of high temperature variation are mitigated. The soils (arensols and luvisols with some cambisols and regosols) have reasonable water retention capacity and levels of fertility for a dryland environment¹⁹. Soil fertility has been maintained through the use of organic and inorganic fertilisers, use of crop residues, specific cropping practices and anti-erosion strategies. The critical question is whether these practices are contributing to the long term sustainability of farming in the region, or are they essentially mining the soil nutrients, and if so which aspects of current

¹⁸ Francis E (1999) 'Learning from the Local: Rural Livelihoods in Disobotla, North West Province, South Africa' *Journal of Contemporary African Studies* 17 (1):49-73

¹⁹ Carugi C and Gareebine D (1996) *Barolong Farms Needs Assessment Survey*

policies are tackling or contributing to this scenario? Through this research we are currently analysing the long term sustainability of different farming scenarios, principally through nutrient budget data. This involves analysing flows between farm, households and range, looking at inputs, outputs and losses in the system and ultimately assessing overall levels of sustainability. From this we can identify best practice scenarios and identify key junctures affected by policy, environment or the lack or presence of the different forms of capital. All these snapshots must be viewed in the above social contexts if appropriate and realistic guidelines are to be produced.

Use of organic fertilisers depends to a great extent on the mixed farming system. Those without cattle or small stock have significantly restricted access to manure, as do those whose cattle are paddocked communally and therefore not kraaled. Where cattle are kraaled by their owners each night, manure accumulates and can be easily used on fields. In Logageng and Tlhapeng cattle are kept in camps and thus no manure collection takes place. For several months (winter) cattle are allowed to graze in the farming area thus providing some manure directly onto fields, though this practice is also being reduced because of the perceived contribution to erosion that it makes. Small stock are kraaled in all settlements and thus are a potential source of organic fertiliser. Small stock manure is often preferred as it contains less weeds. Farmers without access to either rely on inorganic fertiliser, a significant drain on financial capital, or alternative methods such as crop rotation and inter-cropping. Interestingly in Mathateng, where many farmers have few livestock and usually not enough manure from small stock, some interesting alternative methods have emerged. Use of crop residues through ploughing them back into the field is not common in other settlements as these provide cattle with winter feed and are thus of more forage value. However some farmers in Mathateng have started to actively cultivate crop residues back into the soil, in particular groundnut shells. These are reported to act like fertiliser and the practice from just a few farmers is spreading across the settlement. Case study 2 also illustrated a farmer who has experimented with inter-cropping beans with maize to fix nitrogen precisely at the time when maize needs it during its growing cycle. Some of these methods have been copied from white farmers but basically these farmers say they experiment to see what works best in their fields.

At the other end of the scale some of the larger farmers with small businesses rely solely on inorganic fertilisers and they test their soils regularly, altering the applications as required. However with the current difficulties in the agricultural economy these farmers are reporting that some years they apply less, or cheaper, fertilisers and this has obvious long term sustainability consequences. We currently do not know if these different farming practices are sustainable, but it is clear that both policy and environmental conditions drive farmers' decisions about soil fertility practices. Furthermore the social and human capital assets of poorer farmers in particular are essential to their ability to maintain levels of soil fertility necessary for arable crop production. However, such snapshots of the soil fertility picture can be dangerous and assumptions guiding policy should be properly contextualised to recognise the particularities of 'people in places' at specific times²⁰. The following

²⁰ Scoones I and Toulmin C (1999) *Policies for soil fertility management in Africa*. DFID, London.

case studies give a 'snapshot view' of three different farmers and the ways in which are or are not able to practice soil fertility management.

Case 3: Mr Mokabe, Logageng (South Africa)

Mr Mokabe has been farming in Logageng for 28 years, starting soon after they were relocated from Mosita in the late 1960s. He has always farmed with tractors, hiring and buying his own, and over the years he has gradually increased the land he cultivates. He now has 16 ha of his own land and access to four other large fields through share cropping agreements. He grows maize and groundnuts only, selling all his harvest at the local co-operative in Gemsbok. He has three different types of soil on his land which all require slightly different management practices. The light soil needs a lot of fertiliser and he usually uses 321 and urea on this one if he is growing maize. The red/brown soil sometimes needs some fertiliser but he usually plants groundnuts on this soil and therefore does not use fertiliser. The dark soil is not common but is the best for farming if it is wet. He does not like to put kraal manure on the fields because of the weeds and he also keeps his cattle in the communal fields. However he does put sheep manure on the lighter soil where it is subject to wind erosion. The manure strengthens the structure of the soil. His main problem though is raising money to buy fertilisers. Mr Mokabe says he learnt about farming from working on the white farms. He was also able to buy his tractor from a white farmer and he still sometimes asks them for advice. During the farming season the farmers of Logageng meet weekly to discuss farming practices and new information on loans, input prices and techniques.

Case 4: Mr Setshe, Mathateng (South Africa)

Paul Setshi was born in Tshidiamolomo in 1962 and moved to Mathateng to start farming in 1997. He had worked in the mines and as a security guard for a few years but his family asked him to return to farm as the work was too dangerous. He has a 6ha plot but he has only cleared 1.5 ha so far. He pays someone to plough and plant for him (R250 per ha). He would like to use inorganic fertiliser on his fields but does not have money. Instead he mixes cattle and goat manure and also uses the broken up shells of groundnuts. The shells help strengthen the soil but sometimes he has to use the shells as cattle feed if the grazing on the range is poor. He does not have much livestock so asks other people if he can use some of their manure. He says the farmers learn from each other: 'Those who don't listen are usually the ones who have cash to buy fertiliser and get ideas from the co-op. The others don't have money and cannot do that so they have to come up with other ideas. We hold meetings on each others farms to discuss when someone has a problem'. Although he says his soil fertility methods work well he still has aspirations to be a 'bigger farmer' using inorganic fertilisers and getting advice from the co-op.

Case 5: Mrs Mokutshumo, Madingwane (Botswana)

Lentswe Mokutshumo was born in 1924. She and her husband have farmed for most of their lives, but more intensively since he retired from carpentry in 1954. Since 1965 he has been blind and so Lentswe has taken over the farming. They have over 100 ha which they cultivate with their 3 tractors. They have two farm workers employed full time, one for cultivating and one to look after their 80 cattle and 54 goats. They also look after cattle for other family members and thus have a herd of 417 in total. Lentswe plants maize, sorghum and beans. Like Mr Mokabe of Logageng, she distinguishes between her soils and applies different practices to each. She has regular soil samples taken and uses either 232, 231 or 230 on her fields. The light soils in particular need a lot of phosphate while the clay soils are sometimes lacking in nitrogen. Sometimes she does not need to use fertiliser on the sorghum but with maize, 'if there is no fertiliser, there is no harvest'. She believes that you can still make a living from farming. She will not sell her farm, she will keep it for those who are interested and hand it over to her children.

These three case studies show the range of practices that different farmers use to maintain soil fertility on their farms. Mr Mokabe is a typical farmer from Logageng: a small-scale commercial farmer using a mixture of organic and inorganic soil fertility methods. His main difficulty is raising financial capital to buy seeds, diesel and fertiliser for farming. Usually this capital is provided by the previous year's farming but if there is a drought year farming must be supported through livestock sales or cash from waged work. Mr Mokabe has taken out loans in the past but has not been able to repay them fully yet, further constraining his financial capital assets and ability to invest in his farming. He would like a small-scale loan systems tailored to their needs and able to operate flexibly when droughts occur. Mr Setshi is relatively new to farming but is operating within the same policy context as Mr Mokabe. However he has used his financial capital for ploughing and planting leaving no money for fertilisers. Like other farmers in Mathateng he is innovative and uses alternative soil fertility methods with good results. These have evolved through discussion with other farmers, demonstrating the importance of human and social capitals. In contrast to these cases is Mrs Mokutshumo who is a long established farmer in the Barolong region. Able to finance their farming from carpentry initially, and then through the beneficial agricultural policies of the Barolong through to the 1980s, this case illustrates clearly a large scale farming enterprise which is still able to survive in the current era. However, the family is obviously wealthy and it is likely that this enterprise does not have to support all these family members, rather it acts as mixed farming base, or resource in itself.

All farmers had detailed knowledge about their soils and fields and patchy and variable nature of the soil's fertility. By taking field histories with some of these farmers it was also clear that practices had changed over the years in response to different policies (e.g. Botswana's drought relief policies heavily subsidising inputs in the 1980s) as well as different stages in life cycles. For some farmers waged work away from the farm enabled them to invest in their farming yet at the expense of always farming 'well'. For others this lack of work means farming has to be supported by other livelihoods, most often livestock sales or pensions. Others must look towards alternative livelihood pathways. One thing that is clear from these three

case studies is the difficulty of separating issues of soil fertility management from those of financial capital assets and overall livelihood dynamics.

Financial Constraints and Opportunities

As the above case studies have shown, financial capital is critical to day-to-day farming practices, and is the biggest worry to most small and medium scale farmers. Case study 3 illustrated how Mr Mokabe had difficulty financing his soil fertility management practices because of the difficulty of gaining and managing large loans. He outlined a common theme from discussions either side of the border, that is, the need for micro-credit schemes specifically tailored to these farming communities. Throughout this paper examples have been given of the difficulties facing farming communities today and the ways in which they adapt their livelihood strategies to make ends meet. The following two case studies are further examples of how farmers in South Africa and Botswana are struggling to cope with the financial difficulties of farming in today's policy climate.

Case 6: Mr Tswii from Mathateng (South Africa)

In 1994 Mr Tswii took out a loan with land Bank in Pretoria for R4000 but his crops failed. He was unable to pay back the loan. He used the money to repair his tractor and to buy seeds, diesel and fertiliser. He still owes money and has sold some of his cattle to pay back the loan, but still owes more. Mr Tswii did not plough in 1999 because of financial problems. He last farmed in 1998 but the crop failed. He has one field of 29 ha and had borrowed another field in the past but cannot afford to plant it now. After his failed crops in 1994 he has tried to farm well but even the couple of years the rains were OK he did not have money for fertiliser. In 1997 he was able to harvest a reasonable crop but by the time he had paid for the seed and labour there was no profit. Other years he has saved his own seed but he has still not been successful. He does use cattle manure on his fields but not often. At the moment his daughter is working as a cleaner in a garage in Gauteng and she brings home money at the end of the month. This is supporting the family at present. Mr Tswii still owes money to the Land Bank. He now wants to convert back to donkeys for ploughing, he sees this as less risky and more financially viable for his household.

Case 7: Mr Gomoti from Hebron (Botswana)

Abraham Gomoti is 26 years old and is a messenger at the Community Junior Secondary School in Hebron. Since his father died 5 years ago Abraham and his mother have both been working and farming to support the five other children in the household. His mother is currently on sick leave. They used to farm their small field borrowing his uncles tractor until it was confiscated by NDB a few years ago. He did not have enough money to hire a tractor and so he decided to apply to the Agriculture Office for a grant for some donkeys. Over the last few years he has managed to acquire a donkey plough team, a new plough and an underground water storage tank to water his donkeys. As he has had little money to contribute he has been able to provide labour to pay his contribution. He still has his agriculture books from school and continues to study agriculture from books whenever possible. He and his cousin, who is a similar age, have decide to work together to plough some of fields. His cousin, who has taken over the farming of his family's land after the tractor was

confiscated, is keen that they pool their labour resources and share the capital costs of farming. For these young men they see this as the only way to make a start in serious farming. However, both must also support their families and both will continue to work full time in waged work while they are farming.

These cases reiterate the financial problems facing farmers and the harsher economic policies prevailing in both countries. There are fewer subsidies available except for small-scale farmers in Botswana where there are grants to help with the capital costs of farming. While some people are diversifying away from farming (see below) it is clear that others are determined to pursue farming as a livelihood, as illustrated in Case 7. However as with other case studies, non-farm livelihoods become essential to support farming through initial stages and in drought years. The need for appropriate micro-finance cannot be over stated in both contexts. What is also clear is that key policy or economic events, such as the confiscation of tractors by the NDB, act as critical junctures in farming dynamics, shifting the balances of capital and often destabilising these fragile livelihood strategies. Some households have the ability to cope with and absorb these changes but others remain vulnerable and levels of poverty and insecurity have undoubtedly increased.

Alternative Livelihood Pathways

In this last section we want to look at those who are not engaged on farming, or those who chose or are forced to follow different livelihood pathways. An interesting case is the different livelihood pathways followed by those who are living in Thlapeng where few households actively farm, but instead rely indirectly on others for their farming livelihoods. Cases 8 and 9 illustrate the two sides of the story and shed light on how this situation evolved.

Case 8: Mr Mokgalo from Thlapeng (South Africa)

Moses Mokgalo farms 128 ha in Thlapeng through share cropping arrangements (ditele) with local people. He only came to the village in 1982, following his brother who had come here in the 1960s. As they were not 'born and bred' here neither have direct access to land. Moses sells cattle to supplement his farming and to support his children. He says 'full time farmers don't have monthly incomes. If I am are short of diesel I sell cattle or goats'. In January he sells livestock like many other people at the start of the school year. Prices are always poor because so many people are selling livestock. This year he sold all his goat and sheep then and has closed his kraal, he just has cattle now, both here and with other family in Ramatlabama. Last year Mr Mokgalo was not able to plant all the land he has access to because of financial difficulties. He had taken out a loan and there are some disputes about his repayments. He has recently sold most of his livestock to repay the loan. He planted maize but lost most of the crop because of the poor rains. The previous year he managed to plant 217 ha to maize and sunflowers and harvested over 200 tons in total. He uses both organic and inorganic fertiliser on his fields depending on the results from the soil tests he regularly carries out. He employs two tractor drivers full time and when cultivating, and later harvesting, provides employment for 20-30 people for a two week period each time. He never fallows land intentionally, he says 'how can you rest land? I have the people who have lent me the land depending on me. I have eight families depending on me'.

Case 9: Ms Motopi from Tlhapeng (South Africa)

Anna Motopi is the head of a large household comprising her three daughters, one son, their children, and her sister. One of the daughters has found work in Mafikeng but otherwise they rely on her pension for their main income. She has just a few goats and sheep and no cattle. She has two fields in the village (20ha) and Mr Mokgalo (brother of Moses) ploughs them. Last year he did not plough her fields because of the poor rains. In the previous years they received a few bags depending on the harvest. He usually plants maize on the field, but even if he plants sunflowers they prefer him to give them maize instead. At one time her family did plough the fields themselves but since 1983 when the donkeys were killed they have not ploughed the fields. She is now a widow and has to support 8 grandchildren as well as her adult children. They have great difficulty making ends meet.

Tlhapeng is a good example of an area where past policies which have undermined small scale farming practices still have a residual effect on people's day-to-day lives. Opportunist farmers have settled in Tlhapeng providing an alternative or 'way out' of their dilemma at a time when their means of production (donkeys) were taken from them. Now however, many people in Tlhapeng are locked into this dependency scenario. They feel that here they are not part of the wider changes happening in the new South Africa and yet they do not seem to have the capabilities (social and human capitals) to break out of this situation. This settlement highlights the real lack of co-ordinated rural and agricultural policies in South Africa and their ineffectiveness at reaching the people in need. People here depend on their share farming agreements, yet they have little real control or power in these relationships. They rely on seasonal labour, pensions and remittances from poorly paid jobs. Such people are at the margins of the farming community yet changes in farming policy which affect the key active farmers in their settlement are central to their livelihoods. Changes in policy, as well as rainfall, can influence whose field is ploughed, what crops are grown, how much fertiliser is used and the likelihood of a good harvest. This in turn determines how many bags of grain these dependent households will receive in any one farming year.

Throughout this paper reference has been made to the various different livelihoods which people conduct in order to make a living. Many of these livelihoods are critical such as the role of pensions, off-farm work and remittances. But what does this tell us about agriculture policy and trends and overall livelihood strategies and levels of poverty? All the case studies have at some point detailed the different livelihoods that an individual and their household have followed. In some cases farming was the principal livelihood but was supported through sales of livestock, remittance payments or waged work. In other households, these support payments were the only means of cash income, as poorer households had few livestock and limited access to the means of farming. Other cases not detailed in this paper also show how diversification away from farming has taken place in settlements such as Hebron in Botswana. Here, the more educated households (usually retired teachers and business people) have applied for Financial Assistance Programme grants in order to set up small fruit or vegetable garden, or in one case for goats. These require knowledge about the grant system and the ability to fill in complex forms. These are forms for human capital which are weak in many small-scale farmers and rural dwellers. For the landless in Mathateng there are few opportunities for diversification and 'piece

work; remains one of the few options available to households without access to pension or remittances.

This section has investigated the different livelihoods of those living in the Molopo region of South Africa and the Barolong area of Botswana. Through comparison of case studies of farmers either side of the border this section has drawn out common themes and distinct differences in the ways in which policies are articulated on the ground, and the subsequent ways in which they affect day-to-day livelihoods. The section has drawn out themes of flexible adaptations and livelihood diversification in response to different environment, policy, and social situations. Examining farmer cropping strategies has shown how farmers alter practices in response to the variation in the environment as well as their capital assets. Soil fertility management practices are largely governed by access to financial capital, and to innovative use of organic material and cropping strategies. Important here was the social capital, the networks, relationships of trust and access to institutions, that allowed exchange of information and transfer of knowledge. Financial capital issues were also governed largely by external policy issues, such as Land Bank loan schemes in South Africa and the legacy of the NDB confiscation of tractors in Botswana. Finally, drawing these themes together the section looked at alternative livelihood pathways and the ways in which certain livelihoods in one settlement have been transformed by an event in the 1980s which has led to transfer of power relations: the landless are the powerful as they have the financial resources and physical capital to farm, and the those with land see no alternative but to share crop their land for the small income that this will bring. In conclusion then it is clear that non-farm and non-natural resource livelihoods have a central role in both abating poverty for many households but also for maintaining the viability of farming for even the more wealthy and larger scale commercial farmers.

Is there a life in farming in the Molopo and Barolong area?

To answer the question posed by the farmers themselves, where is the life in farming, is difficult. Clearly many farmers are struggling and in doing so are demonstrating the constraints and opportunities under which they live. The above section summarised the main adaptations to policy and environment that different farmers in different places and countries are making. Important are the different forms of capital assets available and these in turn can give us an insight into the sustainability of livelihoods in this region. There are few alternative livelihood pathways open to people in these rural areas, particularly in South Africa. This demonstrates the ineffectiveness and lack of co-ordination of rural and agriculture policy, and its inability to reach people on the ground. Despite these difficulties in both countries young people are wanting to go into farming. In Logageng the young want to set up new farms in Mosita and establish a renewed and strong farming community. In Botswana, in Hebron, the case of the cousins starting to pool their labour resources together to start farming shows encouraging signs that people are still willing to make a life in farming.

Clearly though policies do need to carry out their promises of empowering local people and supporting rural livelihoods. They need to enhance security through improved practices, realistic diversification, and appropriate safety nets. At the start of this paper we set out to identify the elements of policies which both constrain and

enable sustainable rural livelihoods. To conclude therefore the following points highlight these 'good and 'bad' policy outcomes:

- **Micro finance:** An effective, small-scale loan system tailored to the needs of rural farmers is lacking in both Botswana and South Africa. Such a system is crucial if these farmers are expected to operate within the regional and national farming economies. Programmes such as ALDEP (Arable Lands Development Programme) in Botswana provide an 85% subsidy on inputs such as draught power, ploughs and water tanks. ALDEP has made a significant difference at the local level (e.g. Case studies 2&7), yet does not seem to be reaching all small-scale farmers suggesting extension and dissemination is weak in many areas. In South Africa the vulnerability of resource-poor farmers is recognised at policy level²¹ but in reality very little had changed on the ground.
- **Meso finance:** Schemes such as the Financial Assistance Programme in Botswana have had obvious successes in places such as Hebron. Such a scheme should be promoted if realistic markets exist for products, and if it can be run effectively. This is one of the few ways in which diversification at a meso scale can take place.
- **Extension services:** Efficient extension services are rare in southern Africa suggesting the experiences at Mokatoko may be unique (e.g. Case study 2). However, if relationships of trust can be developed extension officers can have the capacity to make a real difference on the ground in these rural communities. In both South Africa and Botswana extension services are highlighted at policy level as important, but currently ineffective, institutions within farming communities, yet there is no evidence that these services are being overhauled.
- **Alternative pathways:** If policies in both countries are moving towards more competitive systems and eventual removal of farming subsidies, this should be planned with the notion of scale in mind. Integrating commercial and communal farming into one system is laudable, but recognition must be given to the different needs of small scale farmers. These should also make provision for alternative livelihood scenarios which fit in with local economies and aspirations. Employment is a key issue in both countries.

In this paper we have made tentative conclusions about the best practice scenarios of policies in each country and the ways in which they contribute, or not, to the sustainable livelihoods of the rural populations. Only with such multi-scale analysis of social, environmental and policy implications can best practice scenarios be assessed, and guidelines be promoted which support strategies that will enhance sustainable livelihoods and reduce poverty.

Acknowledgements

We are grateful to James Drummond (University of North West, South Africa) and his masters students Herman Matonkomane, Neo Mogibile, and Hans Kekana for advice and help in the field. We would also like to thank the staff at BF-OSSCA in Good Hope for discussions and logistical help, and Christina Gwebu for translation in

²¹ Republic of South Africa (1995) *White Paper on Agriculture*. Department of Agriculture, South Africa, p7.

DRAFT DOCUMENT: These are preliminary analyses and findings and are subject to change. They should not be cited as definitive outputs from the PANRUSA project - please seek permission first from the authors.

Botswana. Sincere thanks to all those who participated in the research either side of the Molopo River.

This research was funded by the Department for International Development of the United Kingdom. However, the findings, interpretations and conclusions expressed in this paper are entirely those of the authors and should not be attributed to the Department for International Development, which does not guarantee their accuracy and can accept no responsibility for any consequences of their use.