

**THE SIGNIFICANCE OF THE SAFETY-NET ROLE OF NTFPS
IN RURAL LIVELIHOODS, SOUTH AFRICA**

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ABSTRACT

This study was conducted in two rural villages in South Africa with the purpose of investigating the safety-net role of non-timber forest products (NTFPs). The use of NTFPs as a safety-net is reported as a common feature of rural livelihoods however empirical data supporting this function is limited. Therefore, policy makers and land-use planners under-appreciate the probable role and consequent value of the safety-net function. The findings show that poor, rural households are vulnerable to a range of risks. Over a two year period 100 % of households reported experiencing crises including unexpected idiosyncratic risks (e.g. illness, retrenchment, crop failure and death) as well as expected expenses and periods of vulnerability (e.g. the payment of school fees and seasonal crop shortfalls). Households are prone to these risks irrespective of wealth or gender of the de jure household head. To secure their livelihoods households in both villages rely on a variety of livelihood strategies including waged labour (53 %), self-employment (30 %), government grants (60 %), arable agriculture (56 %), animal husbandry (64 %) and the use (100 %) and sale (22 %) of NTFPs. In terms of the proportion of households involved, the findings suggest land-based strategies make an important contribution. Formal employment and old-age pensions distinguish wealthy households from poor and allow for investments in assets and saving schemes (62 %). In response to the risks experienced households employed a variety of coping strategies. Generally the most commonly used strategies were kinship (85 %), reduced household spending (72 %), changes to food consumption and saving (72 %) and relying on NTFPs (70 %). Kinship and NTFPs show no differences for wealth or gender of the de jure household head. The remaining strategies are influenced by wealth. The use of NTFPs as a safety-net manifested predominantly through the increased use of products, then the substitution of commercial goods by NTFPs and lastly through the sale. Of those using NTFPs as a rural

safety-net 41.4 % used of wild foods, 40 % used medicinal plants, 25.7 % substituted paraffin with fuelwood, 10 % sold fuelwood and 8.6 % sold other products.

Key words: livelihoods, diversity, NTFP use and sale, vulnerability, risk, coping, safety-nets

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DEDICATION

At the going down of the sun and in the morning

We shall remember them.

(For the Fallen, Lawrence Binyon)

Dedicated to the memory of Nick Paumgarten, John Mackenzie, Richard Willis and Guy Fletcher

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The livelihoods of rural households throughout the developing world are inherently fragile, exposed to a range of shocks, trends and seasonal fluctuations over which households have limited or no control (DFID, 1999). In seeking sustainable livelihood outcomes households may draw from their asset base, categorised by DFID (1999) to include human, social, natural, physical and financial capital. These assets seldom contribute positively in isolation and therefore where possible households invest in a range of these. According to Shackleton *et al.* (2000) access to assets (including the combination) determines the robustness of livelihoods. Poor households are particularly constrained and therefore how they manage and mix their available assets is fundamental to survival (Block & Webb, 2001). Access to these capital groups informs the livelihood strategies households pursue in their attempts to achieve and maintain a sustainable livelihood. The livelihoods of the rural poor can be compared to ‘snakes and ladders’ whereby the snakes represent traps that contribute towards poverty and the ladders, resources (including natural resources) and relationships that improve or worsen a household’s degree of poverty (Room, 2000). Research at a global scale has identified that rural households adopt a range of livelihood strategies, draw from a diversity of income sources and invest in an assortment of assets not only in an endeavour to achieve their livelihood outcomes but also to provide a buffer to risk (Ellis, 2000; Block & Webb, 2001; Shackleton *et al.*, 2001; Niehof, 2004; Bryceson & Fonseca, 2006). Livelihood diversification can be disaggregated into diversifying in response to new opportunities or diversifying as an ex-post risk coping strategy (Barrett *et al.*, 2001; Dekker, 2004). The range of livelihood strategies includes both off-farm and land-based livelihood strategies, including the use of non-timber forest products (NTFPs) both for household consumption and for sale. The contribution made by these NTFPs to household income has been found, in certain cases, to be considerable and comparable to other income sources (Dovie, 2001). In recent years with an increasing focus on poverty alleviation, NTFPs have been considered for their role in minimising the impact of crises on rural households and as a possible means to assist households to move out of poverty (Angelsen & Wunder, 2003; Belcher *et al.*, 2005). According to Wunder (2001) there is increasing evidence of natural resources serving as “the poor man’s overcoat” providing rural households with natural insurance through both consumption- and income-smoothing. The need for empirical data is however still necessary (Shackleton & Shackleton, 2004a; Belcher *et al.*, 2005).

This study draws attention to the contribution made by NTFPs to rural households (together with the range of other livelihood strategies) and goes further to explore the potential safety-net role of NTFPs within the context of the vulnerable nature of rural livelihoods. With goals to significantly reduce global poverty within the next decade, there is an increasing focus on the potential role of forests and NTFPs in economic development and poverty reduction strategies (Angelsen & Wunder, 2003; Belcher *et al.*, 2005). This study considers the nature of poverty within rural households as well as the range of risks, shocks and trends to which rural households are vulnerable. Within this context, the suite of potential insurance strategies

available to rural households is considered with a focus on the potential safety-net role of NTFPs and how this role manifests in the face of different crises. Some of the issues surrounding the use of NTFPs as a rural safety-net are considered and attempts are made to point out the potential advantages and disadvantages of this function within the broader context of NTFP use, the range of potential coping strategies, global poverty alleviation and the degree and nature of the risks to which rural households are vulnerable. The policy implications of the rural safety-net role of NTFPs are discussed as well as issues that require further investigation.

1.2 Sustainable rural livelihoods

The livelihoods of poor, rural communities are often insecure and vulnerable to adversity, consequently people adopt a range of livelihood strategies including formal and informal employment, pensions, migrant remittances, the use of natural resources (for subsistence and sale), arable production, animal husbandry and claiming through social networks (Shackleton *et al.*, 2001). Through these multiple strategies people aim to secure their livelihoods and achieve multiple and desired livelihood outcomes. A sustainable livelihood is one that can recover from shocks and maintain and improve its assets without impacting unsustainably on the available natural resource base (DFID, 1999). People have access to combinations of assets: how they use these and what attempts they make to acquire further assets plays a fundamental role in their livelihood outcomes. In the case of communities whose access to certain assets is limited, how they combine and protect their existing assets is often crucial in ensuring survival (DFID, 1999). A livelihood strategy comprises “capabilities, assets and activities required for a means of living” (DFID, 1999). Within the livelihoods approach these strategies and assets cannot be considered in isolation but rather as a suite of activities/assets that together contribute to reducing a household’s vulnerability. Although diversification can help households cope with adversity, it is possible it can trap the poor in poverty (Ellis, 1999). The use of natural resources (and NTFPs in particular) as a livelihood strategy has received increasing recognition although further investigation is warranted, particularly with respect to their daily role in sustaining rural livelihoods compared to their role as a natural insurance strategy or rural safety-net (Shackleton & Shackleton, 2004a).

1.3 NTFPs and their role in rural livelihoods

Non-timber forest products (NTFPs) provide a range of products which, when incorporated into the livelihood strategies of rural people aid in reducing their vulnerability to risks (Neumann & Hirsch, 2000). These products are used for food, energy, shelter, medicines, tools and fibre. They are used to meet basic needs, are sold in local, regional and national markets to generate cash and, serve an important gap filling or safety-net function (Chopra, 1997; Khare *et al.*, 2000; Shackleton *et al.*, 2002; Angelsen & Wunder, 2003). Despite the literature available on various aspects of NTFPs there is no harmonised definition for the term. Various interchangeable terms are used including “minor forest products” and “non-wood forest products”. What constitutes an NTFP is often determined by the research objectives and the stakeholders involved and has recently been defined more by what it isn’t than what it is (Belcher, 2003). For the

purposes of this review, the term NTFP will be used, referring to goods of biological origin including woody raw materials (e.g. fuelwood, construction timber, and wooden tools/carvings), other than large-scale commercialised timber, derived from forests, wooded land and trees outside forests.

Over the last decade research has elucidated the value of NTFPs both to rural livelihoods and as an alternative land-use option and, has found the value of NTFPs to be considerable (Shackleton *et al.*, 2001). In South Africa the gross annual direct-use values averaged across households range from R 1000 to R 7000 (\$ 159 to \$ 1111)¹ (Shackleton & Shackleton, 2004b) and case studies on the mean gross value of woodland resources in communal areas indicate an average of approximately R 950 (\$ 151) per hectare (Shackleton & Mander, 2000). The gross annual direct-use value (excluding trade) of NTFPs in three villages in the Eastern Cape province of South Africa was between R 2000 and R 5500 (\$ 318 and \$ 873) per household (Shackleton *et al.*, 2002). Research on the direct-use values of NTFPs harvested from communal savannas in Bushbuckridge, South Africa found the total annual value per hectare was R 810 (\$ 129), whilst the total per household was as high as R 6630 (\$ 1052): R 2218 (\$ 352) for home consumption and R 4412 (\$ 700) traded. The values of NTFPs (per household per year) included fuelwood (R 465/\$ 74), construction wood (R 218/\$ 35) and, wild edible fruits and herbs (R 525/\$ 83 and R 2625/\$ 417 respectively). Other NTFPs valued included, thatch grass, carving timber, medicinal plants, reeds for construction and so forth (Shackleton & Shackleton, 2000).

Research over two years, in communal areas in Zimbabwe found environmental income constituted 35.4 % of the average total income per person for 1993-94 and, 36.9 % for 1996-97 (Cavendish, 2000). This includes income from gold panning, however even if this is excluded the environmental income is considerable. Comparing values across countries becomes complicated in terms of how the value was derived, how many resources were considered and whether the value is gross or net however, despite these complications, the values still indicate an important contribution made by NTFPs to rural households. Considering the percentage of the total income gives a better indication of the contribution made by NTFPs relative to other livelihood strategies. Wollenberg and Septiani Nawir (1998) considered the value of NTFPs across various countries and found in Nicaragua the average annual net value of NTFPs per person was \$ 411 whilst the contribution made to individual households was approximately 40 % of the total annual income. In Sri Lanka, the annual net value per family was between \$ 32 and \$ 820 with 63 % of the total income coming from forest products. Dovie (2001) considered the income share from NTFPs (for a rural South African community) versus shares from livestock, formal cash income, crop production and informal income and found NTFPs contributed 19.3 %; more than crop production (15.5 %) and informal

¹ The Rand values were converted to US dollars at the prevailing exchange rate (US\$1=R6.3). Although this may differ from the rate used during the data collection, it does not alter the fundamental argument that NTFPs contribute significantly to total household income.

income (15.6 %) but less than livestock (22.7 %) and formal income from jobs and government grants (26.9 %)

NTFPs have often been undervalued because studies have failed to examine the range utilised by communities and only considered them in terms of their direct-use values, not their existence and option values, their role in establishing social ties, local exchanges for goods and services, sacred areas, and ecological services (Shackleton *et al.*, 2001). In addition to these is the value associated with the potential natural insurance role offered by NTFPs. According to Crook and Clapp (1998, p131), “Activities that deplete biodiversity for short-term gain appear economically rational because many of the values of biodiversity are not recognised and accounted for in decision-making.” Although the literature highlights the important role of NTFPs in rural livelihoods, this information is yet to be effectively translated into policy.

1.3.1 Factors affecting NTFP use and how these may relate to rural safety-nets

There are few rural households that do not use NTFPs as part of their livelihood strategies, but the extent of use varies (Shackleton *et al.*, 2001). NTFPs are perceived to be attractive to the rural poor because in many cases, whilst collecting NTFPs is labour-intensive it requires little capital investment or skills (Angelsen & Wunder, 2003). This perception of NTFPs as a “free” resource extends to their perceived strength as a rural safety-net however there are factors that potentially govern the use of NTFPs as well as the opportunity costs involved in their collection. Whilst NTFPs can be easily obtainable, factors such as land tenure, resource availability and accessibility, institutional dynamics, available alternatives and, population dynamics (age, wealth and gender) affect consumption (Kepe, 2002; Shackleton & Shackleton, 2004b). When considering the factors that potentially govern regular NTFP use, the perception that the strength of NTFPs as a rural safety-net lies in their easy accessibility may be flawed. This dynamic needs further investigation in order to determine the real strength of the role played by NTFPs as a rural safety-net and how access to this safety-net compares to access to other forms of insurance such as kinship. McSweeney (2003) draws attention to how household attributes impact on the safety-net function of NTFPs and whilst the environment itself can affect the resource base, Kepe (2002) argues a person’s social differentiation determines their power within the community and affects their access to and use of natural resources. With respect to the safety-net function of NTFPs, what, if anything, controls this use and how this use manifests itself, namely through increased use, use of different resources or commercialisation, requires further investigation (Shackleton & Shackleton, 2004a).

1.3.1.1 Gender

In many rural areas gender is an aspect of social differentiation, with women (and female-headed households) generally being poorer. NTFP use is often determined by gender with some NTFPs labelled as ‘women’s goods’ whilst others are used and controlled by men. According to these socially constructed roles, women generally dominate NTFP use with men involved more in off-farm activities or agriculture. Even within general NTFP use roles differ, for example women collect NTFPs for consumption and trade

in products such as reed mats and hand-brushes, whilst men collect wood for the construction of livestock enclosures and trade in carvings and poles (Shackleton & Shackleton, 2004b). The roles are usually unequal with women having less power and ownership over resources. Household interviews in the Bushbuckridge region of South Africa found that women collected NTFPs in 73 % of the cases whilst men collected in 27 % (Dovie, 2001). In India 98 % of women versus 91 % of men collect NTFPs (Khare *et al.*, 2000). To some extent these gender differences result from the physical nature of the work, however in many cases they are the result of age-old patterns of use.

Women benefit from many NTFP-based activities (including trade) because they are not full-time and can be home-based allowing women to continue with household responsibilities (Shackleton & Shackleton, 2004b). Trade often provides a safety-net during times of need but household responsibilities prevent it from becoming a full-time occupation. For female-headed households where the woman is unable to leave her family in pursuit of alternative livelihood strategies, NTFPs are crucial for livelihood sustainability. As women are largely responsible for the collection of NTFPs they often form groups to assist each other and to provide safety. This aids in establishing social ties, which may in turn provide a safety-net during misfortune.

1.3.1.2 Wealth

Findings from research in Zimbabwe and elsewhere highlight that although NTFPs contribute a large proportion to rural households' income, in terms of quantity; wealthy households tend to consume more (Cavendish, 2000; Wunder, 2001; Kepe, 2002). However, findings from India show that as household wealth increased and allowed for purchasing alternatives, the amount of natural resources used decreased (Chopra, 1997) whereas in South Africa Shackleton and Shackleton (2006) and Cocks *et al.* (in press) found no wealth differences in terms of quantity consumed. With respect to the trade in NTFPs, whilst many poor households may sell NTFPs during times of need, the wealthier households often dominate the commercialisation of certain NTFPs, benefiting from having access to capital, transport and markets (Kepe, 2002; Angelsen & Wunder, 2003). Wealthier households often have more social power enabling them to influence local restrictions to resource use and more available cash so that where external restrictions such as permits are in place these households can afford the associated costs (Kepe, 2002). With respect to forests and poverty reduction, Angelsen and Wunder (2003) argue that interventions would be more successful if targeted at the moderately poor rather than the poorest of the poor, as the moderately poor are better positioned to respond positively. The poor would benefit from a trickle-down effect.

1.3.1.3 Age

Age affects the type and amount of resources utilised. NTFPs and related activities have few entry barriers and together with their nutritional benefits, can contribute significantly to the livelihoods of the elderly, households with an elderly head, or children who opportunistically collect wild edible fruits, insects and small mammals, while travelling to school, herding livestock and so forth (Cavendish, 2000; Shackleton & Shackleton, 2004b). Adults often view certain resources as 'children's food' and will rarely consume them.

Age also affects the household's labour supply, which in turn affects natural resource use; households with control over labour often have greater access to natural resources. Related to this is the household's dependency ratio – whilst household size may suggest enough labour, this is not relevant if the members are either too young or too old to make a beneficial contribution. Kepe (2002) identified labour as a means for exchange whereby large households provide labour for smaller households, in return for a share of the resources collected. Cavendish (2000) draws attention to the relationship between the household development cycle and NTFP utilisation: for example, a young household in the process of establishing a home and a family has a greater need for construction materials than more established households; a more developed household which has accumulated assets such as livestock, has a greater need for fencing materials whilst, a household with elderly household members is constrained by the shortage of labour.

1.3.1.4 *Location*

A village's location affects resource use. There is a difference between 'forest dependence' and using accessible natural resources that offer a cheap alternative (Angelsen & Wunder, 2003). Villages closer to natural forests have easier access to the resources. Distance from an urban node means high opportunity costs associated with accessing goods and services whilst villages closer to urban areas are able to substitute natural resources with goods and services available for purchase. Better access to markets allows for increased income from the sale of natural resources. With respect to forest product commercialisation as a safety-net, proximity to markets as well as access to resources is important (McSweeney, 2003). In terms of NTFPs used as safety-nets location determines access to alternative forms of insurance, to government and NGO assistance and, may determine the susceptibility of villages to environmental risks such as drought or flooding. Kepe (2002) refers to the spatial and temporal variability of the environment and how these dynamics can influence natural resource availability. Physical factors (e.g. natural disturbances such as fire) and human action (e.g. burning) can influence the variability of natural resources. There is potential for further research into whether or not rural households actively alter their surrounding environment by encouraging species that are useful for daily provisioning and as a safety-net. That is, do rural households self-insure in advance or is the use of NTFPs as a safety-net only in response to shocks (Wong & Godoy, 2003)?

1.3.1.5 *Rules of access and tenure*

Access to NTFPs is governed by a myriad of rules and tenure arrangements. Well-managed systems of access to basic subsistence resources should be essential both with respect to national safety-nets and environmental sustainability (Scherr, 2000). There is the risk that elite groups within a community, or external parties who wish to exploit resources for personal gain, may prevent the poor from accessing resources and, powerful, wealthy parties may redefine the existing rules of access in their favour especially where existing tenure arrangements are informal (Angelsen & Wunder, 2003). Together with better control over the marketing chain, wealthier households have an advantage over poorer households in using NTFPs as a pathway out of poverty.

Conflict can arise when different resource users utilise common property. For example, livestock owners along the Wild Coast in South Africa burn grasses to improve grazing however, this destroys wild edible herbs and weaving/thatching grasses that contribute to other households, especially ones with a female-head (Kepe, 2002). In Madagascar fire promotes the growth of wild yams however excessive ecosystem modification risks the long-term availability of this resource as well as other goods and services offered by the forest (Ackermann, 2003). Conflict or subversive behaviour can also arise when communities bordering protected/restricted areas are denied access to resources within these areas. Having access to and control over resources is important however not useful unless people are able to transform those rights into environmental goods and services. Therefore, the institutions in place can determine the value, which people derive from natural resources (Adger, 1999). This could potentially affect the value people derive from NTFPs used as a safety-net and needs further investigation.

1.4 The dimensions of poverty

According to Adger (1999) poverty is directly associated with access to resources (or lack there of), which in turn affects both baseline vulnerability and households' ability to cope. Various 'types' of poverty have been identified, for example, whilst Reardon and Vosti (1995) refer to 'asset poverty' (i.e. a poor asset base restricts livelihood strategies) and 'welfare poverty' (i.e. absolute restrictions on household consumption), Sen (2003) differentiates between social poverty (e.g. inequality), geographic poverty (e.g. households in an area with low 'geographic capital'), transient poverty (i.e. households can recover reasonably quickly by turning to their asset base) and chronic poverty. Poverty is multidimensional, complex and affected by numerous variables and whilst some rural households manage to overcome poverty, its general nature in rural areas is chronic. Poverty is not purely a function of low income but has non-income dimensions, which past assessments have often ignored but which may, with respect to safety-nets, be important, for example a household's asset base (Angelsen & Wunder, 2003; Sen, 2003). As such poverty (as determined by social status and income) and resource dependency are key indicators of vulnerability at the individual level whilst collective level vulnerability is gauged by inequality and institutional adaptation (Adger, 1999).

Within communities there are households which have amassed different asset bases and are therefore more or less vulnerable to risk. Vulnerable households, those more reliant on safety-nets, are younger households which have not yet assembled an asset base to turn to during difficult time, female-headed households and, households with an elderly or infirm head. Households able to move out of poverty are those who accumulate assets faster, diversify their livelihood strategies and are less dependent on land-based activities (Sen, 2003, Skoufias, 2003). Factors affecting the descent into poverty include asset loss; adverse market conditions; ill health; the death of a breadwinner; retrenchment; natural disasters and, expenditure on social ceremonies. Whether this descent is temporary or permanent depends on the degree of the shock, its duration and the household's response. Larger, aggregate shocks often result in increasing poverty with long-term consequences particularly when a households' ability to adequately feed or educate its children is limited thereby affecting the households' future human capital and its resilience to future shocks (Skoufias, 2003). Research is needed into the ability of rural safety-nets to deal with different types of shock and

whether there are situations where they fail to insure households. Where they do adequately insure households, they need to be considered at higher levels of policy debate. Angelsen and Wunder (2003) differentiate between the terms “poverty reduction”, “poverty prevention” and “poverty alleviation” whereby, “poverty reduction” implies people become better off over time, “poverty prevention” refers to maintaining a minimum standard of living and ensuring survival and “poverty alleviation” encompasses both terms. Rural safety-nets can be considered as playing a vital role in “poverty prevention” although they may make no or less of a contribution to “poverty reduction”.

Wood (2003) refers to the ‘Faustian Bargain’ whereby a household’s preparation for the future is constrained by the need to secure livelihoods in the present. Poor households have less control over events that impact on their livelihoods and are forced to focus on daily survival and risk-avoidance whilst discounting the future. In a study of household response to the covariate shock of famine and HIV/AIDS in Malawi, Bryceson and Fonseca (2006) noted that households operate at increasingly shorter time horizons, with an ever-increasing focus on day-to-day existence. This “hand-to-mouth” existence is often a result of poor government policies that entrench conditions that aggravate poverty and produce barriers to upward movement. According to Sen (2003) there is a menu for poverty reduction, which focuses on food and agricultural production, non-farm sector development, credit access, and human development in terms of health and education. Governments in developing countries are often unable to provide this “menu” emphasising the importance of recognising the characteristics of rural livelihoods so that development policies can be geared to complement households’ own efforts to reduce poverty and vulnerability (Kepe, 2002). This includes the use and sale of NTFPs both as a livelihood and coping strategy. The contribution that NTFPs and safety-nets make to rural livelihoods needs to be investigated so that governments do not discount it in their poverty alleviation policies or their assessments on the value of communal areas, natural forests and woodlands. There is currently a disparity between the expected role of forests and NTFPS in economic development and poverty reduction strategies and what is happening in practice.

1.5 Risk and vulnerability

There is a range of risks, shocks and trends to which rural households are vulnerable and their response to different degrees and types of shock may vary. Sen (2003) classifies factors that contribute to a household’s vulnerability into three groups: crisis-, lifecycle- and structural factors. Crisis factors include natural disasters, health hazards and isolated idiosyncratic events such as ceremonies. Lifecycle factors include an increase in the dependency ratio. Structural factors include deteriorating conditions for employment and poor access to credit. Households indicated that crisis factors constituted 38 %, lifestyle factors 35 % and structural factors 27 % of the total factors that affect vulnerability. The Sustainable Livelihoods Framework subdivides the vulnerability context into three broad categories, namely shocks, trends and seasonality. Shocks include human, crop and livestock health shocks as well as economic shocks. These are generally unpredictable in nature, can destroy assets or compel people to precipitately dispose of their assets as a means to cope. Trends are more predictable and do not necessarily impact negatively on the household. These include population, resource and technological trends as well as trends in governance and

national/international economic trends. Seasonality is described by DFID (1999) as one of the greatest enduring sources of hardship for the poor in developing countries and is taken to include the seasonality of prices, production, and health as well as employment opportunities. Wood (2003) differentiates between idiosyncratic risk such as illness, old age, crop failure, and retrenchment and, chronic risk. Chronic risk is induced by factors such as inequality, exploitation and power imbalances. Rural households have a degree of control over idiosyncratic risk through the use of safety-nets however, if addressing broader scale poverty is required then the chronic risks need to be addressed. This has implications for role of rural safety-nets, the real strength of this function and, for policy development in light of increasing goals to alleviate global poverty.

There has been debate regarding the poverty-forests link and the potential for forests to contribute towards poverty alleviation. According to Wunder (2001) although natural forests serve a function as safety-nets, there are challenges in raising producer benefits sufficiently for forests to make a significant contribution to poverty alleviation. Angelsen and Wunder (2003) draw attention to the argument that forests and poverty are linked in a downward spiral whereby poverty causes forest loss and forest loss causes poverty. Wunder (2001) states there are few win-win synergies between natural forests and poverty reduction on a national scale, which negatively, implies there is little incentive to stop forest conversion. Neumann and Hirsch (2000) argue that the safety-net function of NTFPs is important however, as a general response to poverty reduction NTFPs have failed to prove successful. Important to the debate on safety-nets is the issue that whilst forests may help sustain rural livelihoods, there may be better opportunities for poverty reduction in the conversion of forests to other land-uses. Forcing people into a situation where they are required to maintain natural forests may, without the correct benefits, be more of a poverty trap than a safety-net (Angelsen & Wunder, 2003). Poverty traps are activities that provide short-term security but constrain households in the long-term (Wood, 2003). A household's degree of vulnerability and the forest products used as a safety-net are determined by the nature, probability and intensity of the shock as well as the household's ability to cope with such shocks in terms of safety-nets, alternative income sources and insurance mechanisms (Angelsen & Wunder, 2003; McSweeney, 2003). There are alternatives to complete forest conversion that offer a potential path out of poverty and still provide access to resources that have a safety-net function. Generally the literature on natural resources and poverty reduction focuses more on how natural resources can be utilized to reduce poverty at a wider scale (e.g. through commercialisation of products or the payment for ecological services). However, there is a gap in the literature with respect to the real value and strength of the safety-net function of NTFPs.

1.6 The definition and role of rural safety-nets

Currently there is no formal definition of what constitutes a rural safety-net. This concept generally refers to assets that households or individuals may utilise, or utilise more heavily, in times of crisis, including climatic, political, economic or social crises (Shackleton & Shackleton, 2004a). The use of rural safety-nets is a coping strategy. Coping strategies are characterised by a household's resilience to shocks and ability to return to a former livelihood status by relying on a diversity of incomes, food sources, accumulated skills

and kinship networks (De Waal & Whiteside, 2003). Wood (2003) explains the livelihoods of the rural poor are continuously moving between troughs and peaks of security whereby households are involved in improving their livelihood outcomes or coping with vulnerability. Rural safety-nets could be viewed as the link between the troughs and peaks; that is, they seldom offer a long-term solution to insecurity but they are essential in helping households mitigate the troughs. People do not turn exclusively to natural resources but rely, to varying degrees, on the range of assets available to them. For example, some households may rely entirely on social assets whilst others turn to physical assets and so forth. In an assessment of the contribution of forest product commercialisation to households in Eastern Honduras during adverse times, McSweeney (2003) found that kinship and soliciting loans from family/friends was the primary form of insurance and that only some households sold forest products for the necessary cash. There are various different forms of insurance and coping strategies including the redistribution of labour and reallocation of dependents, gifts/loans, remittances, credit savings, the sale of assets (including livestock), out-migrations, waged labour, kinship and community-support networks, agricultural diversification, adjustments to household spending and food consumption, a reliance on credit groups and savings and, increased forest extraction for consumption and trade. These have been identified by various commentators in response to a variety of shocks as well as expected expenses, including environmental, human health and economic shocks/expenses (Maxwell *et al.*, 1999; Block & Webb, 2001; Mock *et al.*, 2003; Wong & Godoy, 2003; Dekker, 2004; De Merode *et al.*, 2004; Heemskerk *et al.*, 2004; Bryceson & Fonseca, 2006). However whilst these informal forms of insurance may help in cushioning against small and medium shocks, their ability to reduce vulnerability to large, covariant shocks is questionable and they may constitute more of a poverty trap than a safety-net. For example, households that sell their productive assets during adverse times may never sufficiently recover to replenish those assets and therefore get caught in a downward spiral of poverty (Skoufias, 2003; Wong & Godoy, 2003).

This study focuses on the role of NTFPs as a rural safety-net and the need for further investigation into the strength of this function however there is a degree of complexity involved in this assessment. NTFPs contribute towards sustaining rural livelihoods and reducing vulnerability not only during exceptional circumstances but also on a daily basis (Wunder, 2001). This makes the boundary between NTFPs used for direct household provisioning and NTFPs used as a safety-net indistinct. What potentially complicates this further is certain livelihood activities (e.g. the sale of NTFPs) may originate as a response to misfortune, but become a permanent strategy. Shackleton and Shackleton (2004a) refer to the “daily-” versus the “emergency-” net to try and distinguish between general NTFP use and those used as a safety-net. They suggest everyday use of NTFPs is in itself a safety-net in that it is a cost saving to households with a low cash income. It allows for money to be saved and spent on other livelihood strategies, which may in turn contribute to the household’s sustainability and livelihood security.

Additional complexities include that safety-nets are not always used strictly to help households cope during unexpected shocks but also to tide them over more predictable periods of vulnerability. Households may also turn to NTFPs as a safety-net in response to general trends such as inflation. This response is likely to be a more permanent shift unless the trend reverses or the household compensates in another manner in the

long-term. Angelsen and Wunder (2003) differentiate between a 'gap filling' and a 'safety-net' function. People can prepare for more predictable shortfalls by collecting NTFPs to contribute towards food security or household income: this constitutes 'gap filling'. For example, Kepe (2002) found women along the Wild Coast in South Africa plant, dry and store edible herbs to ensure continuous availability throughout the year. For unpredictable misfortunes such as illness, death or natural disasters NTFPs provide a 'safety-net' in terms of quick, easy access to goods for household consumption or sale. These 'gap filling' and 'safety-net' functions are hard to value. They cannot be valued purely in terms of the direct-use value of the NTFPs used because to households that depend on this function, the NTFPs may make the difference between succumbing to the shock and survival (Angelsen & Wunder, 2003). Unless governments provide alternatives, the safety-net function may support arguments of maintaining forests and woodlands for their contribution in sustaining rural livelihoods. Despite increased awareness of the potential safety-net role of natural resources, research is needed on what motivations and circumstances compel households to turn to natural resources to mitigate risk or overcome misfortune (McSweeney, 2003). The rural safety-net function of NTFPs may manifest in various ways, however what drives this manifestation is not clearly understood. Whilst the nature of the shock may determine the response, other factors may also play a determining role, as in the case of more generalised NTFP use. Despite the assumption of the rural safety-net function being an aggregate trait, McSweeney (2003) suggests it is affected by factors such as accessibility, household wealth, human capital, market opportunities and institutional controls.

The commercialisation of NTFPs has gained recognition as an important livelihood strategy and for its potential role in the conservation of NTFPs although Belcher *et al.* (2005) draw attention to the growing literature questioning the role of NTFP commercialisation in poverty alleviation plans. With respect to rural safety-nets, this commercialisation is a potential recourse for households experiencing misfortune and can be considered as a manifestation of the safety-net function (McSweeney, 2003; Shackleton & Shackleton, 2004a). Whilst some households in rural areas are involved in the permanent trade of NTFPs, most sell on an ad hoc basis to generate cash during adverse times (Angelsen & Wunder, 2003; Shackleton & Shackleton, 2004a). Households that commercialise NTFPs as a safety-net utilise a range of products in response to changing resource availability, market demands and alternative income opportunities (Angelsen & Wunder, 2003). In Eastern Honduras McSweeney (2003) found that over a two-year period, households most likely to sell forest products were those who had either experienced a poor harvest or, whose members had been ill/injured for a lengthy period of time. The actual members affected and the length of time they were unable to contribute to the households' livelihood strategies also determined the safety-net. When adult members were affected and as such the labour source, NTFPs were generally not relied on as a safety-net, instead, kinship was the primary form of insurance. When a child was ill or injured, NTFPs were relied on because adult members were available to provide labour. When a household member died, social ties were again the primary form of insurance, as labour was reduced, not only through the death of a member but also because other members had to assume extra duties around the household and went through a period of mourning (McSweeney, 2003). The sale of forest products does contribute towards reducing vulnerability but households may choose from a range of safety-nets depending on circumstances (McSweeney, 2003).

Other manifestations of the rural safety-net function of NTFPs include the increased use of certain products or the use of products not usually used in daily household provisioning. De Merode *et al.* (2004) identified that wild foods make a significant contribution to the livelihoods of rural households in the eastern Democratic Republic of Congo and that consumption levels vary seasonally with bushmeat consumption increasing by 75 % during the ‘hungry season’. Households substitute cultivated or bought foods with wild alternatives to increase household food security or, sell cultivated foods and consume the cheaper, easily obtainable wild foods (Fleuret, 1979; Ackermann, 2003; De Merode *et al.*, 2004). The dependence on natural resources, in response to seasonal shortfalls, decreases once agricultural produce is once again available. Complexities involved in investigating and measuring these other manifestations include that households may not rely on them on a daily basis and therefore may not be able to give accurate reports on the quantities and species used. Accurately reporting this would involve being present in a community during times when different households experience adversity. Furthermore, certain periods of vulnerability or the use of NTFPs in response to vulnerability may last for several months before the household is able to recover; in such cases it may not fall within the scope of the study to monitor responses over a lengthy period of time. These complexities contribute towards the lack of empirical data on the real strength of the rural safety-net function of NTFPs.

Bearing in mind that rural safety-nets are not well defined and that few empirical studies have quantified the safety-net function in terms of the prevalence of use or the value of the insurance function to rural households, there is the need to assign a generally applicable definition and value to this function. The value of the goods and services provided by NTFPs (including the safety-net function) has generally not been captured in regional and national statistics (Shackleton *et al.*, 2001). The policy implications of this are considerable as rural areas continue to be viewed as unproductive and rural households are seen to be largely dependent on off-farm sources of income. Kepe (2002) emphasises the importance of recognising the characteristics of rural livelihoods so that development policies can be geared to complement households’ own efforts to reduce poverty and vulnerability. Government responses need to be designed to support rural households during times of adversity as well as address long-term poverty alleviation. The interplay between ex-ante and ex-post strategies already utilised by households needs to be investigated so public agencies can incorporate these responses into their attempts to tackle poverty and provide insurance for rural households. This is also important with respect to economy-wide shocks and natural disasters.

1.7 Rationale for the study, objectives and key questions

Recent research into the safety-net role of NTFPs identifies that most of the evidence to date on the insurance role fulfilled, has been ethnographic in nature. Only with the increasing interest in the role played by forest products and other natural resources in poverty alleviation, have studies begun to consider the role both more critically and quantitatively (McSweeney, 2003; Skoufias, 2003). Additionally research has often focussed on tropical forests with less focus on the contribution of those resources from other ecosystems including savannas and woodlands. Gaps in the existing knowledge on NTFPs as rural safety-nets include, the nature, frequency and duration of the risks for which people resort to NTFPs as a safety-

net; whether different categories of NTFPs (e.g. wild foods, medicines, wood products) are utilised for coping with certain shocks but are unsuitable for others and, whether households anticipate certain shocks (e.g. seasonal shortfalls) and act in advance or whether safety-nets are only utilised in the wake of a shock. There are few barriers to NTFP use and commercialisation, making their potential function as a safety-net a strong one however it should be considered whether or not these safety-nets are irreplaceable over time. In cases when households' access to NTFPs is restricted (e.g. through loss of tenure, over-utilisation) they may find alternative safety-nets. Access to NTFPs for safety-nets may be crucial only if there are no accessible alternatives. Determining households' access to alternatives may be one way of placing a value (although only a qualitative one) on the safety-net function of NTFPs. Angelsen and Wunder (2003) argue that whilst the 'static' role of NTFPs is understood, questions regarding the 'dynamic' role need consideration, these include: how much potential NTFP safety-nets have compared with other insurance options; how the risks to which households are vulnerable can be dealt with; at what opportunity cost should these safety-nets be maintained and, are other forms of insurance replacing NTFPs as a safety-net.

Communities, poverty and natural resource use are inherently complex therefore development policies that consider natural insurance, need to bear in mind the potential for different degrees of receptivity within communities (McSweeney, 2003). Policies aimed at the sustainable use of natural resources need to take into account that unless communities dependent on NTFPs as a safety-net, are offered alternative forms of insurance, they will continue to utilise NTFPs (possibly unsustainably) both on a daily basis and during adverse times. Without the necessary institutional fallbacks such as health care, credit provisioning and crop insurance programmes, compliance with restrictions on natural resource use is unlikely especially when households are in crisis. The interplay between the use of NTFPs as a safety-net and sustainable resource use requires further investigation in light of increasing reports on the failings of the commercialisation of NTFPs to provide incentives for sustainable use (Belcher *et al.*, 2005). In order to reconcile long-term economic development and biodiversity conservation, it is important to understand people's use of natural resources and the factors that affect this use (McSweeney, 2005).

According to Skoufias (2003) there is a reported increase in natural disasters and economic crises at a global level. Rural safety-nets may be insufficient in coping with these aggregate shocks. If households rely primarily on NTFPs as a safety-net, how is the resource base affected if an entire village has to rely on NTFPs in response to wide-spread shocks? What is the strength of this safety-net function under such conditions? De Waal and Whiteside (2003) investigated the combined effects of the HIV/AIDS epidemic and food crises in Southern Africa and found that households were less resilient to the aggregate nature of this shock. The results showed that HIV/AIDS limited the household's labour supply and therefore negatively impacted on general livelihood strategies and other safety-nets such as the collection of NTFPs. With respect to commercialisation as a possible manifestation of the safety-net function of NTFPs, under what environmental and market conditions does it prove successful? If these conditions are absent, how do households respond to risk? How prevalent is commercialisation compared to other possible manifestations of the safety-net function of NTFPs? The degradation of the natural resource base threatens the strength of the safety-net function of NTFPs without providing long-term alternatives. The loss of this safety-net may

affect more people than the few who may benefit from NTFP commercialisation. If the insurance value of NTFPs is considerable, it may promote resource-conserving behaviour, especially where governments are unable to provide basic services and alternative insurance options. Massive global poverty reduction in the near or medium future is unlikely. Therefore there is the need to realistically accept poverty and concentrate on ensuring people's survival through increasing the understanding of the role of rural safety-nets and, the ability of rural households to cope with shocks by securing and maintaining safety-net options. The relationship between safety-nets and poverty-traps is important in assessing the benefits or impacts of natural resource conservation to rural households. If shown that forest conversion would be economically more sensible to these households, then, either other incentives need to be considered for resource conservation or alternatives that are environmentally sustainable need to be investigated (Angelsen & Wunder, 2003).

From the preceding it is clear that there is a lack of an adequate and harmonised definition, characterisation and common understanding of what constitutes a safety-net, as offered by access to and use of NTFPs. The use of NTFPs as a safety-net is reported as a common feature in rural livelihoods however the empirical data to support this function is limited. The maintenance of and access to these safety-nets is perceived by many commentators to be crucial in assisting certain sectors of rural populations in coping with shocks as well as contributing towards poverty prevention, although this is based on few empirical studies. Therefore, policy makers and land-use planners under appreciate the probable role and consequent value of the safety-net function of NTFPs. Consequently there is the need to examine the concept and nature of rural-safety-nets in the South African situation with a particular focus on the role of NTFPs. This study set out to contribute towards the existing data by addressing the following key questions:

- 1. How prevalent is the use of non-timber forest products (NTFPs) as a rural safety-net?*
- 2. How does the use of NTFPs as a rural safety-net manifest itself?*
- 3. What characterizes those households that are more dependent on NTFPs as a rural safety-net?*
- 4. Do households that rely on NTFPs as a rural safety-net selectively choose particular NTFPs when responding to adversity? If so, what characterizes those NTFPs (e.g. are they marketable or do they provide a good source of nutrition)? Alternatively, do people resort to whatever NTFPs are available to help them cope?*

Although there is no harmonised definition for rural safety-nets, for the purposes of this study the rural safety-net function of NTFPs has been classified as the increased use of NTFPs, the use of different NTFPs or the sale of NTFPs by households in response to times of need or crisis. This may relate to climatic, political, economic or social crises.

The above chapter has given an overview of the literature related to this study. The remainder of the thesis is structured as follows: Chapter 2 discusses the research methods used including Participatory Rural Appraisal, key informant interviews and the household surveys. This chapter also gives an overview of the

two study sites in terms of their socio-economic and bio-physical characteristics. Chapter 3 considers the diversity of rural livelihoods including the range of off-farm and land-based livelihood strategies in which rural households engage. Included in the range of land-based livelihood strategies is the use and sale of non-timber forest products. Chapter 4 examines this use in more detail, considering the range of species used, how households procure their NTFPs as well as whether households sell these products and why they sell. Chapter 3 and Chapter 4 provide an overview and base-line understanding of the livelihoods of the households sampled. In doing so these two chapters set the backdrop for the examination of the vulnerability context of these households and how they cope with the range of risks, shocks and trends to which rural households are vulnerable. The rural safety-net role of NTFPs is examined within this context, taking consideration of the regular use of NTFPs as well as the range of coping strategies households employ in response to misfortune (Chapter 5). The concluding chapter, Chapter 6, collates the preceding results chapters, comparing the findings of this study to others that have examined the vulnerability of rural households and how they cope, with a particular focus on the use of NTFPs as a rural safety-net. Chapter 6 continues to address and answer the key questions proposed at the outset of the research as well as suggest areas for further research and possible policy implications related to the findings.

CHAPTER TWO: METHODS AND STUDY AREA

2.1 Research Methods/Data Collection

The research consisted of two components conducted in each of the study sites. The first component was made up of a variety of Participatory Rural Appraisal (PRA) techniques, which were employed in a series of workshops, whilst the second component consisted of the administration of an interview schedule to individual households. The PRA techniques and the interview schedule were expected to complement each other and, as additional triangulation, the relevant secondary data were collected and reviewed, personal observations were made and interviews were held with selected key informants. Before commencing with the fieldwork, an introduction and ground proofing procedure was carried out and permission to conduct the research was gained from the relevant authorities. Participation in both the workshops and interviews was completely voluntary and the confidentiality of the information received was assured.

2.1.1 Workshop component – Participatory Rural Appraisal

Participatory Rural Appraisal (PRA) techniques were employed in a series of workshops in order to establish an understanding of people's livelihoods, particularly with respect to their use of non-timber forest products (NTFPs) (both as a livelihood strategy and as a rural safety-net) and the vulnerability context of the communities in question. The workshops were also used to communicate the purpose of the research and to introduce some of the key concepts being investigated. The PRA exercises were used to gain a base-line understanding before commencing with the household interview schedules. Each PRA technique employed in the workshops was followed by discussion sessions allowing for debate around relevant issues. The range of PRA techniques employed included:

1. The identification of NTFPs and ranking
2. The identification of livelihood activities and ranking
3. The identification of wealth criteria and wealth ranking
4. Historical profiles
5. Time trend exercises
6. Seasonal calendars

2.1.1.1 *Identification of NTFPs and ranking (preference ranking)*

Before considering the use of NTFPs as rural safety-nets, it was important to have an understanding of the more regular role played by NTFPs in people's livelihoods. People were asked to list the NTFPs used either in their own households or that they knew other households used. The use of NTFPs was then discussed

covering aspects such as their contribution to livelihoods, historical and seasonal changes in use, abundance and availability, characteristics of households using NTFPs (i.e. age, size, gender, wealth), whether the existing land tenure situation or any institutions/restrictions limited or controlled access to resources, how households procured NTFPs (i.e. by collecting themselves or buying) and, whether any households sold NTFPs. Once the nature of NTFP use had been discussed, a ranking exercise (stratified by the gender of workshop attendants) was conducted with groups ranking the different NTFPs in terms of their importance to livelihoods.

2.1.1.2 Identification of livelihood strategies and ranking

In order to assess the role played by NTFPs in rural livelihoods, the range of livelihood strategies that rural households adopt in their pursuit of attaining sustainable livelihoods was considered. As a group people were asked to list activities that contribute either to their own households or other households in the village. A ranking exercise was conducted to determine which strategies are considered to be more important to rural livelihoods and how people view NTFPs as a livelihood strategy, compared to the other strategies.

2.1.1.3 Identification of wealth criteria and ranking

Before commencing with the wealth ranking it was necessary to determine the criteria by which the communities categorise households as wealthy or poor (Table 2-1). These criteria/attributes were determined in open discussions however this was a sensitive issue that respondents were not happy to discuss publicly. This should not be seen as a limitation to the wealth ranking itself as people would have ultimately ranked in accordance with their own perceptions of wealth. A possible limitation is that these perceptions of wealth may differ from both the researcher's and more generally held views.

Table 2-1 Wealth criteria for Dyala and Dixie (PRA)

Wealthy Households	Poor Households
Own more livestock	Own less or no livestock
Are able to send their children to tertiary institutions	Rely exclusively on wood for energy
Have brick houses	Send their children around the village to ask for food, paraffin, etc.
Have smart/expensive furniture	Houses built in more traditional style with mud & wooden poles
Have healthy looking household members	Children are in arrears with their school fees, uniforms, etc.
Have more and bigger rooms	Have no or only traditional furniture
Have members receiving an old-age pension	In each house, more people sleep per room
Head is permanently/temporarily employed	No members receive a pension (especially old-age pensions)
	No members are employed – either seasonally or full-time

A village representative compiled a list of households and each household was assigned a number. People were then given numbered cards corresponding with the household numbers and were asked to “vote” for the households they felt fall into one of three categories namely “wealthy”, “middle” and “poor”. This involved placing the numbered card into a representative box. People were assured of the confidentiality of the vote. In instances where people were uncertain of the exercise, an interpreter /facilitator was made

available. The use of an external interpreter for this ensured that even in the cases where assistance was needed, it was unbiased. Once the exercise had been completed the votes were tallied. A list of the wealthy and poor households was compiled. The wealth ranking was then used to target the interviews at selected households. From the list of wealthy and poor households, twenty-five households were chosen from each category in each village: one hundred households in total. These households comprised the survey sample: that is fifty households in each village consisting of 50 % poor households and 50 % wealthy. Although household wealth was the criteria used for selecting the households to be interviewed, during the interviews gender of the de jure household head was noted allowing for comparisons to be made based on this household characteristic. In Dyala, thirty-three of the selected households are male-headed and seventeen, female-headed whilst in Dixie, forty-two have male-heads and eight, female-heads. De jure household head was selected as opposed to de facto head.

A Principal Components Analysis (PCA) was performed retrospectively to corroborate the wealth ranking exercise. PCA can be used as a classification technique to highlight relationships among variables and cases. The PCA separated wealthy and poor households based on the household's combined asset ownership, number of old-age pensions per household, total number of employed household members, total number of formally employed household members, number of cattle per household and, number of saving schemes per household (Figure 2-1). Wealthy households are distinguished from their poor counterparts in that they have a greater number of old-age pensions per household, more employed (especially formally employed) household members, more cattle per household, a greater number and diversity of accumulated assets and a greater number and diversity of saving schemes (Chapter 3).

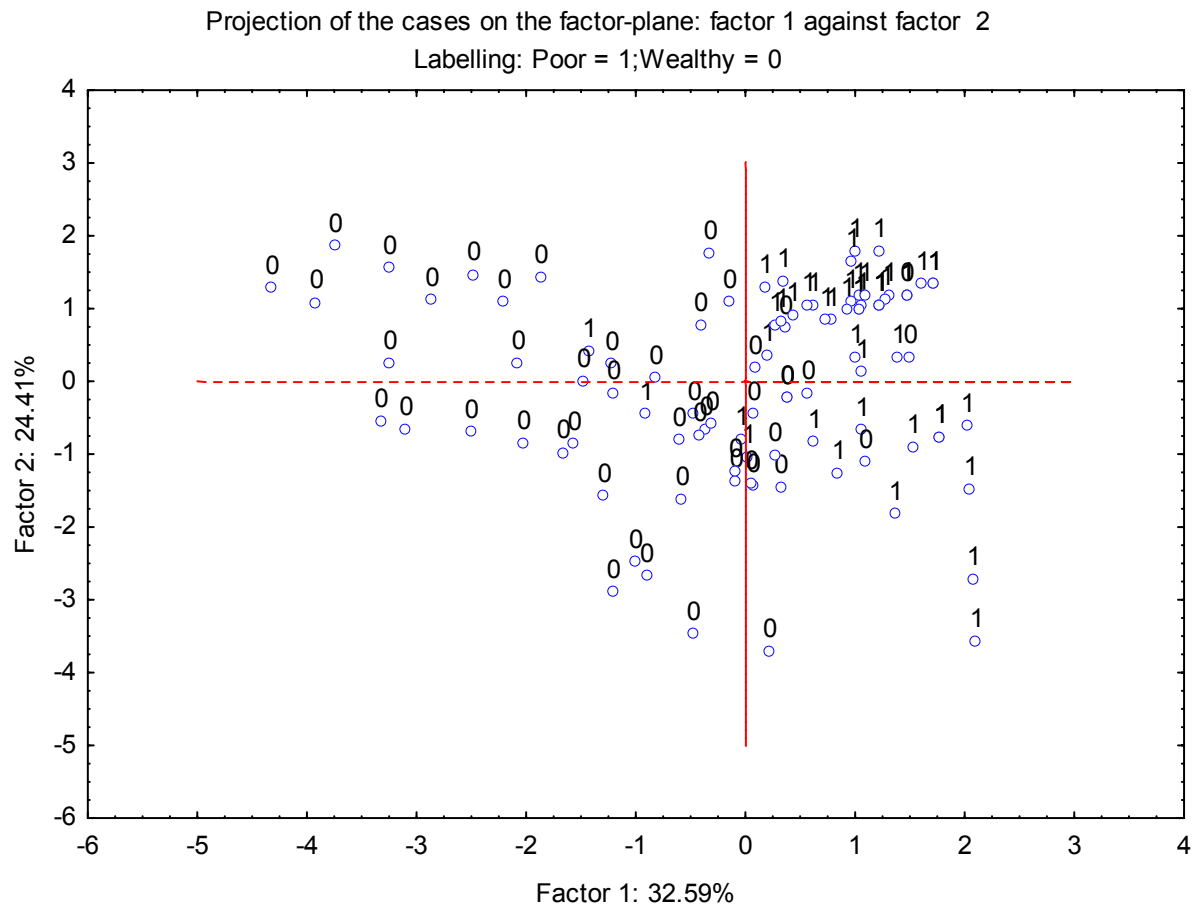


Figure 2-1 Plot of factor scores separating wealthy and poor households

2.1.1.4 Identification of coping strategies and ranking

Having established an understanding of the livelihood strategies of the households in the respective villages, including their use of NTFPs both for direct household provisioning and sale, it was necessary to gather some understanding of the households' vulnerability contexts as well as introduce and explain the concept of coping strategies/rural safety-nets. As with the discussions on the wealth criteria, problems that households face and how they cope were issues that people stated they'd prefer to discuss in the individual interviews.

To introduce the concept of coping strategies and to initiate discussion, examples of shocks and coping strategies were given from the literature. Whilst this may constitute as leading, it was necessary to explain the issues and evoke discussion. During discussions, respondents mentioned a variety of crises to which households are vulnerable. These crises were divided into two categories: anticipated and unanticipated crises (Table 2-2). Anticipated crises were taken to be any events that impact negatively on the household but for which the household is able to plan in advance. Unanticipated crises are unexpected, shock events

that households are unable to predict. Whilst a household may plan for “difficult times” and the possibility of these occurring, the exact nature of the shock and when it’s experienced is not a given.

Table 2-2 Identified crises

Anticipated Crises	Unanticipated Crises
Annual expenses (e.g. school fees and uniforms)	Livestock diseases and/or death
Socials expenses (e.g. Christmas, Easter & traditional ceremonies)	Crop loss and/or damage
Agricultural expenses (e.g. buying seed, pesticides, hiring ploughs)	Illness/injury of a household member and/or the breadwinner
Seasonal crop shortfalls (e.g. winter)	Damage to/loss of assets (e.g. theft, rain damage)
	Loss of income
	Death of household member, family member and/or breadwinner and the associated funeral expenses
	Increasing cost of living

The list of anticipated and unanticipated crises was used during the individual household interviews whereby households were questioned on whether or not they had experienced any of the listed crises over the preceding two years and how they had responded. The coping strategies raised in the discussion were noted and a ranking exercise was performed by the group as a whole to determine the preferred coping strategies. The group was provided with a chart and beans and as in the other ranking exercises, they were asked to rank which coping strategies they felt were the most effective/first relied on when households were faced with a crisis. The strengths and weaknesses of each strategy were then discussed.

With respect to the various ranking exercises, where strategies/NTFPs differed by a ranking of two or less, the strategy was judged to have a consensus ranking. In cases where the ranking differed by more than two it was judged not to have a consensus ranking (Maxwell *et al.*, 1999).

2.1.1.5 Historical profiles

A workshop was set aside to collate a brief historical profile of each village. “Historical profiles reveal important information for understanding the present situation in a community. They provide a summary overview of the key historical events in a community and their importance for the present situation” (Theis & Grady, 1991, p99). The historical profiles were used to inform on the history of the two sites as well as on notable events that have occurred throughout the villages’ existence. Informants were asked to emphasise times of crisis with a focus on shocks that have affected the village as a whole. Vulnerability, as well as livelihood and coping strategies are dynamic in nature, influenced not only by household characteristics but also by a variety of exogenous factors as well as historical changes/fluctuations. As the research focussed on a two year period the use of natural resources as a rural safety-net in response to more dispersed shocks or longer-term trends, was not considered in detail. The historical profile exercise was used to give an indication of the nature of more wide-scale and long-term shocks/events to which people (and entire villages) are vulnerable (Tables 2-7 & 2-8).

2.1.1.6 *Time trend exercises*

According to Theis and Grady (1991, p95), “time trends show quantitative changes over time and can be used for many variables”. During the time trend exercises respondents were asked to identify changes in different selected categories in different decades from the time that the village was established (for both villages this meant, established in their present position). These categories were divided into two groups. The first group included more general issues relating to rural livelihoods (Table 2-3). The second group considered the changes in the use of different NTFPs identified in earlier stages of the workshop phase (Table 2-3).

The time trend exercise involved a grid board with the different categories running along the x-axis and the decades down the y-axis. People were given beans and asked to use the beans to represent changes in the different categories over time. Once the exercises had been completed the informants were asked to explain why various changes had occurred including why the use of NTFPs had either increased or decreased and, whether or not this was a result of changes in availability or if other factors had resulted in the changes in use. People were queried on how the changes affected their livelihoods and how they had responded to these changes (Appendices 7-3 & 7-4).

Table 2-3 Time trend categories

General Time Trend Categories	NTFP Time Trend Categories
Number of people	NTFP use and sale
Number of deaths	Fuelwood
Health	Wild edible herbs
Employment	Wild edible fruit
Degree of poverty	Medicinal plants
Difficulty of life	Wood for household items and furniture
Infrastructure	Grass and twig hand-brushes
Rainfall	Indigenous poles for livestock enclosures and fencing
Number of cows	Bushmeat
Number of goats	Building materials (wooden poles, thatching grass, etc)
Number of other livestock (pigs, poultry, donkeys, sheep, etc.)	Mushrooms
Available grazing	Wild honey
Number of fields	Wood for curios/carvings
Size of fields	
Amount of produce per field	
Number of gardens	
Size of gardens	
Amount of produce per garden	

2.1.1.7 *Seasonal calendars*

A seasonal calendar is “a calendar showing the main activities, problems, and opportunities throughout the annual cycle in diagrammatic form. It helps to identify the months of greatest difficulty and vulnerability,

or other significant variances which have an impact on people's lives" (Theis & Grady, 1991, p91). During the workshop people were asked to do a seasonal calendar for a one-year period looking at changes in various aspects of livelihood activities. As with the time trends, categories included more general livelihood categories as well as those considering changes in NTFP use and availability (Table 2-4). Once the calendars were completed they were used "to show correlations between different variables and identify any problem or opportunity times within the year." (Theis & Grady, 1991, p92).

This session was followed by a discussion on what people do to cope during the months of vulnerability, focussing particularly on the use of NTFPs during these times and how the safety-net function of NTFPs manifests itself (i.e. through increased use, commercialisation or, the use of different resources) (Appendices 7-5 & 7-6).

Table 2-4 Seasonal calendar categories

General Seasonal Calendar Categories	NTFP Seasonal Calendar Categories
Rainfall	Fuelwood
Planting	Sale of fuelwood
Harvests	Wild edible herbs
Increased labour needed	Wild edible fruits
Crop pests and disease	Sale of wild edible fruits
Crop shortfalls	Medicinal plants
Livestock diseases	Bushmeat
Human diseases	Wild honey
Social ceremonies	Mushrooms
High expenditure	Sale of grass and/or twig hand-brushes
Cash income	
Migrant remittances/contributions	
Cash shortages	
Livestock sales	

Building materials, indigenous wood for furniture, livestock enclosures and fencing and, wooden household utensils/items were not included in the seasonal calendars as changes in these occur over longer periods of time.

2.1.1.8 Group discussions

Group discussions were held after each PRA exercise and thereafter the final workshop in each village was used to discuss the results and any identified gaps. Group interviews are useful in obtaining information at the community level and have several advantages as "they provide access to a larger body of knowledge, and provide an immediate cross-check on information as it is received from others in the group" (Theis & Grady, 1991, p53). Despite this, group discussions proved ineffectual for discussions on more sensitive and "private" topics, such as deaths within the family and financial difficulties.

2.1.2 Household interviews

Once the PRA phase of the research had been completed, the results were collated and analysed and used to design the interview schedule for the household interviews. The individual household interviews were targeted at one hundred predetermined households (from the wealth ranking exercise in the workshops). According to Theis and Grady (1991, p52) “Information obtained from individual interviews is more personal than from group interviews...since respondents may feel they can speak more freely without their neighbours present”. With respect to the structured interviews, questions were administered orally with the assistance of a translator. Wealthy and poor households were targeted for the interviews. In each case the gender of the de jure household head was recorded.

The structured interview schedule was done in two parts. The first part covered more general household activities, livelihood strategies and NTFP use, whilst the second part considered shocks households had experienced over the preceding two years and how they had responded. Whilst the first interview schedule consisted predominantly of structured questions, the second half was more open-ended questions allowing for discussion and exploration of the issues. The interview schedule focussed on a two year period: an unrestricted timeframe may have yielded too many crisis events to analyse each as well as the relevant coping strategies, in sufficient detail. There is also the issue of inaccurate recall with events that have occurred far in the past. The first interview schedule considered household members; sources of income (wages, remittances and government grants); asset ownership; investments in saving schemes; arable agriculture and animal husbandry as well as the use and sale of NTFPs. In the second interview schedule households were asked to list which of the predetermined crises they had experienced in the last two years. Each of these crises was then dealt with individually whereby respondents were asked to detail how they had coped with each. Once the households had been questioned on their responses to various crises they were then questioned more specifically on the use of NTFPs during these times and whether or not they had experienced times when they had i.) used more NTFPs than usual, ii.) used NTFPs they do not normally use, iii.) sold more of a certain NTFP than usual and iv.) sold NTFPs they do not usually sell. Any positive answers to these questions were then explored in more detail, focussing on the reasons why the households had responded as such. Households were questioned as to whether or not they felt NTFPs were important to them as a rural safety-net or whether they had preferred strategies for coping with crises.

2.1.3 Key informant interviews

A select number of key informant interviews were conducted.

1.) Mr. Klaas from the Department of Water Affairs and Forestry (DWAF) office located above the Dyala-Jurieshoek valley provided the biophysical data for Dyala as well as details on the DWAF forests and the permit system controlling NTFP harvesting.

2.) Mr. Ncume and Mr. Ndlovu, ward councillors for Dyala and Dixie respectively, provided insight and information on the two communities including household numbers, provision of services and land-ownership.

3.) Informed community members who provided general background information on the respective communities (including the Dixie land issue: Box 2-3) and compiled the lists of households for the ranking exercises.

2.2 Data Analysis

The data has been analysed with the purpose of answering the key questions set out in Chapter 1. The data was collated and compiled for the two villages then analysed and compared using both household wealth and gender of the de jure household head as points for comparison. These factors were compared separately for both villages with the exception of Chapter 5. In Chapter 5 data from the two villages were combined because the sample size of households that positively reported experiencing selected crises was reasonably small. Therefore whilst household wealth and gender of the de jure household head are still considered, this is a composite view.

The data analysis process included a statistical analysis. With respect to the data collected during the PRA, where possible this has been collated and analysed statistically, otherwise it has been presented and where relevant, diagrams used. Where nominal categorical data was recorded the Pearson's Chi-Squared Test was used to determine significant associations between variables. A p-value of less than 0.05 was taken to be significant. These results have been tabulated giving both the Chi-Square- and p-values. Numerical values (both continuous and discrete) such as the frequency of consumption and the average number of resources consumed were analysed using either a t-test for independent samples (where the data was normally distributed) or the non-parametric Mann-Whitney U Test if the data failed tests for normality and homogeneity. Here again, p-values have been recorded. T-values and Z-values are displayed in the same column: *T-values have been underlined and Z-values italicised* in order to distinguish them. The Kolmogorov-Smirnov test was used to test for normality ($p > 0.05$ shows normal distribution) and, the Levene's test for equality of variance. Descriptive statistics were used to describe the data in terms of means and standard errors. Results were analysed across both the total sample (e.g. for NTFPs both users and non-users) as well as for only those households that were using NTFPs, owned livestock and so forth.

Plant species recorded in the local vernacular (Xhosa in the Eastern Cape and Tsonga in Limpopo) were translated into their botanical and English (where possible) names using "plant dictionaries" compiled by Dold and Cocks (1999) and Shackleton *et al.* (1998).

2.3 Selecting the sites

With respect to selecting the two study sites, a case study approach was adopted using two villages from different regions in South Africa. Attempts were made to choose sites with certain similar characteristics so

for example, both sites fall within areas where there has been previous detailed research into the use of NTFPs at a household level (both for direct household provisioning and for sale). This allowed for a baseline understanding of the importance of NTFPs to rural livelihoods on a daily basis and therefore opened the way for an investigation into the rural safety-net function of NTFPs. Both villages are reasonably small, allowing for a large proportion of each village to be covered in the household interviews. Furthermore, both villages are reasonably isolated which although problematic in the sense that this restricts people's access to markets (and as such impacts on the possible commercial manifestation of the rural safety-net function), it is beneficial in that their access to NTFPs is better than many of the villages in the surrounding areas. It was decided at the start of the research that there is the possibility that villages closer to urban centres may rely on different safety-nets to those in "deeper" rural areas; that is natural assets form a smaller proportion of both their livelihood and coping strategies. Whilst a gradient approach was considered, it was decided that as the focus of the research was on the role played by NTFPs as a rural safety-net, villages considered for sites were to be more than 15 km from an urban centre. Both villages fall within areas formerly designated as homelands under the previous apartheid government and as such have similar characteristics in terms of service provision, levels of development, reliance on a variety of livelihood strategies including arable agriculture, animal husbandry, formal and informal employment, government grants and the use and sale of natural resources. However, despite attempts to find villages with similar characteristics, it has to be understood that there are differences in the two sites, many of which became more apparent as the research progressed. Other differences such as climate, vegetation, culture and so forth were known from the outset. These differences together with those that emerged during the field work were acknowledged by the researcher and considered throughout both the fieldwork and the analytical stages of the research.

Whilst it was understood that there are inherent problems to this case study approach, such as the issue of extrapolation should the results for the two sites reveal significant differences, the focus of the research was on wealth and gender distinctions more than site comparisons. Additionally, the choice of the two sites was more convenient for the researcher in terms of available funding and accommodation. Furthermore, it supported the argument that there are weaknesses in extrapolating site-specific results to broader regions and, as an area of research that is still in its infancy, the investigation into the rural safety-net function of non-timber forest products (NTFPs) might benefit from a more general overview leaving more area specific studies open to future research.

2.4 General overview of the two study sites

Two study sites were chosen, both of which fall within formerly designated homeland areas under South Africa's previous apartheid government. The village of Dyala-Maasdorp (also referred to as Jurieshoek but henceforth as Dyala), is located within the Eastern Cape province in what was, under the previous political regime, the Ciskei, whilst the second village, Dixie (or Pungwe), is located in the Limpopo province in what was the former Gazankulu homeland. Under the homeland system black people were forcibly removed from urban areas and white farms to certain demarcated areas. The Ciskei was designated for Xhosa-speaking people whilst Gazankulu was populated by the Tsonga. Most of these former homeland

areas still bear the scars of their history and both sites have similar characteristics in terms of poor service provision, low levels of development and, a reliance on a variety of livelihood strategies including arable agriculture, animal husbandry, formal and informal employment, government grants and the use and sale of natural resources. Ward profiles for the wards within which the two villages are located show common characteristics between the two wards including higher proportions of females than males; high proportions of dependents (> 50 %) and, low proportions of people who have completed secondary schooling. Whilst the ward profiles indicate low formal employment, unemployment is also low suggesting either high rates of migrancy or the important role of the informal job market (Table 2-5). Where people do receive a monthly income, the amounts are low. Houses are poorly supplied with electricity, potable water and adequate sanitation. Both wards have lower population densities than many of the surrounding areas (Table 2-5). The population for density the ward in which Dixie falls is 26.8 people/km²; population densities for the surrounding Bushbuckridge area have been recorded ranging from 160 – 300 people/km² (Shackleton & Shackleton, 2000; Pérez de Mendiguren & Mabelane, 2001). According to Gelb (2003) the Limpopo and Eastern Cape provinces are amongst the poorest in the country.

Table 2-5 Ward profiles (Source: Statistics SA and the Municipal Demarcation Board)

Attribute	Village	
	Dyala	Dixie
Province	Eastern Cape	Limpopo
District Municipality	Amatole	Bohlabela
Local Municipality	Nkonkobe	Bushbuckridge
Ward details:		
Ward no.	13	16
Ward population density (people/km ²)	36.3	26.8
Average number people/household	4.8	4.0
Females (%)	55.5	54.8
Males (%)	45.5	45.2
Dependents: > 65 yrs (%)	4.8	8.6
: < 15 yrs (%)	46.2	34.2
Education: none (%)	21.6	9.9
: Grade 12 pass (%)	4.5	5.9
Labour force: Employed (%)	3.7	9.8
: Unemployed (%)	8.6	19.9
Annual household income: none (%)	41.3	25.7
: ≤ R 4800 (%)	16.7	11.2
Energy: households with electricity (%)	68.2	54.4
Sanitation: none (%)	50.4	25.5
: Pit latrines (%)	18.5	63.6
: Flush toilets (%)	1.7	4.9
Water: Dwelling (%)	1.9	0.7
: Yard (%)	11.4	22.0
: Community standpipe (%)	72.9	36.9

Village profile data is taken from personal observations, key informant interviews as well as from the household interviews. Both villages are located more than 15 km from the nearest regional centres. In both, the average household size (for sampled households) is smaller than the ward average: household size is smaller in Dixie than in Dyala. In both villages, of the one hundred sampled households, the greater proportion are male-headed (taking de jure head, not de facto). Average education levels for the two villages are similar and both villages are characterised by poor infrastructural development and service delivery (Table 2-6).

Livelihood strategies in both sites include formal and informal employment, arable agriculture, animal husbandry, a reliance on government grants and, the use and sale of NTFPs. Formal employment as well as self-employment opportunities are more prevalent in Dixie whilst Dyala households rely on informal employment and old-age pensions. Land-based strategies contribute to households in both villages although those in Dyala are involved in arable agriculture and animal husbandry to a greater extent than their Dixie counterparts. The use of NTFPs is a common feature to both sites. More detailed descriptions of local livelihoods are provided in the relevant chapters.

Table 2-6 Village profiles

Attribute	Village	
	Dyala	Dixie
Latitude	32° 32.0' S	24° 41.7' S
Longitude	26° 40.3' E	31° 28.5' E
Nearby regional centres	Seymour & Fort Beaufort	Acornhoek & Hluvukani
Distance to regional centres	16 km; 38 km	55 km; 25 km
Approximate number of households	135	98
Av. household size (for sampled households)	4.5 ± 0.3	3.6 ± 0.3
Proportion of male-headed households sampled (%)	66.0	84.0
Proportion of female-headed households sampled (%)	34.0	16.0
Average number of men per household	2.2 ± 0.3	1.6 ± 0.2
Average number of women per household	2.3 ± 0.2	2.0 ± 0.2
Average number of adults per household	3.1 ± 0.2	1.9 ± 0.1
Average number of children per household	1.4 ± 0.2	1.7 ± 0.2
Average education per household	5.8 ± 0.4	5.8 ± 0.3
Availability of piped water	None	Communal standpipes
Electricity	None	None
Number of schools	1 (primary)	2 (pre-primary & primary)
Clinic	None (mobile clinic)	None (mobile clinic)
Number of stores	None (spaza shops)	None (spaza shops)
Approx. MAP	997 mm	600 mm
Vegetation type (Acocks, 1988)	Succulent Thicket	Arid Lowveld
Tribe/Ethnic group	Xhosa	Tsonga

2.4.1 Dyala

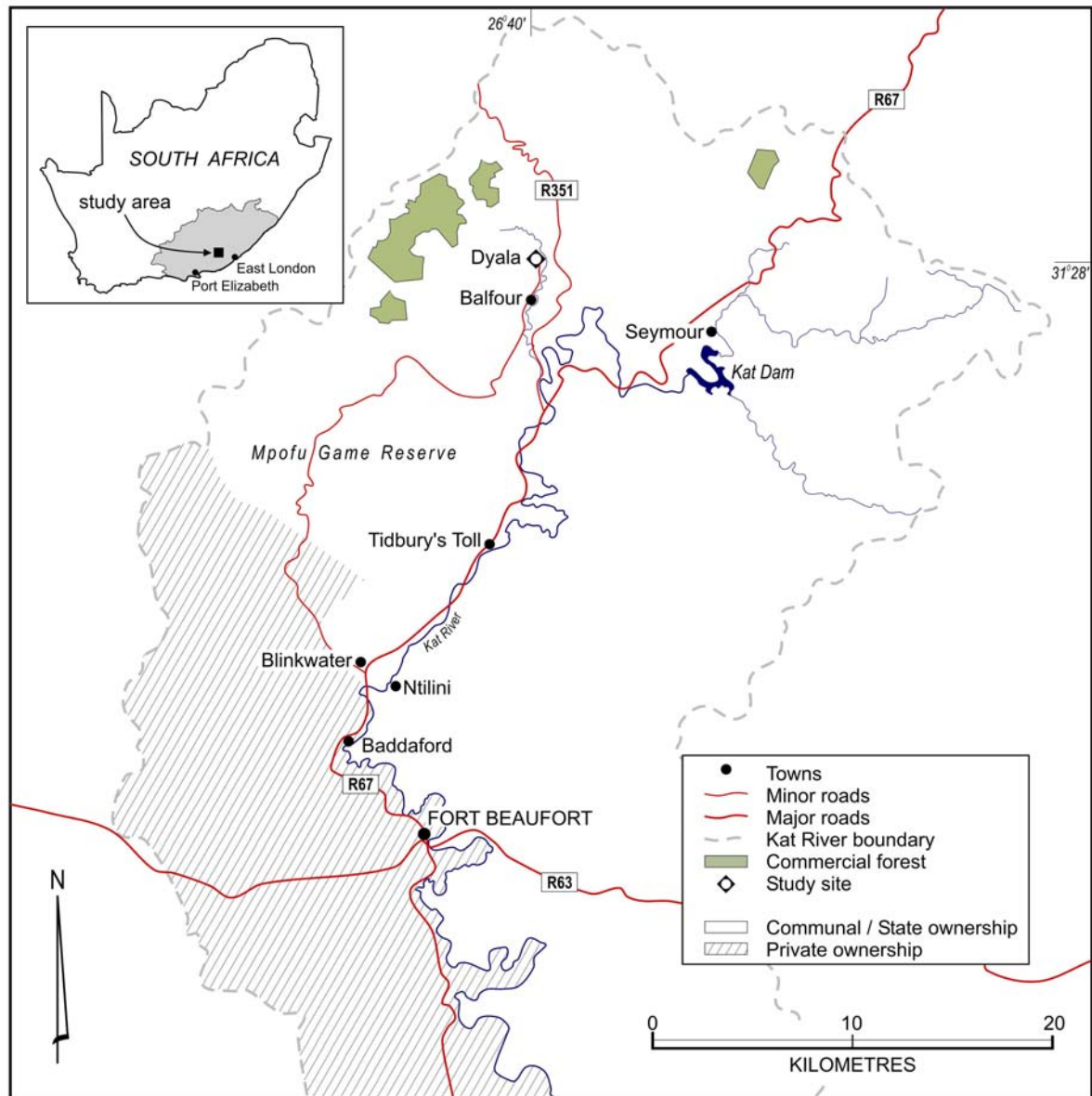


Figure 2-2 Map of Study Area - Dyala

2.4.1.1 *The biophysical environment*

Dyala lies at the northern end of the Kat River valley in the Eastern Cape province of South Africa. The Kat River valley extends approximately 80 km from north to south, covering an area of approximately 1700 km² (McMaster, 2002). The village lies in the shadow of the Katberg Mountains, part of the Winterberg mountain range. There is a declining rainfall gradient from the north to the south of the valley, with a mean annual rainfall in Fort Beaufort approximately of 500 mm whilst records from the Department of Water Affairs and Forestry (DWAF) office located above Dyala show a mean annual rainfall of 997 mm. The dry

season stretches from May till September with the monthly precipitation for this time ranging from the annual lowest of 24 mm (July) to 48 mm (DWAF, 1996). The climatic conditions of the area include warm summers and cold, harsh winters with regular snowfalls on the surrounding mountains and in the village itself. Hail and strong winds also occur in the area and are destructive both to the commercial forests and property. According to the seasonal calendars, rainfall is experienced in the summer months and again in June although this is often in the form of snow (Appendices 7-5 & 7-6). Agricultural activity is governed by the rain.

Corresponding to the rainfall gradient along the valley, there is a change in vegetation from Eastern Thorn Bushveld, dominated by *Acacia karroo*, in the north to Succulent Thicket, characterised by *Acacia karroo*, *Euphorbia sp.*, *Diospyros dichrophylla* and *Olea europaea*, in the south. The area surrounding Dyala is forested with a mix of commercial timber and indigenous forest. The commercial plantations in the area cover a total area of 2 236 ha whilst 4 198 ha is covered by indigenous forest (Klaas, pers. comm., 2004). Highveld Sourveld grasses are common although in areas where heavy grazing occurs, *Acacia karroo* has spread. Alien species such as *Acacia mearnsii* also occur in the area although Working for Water is in the process of removing this as well as other alien invader species. The lower slopes of the surrounding mountains support grassland and scrub-forest whilst at higher altitudes the forest canopy consists of plant genera such as *Podocarpus*, *Xymalos*, *Rapanea*, *Ptaeroxylon* and *Vepris* (DWAF, 1996). The dominant commercial timber is *Pinus* plantations. Numerous streams, both non-perennial and perennial ensure a supply of water for the villages in the valley.

2.4.1.2 *The socio-economic environment*

The land in the Kat River valley was privately owned commercial farmland until the early 1970s when the greater, eastern section of the catchment was incorporated into the Ciskei. As a result the catchment was divided between the “old” South Africa and the Ciskei. Many of the villages were originally established to house the farm labourers on the commercial farms in the area. These commercial farmers were removed from the area in the 1970s (Table 2-7). In 1994 the Ciskei was reincorporated into South Africa and as a result land ownership in the Kat River valley is now a mix of private and communal/state ownership. In the former Ciskei sections, the land tenure is not formalised and the tenure arrangements are communal: the community of Dyala has open access to land, including indigenous forest. They are however denied access to the surrounding DWAF forests, unless they purchase the relevant permits (Box 2-1), as well as any privately owned land.

Box 2-1 Community perceptions of the permit system required to enter into, and harvest in DWAF controlled forests

Before people can enter the surrounding state-controlled forests, permission (in terms of the National Forest Act, No. 84 of 1998) needs to be granted by the Department of Water Affairs and Forestry (DWAF). The DWAF offices are located above the Maasdorp-Jurieshoek valley and the village of Dyala. The permit sets out various conditions and is only valid for one trip per day (Appendix 7-1). Forest officers patrol the area and anyone found in the forest is required to produce the permit on request. Although the permit system prohibits the removal of “any plants or forest produce”, communities living near or around state forests are exempt from this following certain conditions laid out in the Exemption in Terms of Section 24(6) of the National Forest Act, No. 84 of 1998 (Appendix 7-2). These include, amongst others:

- 1.) Only such forest produce as is customarily used for domestic, cultural, health or spiritual purposes may be collected and removed.
- 2.) Only such quantity of firewood or other forest produce may be collected and removed as can be carried on the person.

Additional conditions prohibit the collection of produce for sale and the cutting and removal of live wood.

Discussions with community members revealed differing viewpoints on the permit system.

“The permits are not helpful because we need things from the forest.”

“Even if we lose a cow, we need to first get a permit before we can go into the forest to look for it.”

“The permits are making life difficult”

“If your child is ill and you know that you can help your child with medicinal plants from the forest, you have to first go and get a permit before you can go into the forest to search for plants. In the mean time your ill child is left at home.”

“The permits are a good idea. We can now enter the forests which were previously off limits and protected by DWAF and collect resources no longer available elsewhere.”

Land use along the Kat River valley includes commercially run, private, export-orientated citrus farms as well as commercial stock farming in the lower/southern Kat; small-scale or subsistence agriculture (including livestock) in the middle Kat and commercial forestry in the upper, north-western section (McMaster, 2002). There are some black commercial farmers in the valley however the majority of the local communities farm at a subsistence level. Prior to expropriation in 1980 the areas around Balfour and Seymour included productive agriculture. There are also four game reserves in the catchment. Households in Dyala practice both subsistence agriculture and small-scale animal husbandry. There are some households that farm on a larger scale and others that are involved in a community farming project initiated in 2002 (Box 2-2). With limited employment opportunities in the area, households rely on these land-based livelihood strategies, including the use and sale of non-timber forest products (NTFPs).

Box 2-2 The Maasdorp-Jurieshoek Community Farming Project

In February 2002, 700 ha of land spanning the Maasdorp-Jurieshoek valley was officially handed over to the community in the initiation of a R 1.9 million community farming project. The land, including both state and privately owned portions, as well as farming equipment and fencing materials were acquired using the Settlement and Land Acquisition Grant. The application by the Maasdorp-Jurieshoek Community Property Association was the first in the greater Mpofu area to receive approval. The 249 households intended the land for various agricultural ventures (Carlisle, 2002).

Former homeland areas throughout South Africa still show marked signs of poor service delivery, high unemployment and under-development. In accordance with these characteristics, the village of Dyala has no electricity supply or piped water and, sanitation is limited to pit latrines. People rely on river and rainwater whilst fuelwood and paraffin constitute the primary forms of energy (Table 2-6). The village lies on the Balfour River (a tributary of the Kat), the proximity of which ensures the village has access to a basic supply of water for domestic use and irrigation, although the water has to be collected by hand. The village can be accessed via a dirt road, which during heavy rains can become impassable. Whilst neighbouring Balfour has a small general store, a clinic and a school, the closest regional centres offering a more diverse range of services are Fort Beaufort and Seymour. These centres are however not always easy to access as there is no public transport servicing the village, taxis are expensive, few households own cars (Table 2-6) and, wet weather can leave the road in poor condition. There is a primary school in Dyala but children who wish to attend high school must either travel to Balfour or to villages further afield. There is a mobile clinic that visits the village but this service is constrained by the poor roads (Table 2-6). The time trend exercise indicates a decline in infrastructure (and quality of infrastructure) occurred after the formation of the Ciskei and associated removal of white farmers from the area (Appendices 7-3 & 7-4). Roads deteriorated and schools shut down. According to respondents this has been a persistent trend.

General economic activity in the area is very low with high unemployment. Furthermore, with several communities along the valley, competition for limited available jobs is high. Many of the employment opportunities that do exist in the Kat River valley are on the surrounding citrus farms and are generally seasonal in nature. There are also limited opportunities in the forestry sector (including Working for Water) and small-scale tourism ventures. In Dyala the situation was aggravated in 1996 by the closure of the saw-mill located in the village. Participatory rural appraisal techniques indicated a high dependence on pensions and government welfare grants and very few opportunities for formal employment. With respect to leadership in the village, the ward councillor presides in the village and leadership responsibilities fall on him.

2.4.2 Dixie

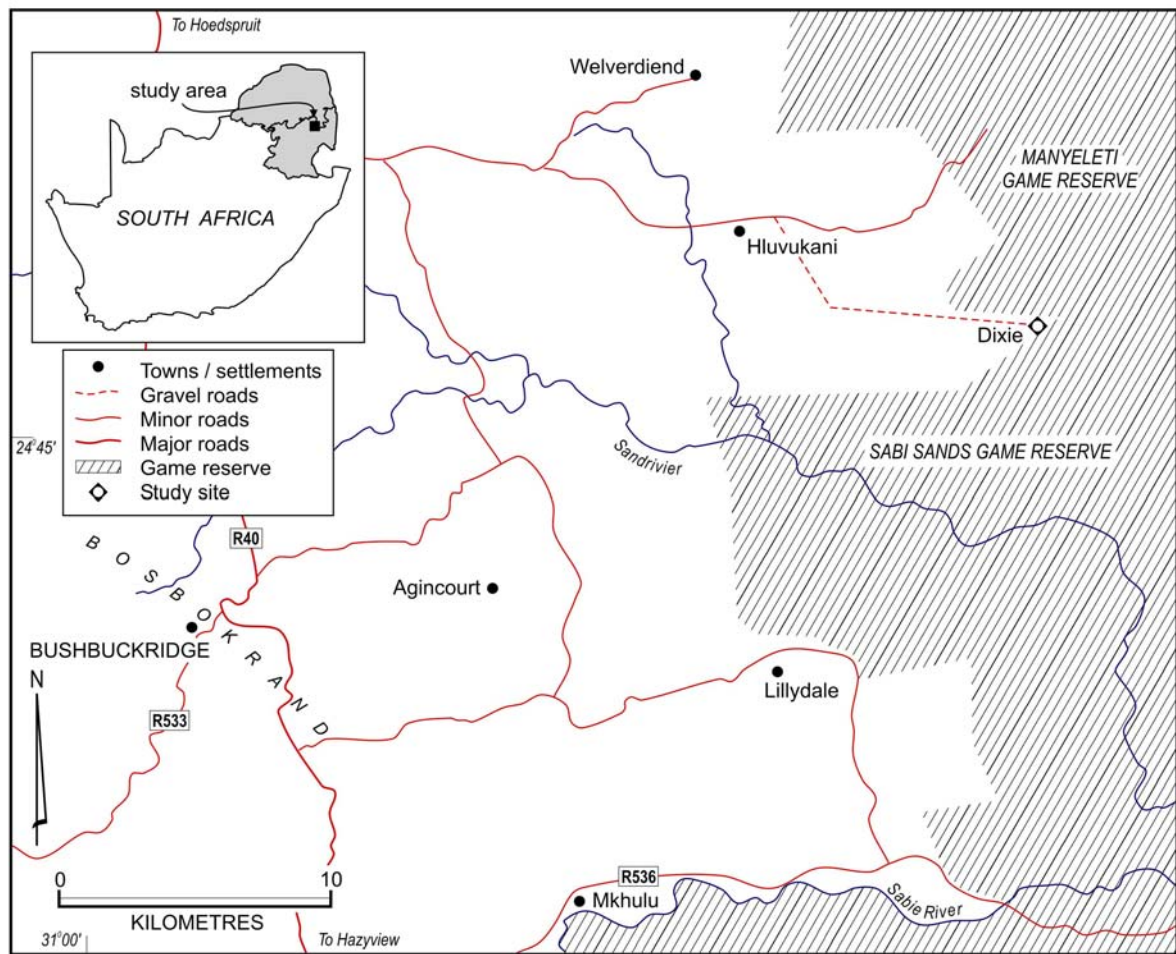


Figure 2-3 Map of Study Area - Dixie

2.4.2.1 *The biophysical environment*

Located in the Limpopo province, within the Bushbuckridge Cross Boundary Local Municipality, the farm Dixie (Dixie 240KU), on which the village is located, is a wedge-shaped piece of land (1 000 ha) bordered on two sides by the Manyeleti and Sabi-Sand Game Reserves (Kotze, 1992). According to Shackleton and Shackleton (2000, p30) the Bushbuckridge area is “defined as the area between the Sabie River in the south and the Klaserie-Orpen road in the north; the Drakensberg escarpment in the west to the border with the Kruger National Park and Sabi-Sand Game Reserve in the east.”. The Bushbuckridge lowveld region is characterised by a dry, frost-free winter and a warm, wet summer (Swart, 1996; Appendix 7-6). Temperatures in the area can reach as low as 5 °C in the winter months whilst summer highs can reach and exceed 40 °C. Mean minimum and maximum temperatures fall in the region of 15 °C and 30 °C respectively. According to Pollard and du Toit (2003) there is a west-east division with respect to climate and rainfall, with rainfall being higher to the west near the mountains whilst the eastern section is more

arid. The mean annual rainfall ranges from 1 200 mm per annum in the southwest to less than 600 mm per annum in the east (High & Shackleton, 2000). Dixie falls within the eastern section of this region. The area experiences sequential cycles in the average precipitation with wet and dry cycles lasting between eight and ten years (Gertenbach, 1980; Tyson & Dyer, 1975). Historically the Dixie community has been vulnerable to periods of drought as well as heavy rains and flooding (Table 2-8). According to Shackleton and Shackleton (2000) erratic rainfall, frequent droughts, poor soils and limited land availability make cultivation difficult and crop failure common.

The vegetation reflects the rainfall gradient with the moister western section being dominated by what is classified as “Lowveld Sour Bushveld” shifting to “Arid Lowveld” in the east (Acocks, 1988). Dixie falls within the “Arid Lowveld” classification. The vegetation includes savanna communities and the landscape is dominated by tree genera of the *Acacia*, *Combretaceae*, *Sclerocarya* and *Mimosaceae* (Huntley, 1984; Swart, 1996). Swart (1996, p1) describes the topography of the neighbouring Sabi-Sand Game Reserve as “gently undulating with moderately dissected and rounded hill country” with an average altitude of approximately 400 m.a.s.l. The Sand and the Sabie are the two main perennial rivers in the area although many of their tributaries are seasonal in nature. After periods of high rainfall though, water may still be found in these drainage systems well into the drier winter months.

2.4.2.2 *The socio-economic environment*

The Bushbuckridge municipality covers a total area of 2 417 km². Land-use consists of a mix of residential, state-owned plantation forestry and conservation, communal grazing land, rain-fed crop production and irrigated agriculture (Till, 1996; Shackleton, 2005). Arable agriculture is restricted by low and erratic rainfall as well as frequent droughts. Animal husbandry is also influenced by drought with livestock losses being a common feature of these times. Communal grazing lands provide access to NTFPs which contribute to households’ livelihood security both through direct household provisioning and sale (Shackleton, 2005). Dixie falls within this semi-arid agro-ecological region. Despite erratic rainfall, frequent droughts and poor soil quality, making much of the area marginal for agriculture, households are involved in both subsistence arable agriculture and limited animal husbandry (Mackenzie, 1995; Shackleton & Shackleton, 2000). Agricultural activity is governed by the rains with households planting once the rains start in October. People harvest in January (Appendix 7-6).

There are several large settlements in the greater Bushbuckridge area and the high population densities place additional pressure on available land (High & Shackleton, 2000). The communities in the region face a number of constraints to development, which have been exacerbated by the influx of refugees from Mozambique (Hearn & Pollett, 1993). Shackleton and Shackleton (2000) note variable population densities with some areas having more than 300 people per km² whilst in other areas it is half of this. In terms of employment in the region, there is generally a lack of local employment opportunities with tourism being the major employer (Kotze, 1992). People are also employed in the informal economy. Average unemployment for the area is 63 %. There is a marked reliance on pensions and migrant remittances (Hearn & Pollett, 1993) as well as the natural resource base, for supplying basic needs as well as for income

generation (Shackleton & Shackleton, 2000; Hunter & Twine, 2005). The infrastructure and services in the region are either lacking or inadequately developed and maintained (Table 2-5). With respect to Dixie, the community is faced with the additional problem that as a small community and one on the outskirts of the district, they are not a development priority and as a result, much of the existing infrastructure is provided through funds/donations made available by the neighbouring private game reserves (Ndlovu, pers. comm., 2004). There is a pre-school and a junior school but children who attend high school are required to travel to schools in neighbouring villages or stay with relatives in villages where they attend school. There is no clinic but a mobile clinic serves the village each week. None of the households are supplied with power, potable water or sewage reticulation. As a result they rely heavily on fuelwood, paraffin and gas for power. Whilst there are a few standpipes in the village, they are few and far between and often out of order. Water is pumped from a nearby dam however the engine is frequently out of order for periods of up to two weeks. During these times, the community either collects water from the nearby river, the dam or rely on water tankers that bring water to the village. Whilst conducting the research the local government sent in a team to perform road repairs, the general comments from community members was that this was because the local municipal elections were drawing near. The closest regional urban centres to Dixie are Thulamahashe, Acornhoek and Hluvukani. Whilst there are a few spaza shops in the village itself, these are small and provide a limited choice. For more variety and services people are required to travel to the urban centres. For a few villagers this is possible by car for others it requires catching a taxi, a service that is irregular often leaving people to walk to neighbouring villages to catch a taxi from there (Table 2-6). Time trend exercise indicated improved infrastructure since the village's relocation to its present position in the 1960s (Appendix 7-4).

The original farms that make up the district were purchased by the Department of Bantu Administration under the South African Bantu Trust Act of the former apartheid regime, for the settlement of black families into planned villages. The village of Dixie has only been in existence since the 1960s. Prior to 1963, people lived on land now belonging to either the Sabi-Sand or Manyeleti Game Reserves. When the reserves were formalised, fenced and the tourism industry began to dominate, people were relocated by the government to the farm of Dixie, their present settlement (Table 2-8). The community have now lodged a formal land claim for the land they previously occupied (Box 2-3). As a result of betterment planning, the households now occupy demarcated sites with either distinguishable or at least understood and respected boundaries. Land ownership is communal. The members of the Dixie Community have "residential, cropping and grazing rights" to the farm which, are protected "in terms of the Interim Protection of Informal Land Rights Act 31 of 1996" (LRC, 2003, p32). Leadership in the village involves a combination of traditional authorities and elected local government structures. The greater region falls under the jurisdiction of the Mnisi Tribal Authority. This mix of institutions has proved problematic in Dixie with disputes occurring between the different institutions (Box 2-3). According to Pollard *et al.* (1998) confusion over duties and responsibilities has left an institutional gap in parts of the Bushbuckridge municipality especially with respect to management of and access to natural resources. The majority of the people living in the district are Tsongas.

Box 2-3 The Dixie Land Issue

The Dixie Community received widespread news coverage in recent years as a result of conflict arising out of disagreements on the future development of the Dixie Farm. Local government, the district chief's tribal council and the municipality entered into a deal with a private company to lease a section of the land with the intention of constructing and developing a luxury lodge. In terms of location, Dixie is ideally suited for such a development as it neighbours both the Manyeleti and Sabi-Sand Reserves. The agreement was to involve a ninety-nine year lease with, according to the developer, the community as equal partners. However, no attempt was made to consult with the community over this move, which would see the community losing access to a substantial portion of their land, seen by many as the community's prime resource. Community members, the local Induna as well as the Mnisi Royal Family opposed the move. According to newspaper reports "The Dixie community...claims their chief signed away development rights to the 1000 hectares of virgin bushveld for just R 4 000 a month" (Samayende, 2002). The land itself could be valued at as much as R 20 million. The Tribal Authority signed an agreement with a developer, giving them exclusive use for 40 years, with no thought/mind given to what benefits the community should accrue from such an agreement or, to the relevant legal conditions. The land however is held in trust for the community by the state and the Tribal Authority is only authorised to administer it. Although the developer promised benefits to the community and had apparently received substantial buy-in for the development, the Dixie community responded to the potential loss of their land with an interdict against the developers/investors and the Mnisi Tribal Authority. The developer argued that in an area with such high unemployment and low economic activity, the opportunity to develop the land was one of extreme benefit to the community. Furthermore, the development would include spending on schools, clinics and other relevant infrastructure. According to the Tribal Authority and the developer, most of the community supported the plan however the local Induna (chief) and his supporters stated that they had lost their land in the past to the reserves and did not wish for the same to happen again (Jordaan, 2001). With the threat of looming court action, all affected parties withdrew.

As of the time of research, there were no developments on the Dixie land although the issue was still a contentious one and has caused a rift in the community between those members who support the development and those who are opposed to it.

Table 2-7 Historical profile for Dyala (Participatory Rural Appraisal)

Date	Event
1940s (pre – 1945)	<ul style="list-style-type: none"> • The community was originally based in a village called Solanti located over the mountain • Missionaries arrived in the area • Missionaries established, and were responsible for the school
1945	<ul style="list-style-type: none"> • The church was completed
1950s	<ul style="list-style-type: none"> • The entire village was relocated by the government to its present location. They were originally living on white-owned farms
1963	<ul style="list-style-type: none"> • A large bushfire burnt the area from Dyala to Buxton damaging houses and fields. People stated times were difficult afterwards as the government gave no compensation for damaged property
1970	<ul style="list-style-type: none"> • A flood washed away many houses and two people drowned
1970s	<ul style="list-style-type: none"> • The missionary teachers and pastor left the area and control of the school was transferred to the Department of Education • The formation of the Ciskei and the removal of white farmers from the area had a significant affect on the village. The farmers sold their livestock so many villagers increased their livestock holdings. The village acquired access to more land for arable agriculture and settlement. Agricultural assistance ended.
1972	<ul style="list-style-type: none"> • Very heavy rains made the river impossible to cross making it difficult to get to the shops for food. One community member with sufficient crops provided people with food. Neighbours helped each other. • A man and a child drowned • The village was affected by both chicken pox and pink-eye
1984	<ul style="list-style-type: none"> • Strong winds destroyed the church, damaged several houses and knocked over trees. The trees made collecting water from the river difficult and the community had to dig a well for water. Church & community members raised funds to repair the church whilst individual households struggled to repair the damage to their houses although neighbours assisted each other where possible.
1996	<ul style="list-style-type: none"> • The saw-mill, which employed several people in the community, closed after ongoing labour disputes and demands for increased wages. The community have lived in extreme poverty since its closure with households struggling to make ends meet.
2000-2004	<ul style="list-style-type: none"> • Several livestock diseases, including swollen glands in cows, foot & mouth (especially in goats) and boils, were experienced. The community don't know why these were suddenly a problem. They received no support in terms of medication and advice (as a result of poor extension services). They either bought medicine from pharmacies or used medicinal plants. • Livestock got into the fields and destroyed the potato crop • A community farming project was initiated (Box 2-2)
2003-2004	<ul style="list-style-type: none"> • Drought resulted in poor harvests
2005	<ul style="list-style-type: none"> • Rains broke the drought • Heavy rains washed away the road to Dyala making the village difficult to access. As a result the mobile clinic was unable to access the village, leaving the community with no access to medical attention.

Table 2-8 Historical profile for Dixie (Participatory Rural Appraisal)

Date	Event
Pre-1963	<ul style="list-style-type: none"> The community was settled on land now belonging to the Sabi-Sand and Manyeleti Game Reserves or in another village (Pungwe)
1954	<ul style="list-style-type: none"> At previous location Most of the village was affected by chicken-pox which people treated with traditional medicines (including medicinal plants)
1963	<ul style="list-style-type: none"> People were relocated by the government to their present location on the farm Dixie to allow for the formation of the surrounding game reserves. The community have lodged a formal land claim on this land (Box 2-3)
1982	<ul style="list-style-type: none"> The area was affected by severe drought. The whole village suffered at this time as wide-scale crop failure was experienced. People relied heavily on the surrounding bush for food during this time. For example, they ate green and yellow monkey oranges which survived despite the drought. A powder made from the kernels of these fruits is consumed as an appetite suppressant. People stated that the bush played an important role in their survival.
1983	<ul style="list-style-type: none"> The primary school was established
1988	<ul style="list-style-type: none"> A bus service started to Acornhoek and Thulamahashe. This service was welcomed by the community who had previously struggled to get transport into these regional centres.
2000	<ul style="list-style-type: none"> The area was affected by heavy rains and flooding in which most people lost their homes, fields, gardens, livestock, furniture, etc. Many people were left with nowhere to stay and so made temporary houses using NTFPs whilst rebuilding took place. The Reconstruction and Development Programme (RDP) promised houses but never delivered, therefore people rebuilt their houses on their own. People struggled for food because the fields/gardens had been destroyed and even wild edible herbs couldn't grow. Some people went to Acornhoek and bought groceries for the community.
2001	<ul style="list-style-type: none"> Dixie got its own pension point, which helped the elderly who had previously been travelling to neighbouring Utah to get their monthly pensions. Pension points are active and important points for trade in the surrounding area.
2002	<ul style="list-style-type: none"> The pre-school was established and opened.

CHAPTER THREE: RURAL LIVELIHOOD DIVERSIFICATION – SPREADING THE RISK

3.1 Introduction

3.1.1 Livelihood diversification - overview

The diversification of livelihood strategies practised by rural households has increasingly come into focus as research considers the various contributions made by the assortment of activities in which rural households engage (Adger, 1999; Cavendish, 2000; Ellis, 2000; Niehof, 2004). Rural households throughout the developing world have been identified as investing in a diversity of livelihood strategies to secure their livelihood outcomes and to avoid becoming dependent on a limited number of strategies (Barrett *et al.*, 2001; Block & Webb, 2001; Shackleton *et al.*, 2001; Smith *et al.*, 2001; Niehof, 2004). These livelihood outcomes include increased well-being, reduced vulnerability, more and secure income sources and, improved food security (DFID, 1999). Barrett *et al.* (2001) go so far as to describe livelihood diversification as the norm for rural households. The diversification of livelihoods is recognised as a method by which households aim to reduce and cope with vulnerability by spreading potential risk and, endeavour to achieve and maintain sustainable livelihoods however there are commentators that suggest diversification may constitute more of a poverty trap than a strategy for securing and maintaining rural livelihoods (Adger, 1999). According to Dekker (2004) an important aspect of livelihood diversification as a coping strategy, is to include activities that are not vulnerable to the same risk. DFID (1999, p23) describes these livelihood strategies as “productive activities, investment strategies and reproductive choices” and whilst household characteristics as well as exogenous factors may determine the overall mix of activities and assets, the underlying objective is common to all – “the more choice and flexibility that people have in their livelihood strategies, the greater their ability to withstand – or adapt to – the shocks and stresses of the vulnerability context”. Those households with a greater diversity of strategies and a broader asset base are better positioned to cope during times of misfortune and to make positive livelihood choices. As such, the diversification of livelihood strategies and the accumulation of assets practiced by rural households is a pre-emptive method of coping. Block and Webb (2001) and Niehof (2004) distinguish between diversification in response to new opportunities to improve livelihood outcomes and diversification as a coping mechanism, stating that the strategies pursued may differ depending on the objective.

The range of activities that make up a household’s livelihood portfolio includes various off-farm strategies (e.g. formal and informal waged employment, migrant remittances, government grants and income from micro-enterprises) as well as land-based activities, including arable agriculture, animal husbandry and, the use and sale of NTFPs (Dercon, 1998; May *et al.*, 2000; Shackleton *et al.*, 2001; Bryceson, 2002). In addition to the diversity between strategies there is also considerable diversity within strategies. For example, there is a variety of goods and services associated with livestock including milk, meat and

draught power from which both livestock owners and non-owners benefit (Dovie *et al.*, 2006). The goods and services associated with NTFPs benefit households not only through direct household consumption and the associated cost-saving offered, but also through income earned from the trade in various products (Shackleton *et al.*, 2001). The full range of activities and their associated benefits are often not fully accounted for in national statistics giving the often false impression of communal, rural areas as unproductive with a heavy reliance on state assistance through the administration of government grants (Shackleton *et al.*, 2001; Niehof, 2004). In addition to the overall diversity of strategies not being adequately recognised, the interconnectedness between strategies has also not received sufficient recognition. This applies not only to connections between land-based and off-farm strategies but also within these categories (Adams *et al.*, 2000; Dovie, 2003). According to Smith *et al.* (2001) land-based livelihood strategies allow for diversification into off-farm strategies such as micro-enterprises, through the sale of crops and small livestock. Dovie (2003) noted the opposite with cash income from off-farm sources allowing for investments in land-based strategies. The various land-based strategies are also interlinked, for example animal husbandry and arable agriculture with livestock providing draught power for ploughing and dung for fertilizer whilst damaged crops and stover (crop stalks and residues) are used as livestock feed.

In addition to a range of livelihood strategies, households also endeavour to accumulate and maintain a diversity of assets including productive assets such as agricultural implements, household commodities and livestock. These assets together with land (in situations where tenure arrangements are secure and private) are all commodities that households may choose to liquidate either to meet pressing financial needs or to allow for investments in other livelihood strategies. They can also stand as collateral for loans although Niehof (2004) refers to the sale of assets as the de-diversification of livelihoods, often weakening a household's overall insurance and resulting in a downward spiral of increasing poverty. Whilst many households may choose not to liquidate assets as it leaves them facing the challenge of recouping these, the option to sell contributes towards household security. DFID (1999) however explains that the liquidity of the assets in question is an important factor to bear in mind. Niehof (2004) distinguishes between assets and resources: households "have" assets but "use" resources. Households can choose to convert their assets into resources. Available stocks, including liquid assets such as livestock, bank deposits and financial resources obtained through credit providing institutions constitute part of households' financial capital. Financial capital is the capital generally least available to the poor, making them more reliant on other forms of capital particularly social and natural capital.

Regular inflows of cash (particularly from off-farm sources) also allow households to invest in a variety of saving schemes including burial societies and other credit providing institutions. Credit providing institutions have been documented in various countries including Cameroon, Senegal, Ghana, India, Egypt, Mexico, Indonesia and South Africa (Lukhele, 1990; Bouman, 1995). They provide an important insurance network, particularly for marginal populations with limited access to credit. They assist in guarding against unforeseen expenses associated with misfortunes (e.g. funeral costs) as well as more anticipated costs: "the main flow of this credit is directed to private consumption, durable consumer goods, and payment of school

fees, ensuring survival and improving the quality of life” (Bouman, 1995, p373). Lukhele (1990) extends the diverse financial function of these groups to include establishing small business ventures (by giving people with limited collateral access to credit) and bulk-buying. In addition to the financial contribution made by these groups, they play an important role in establishing and strengthening social ties, kinship and reciprocity amongst members, thus providing a useful coping strategy that extends beyond the financial (Lukhele, 1990; Bouman, 1995). Membership of these groups is high (exceeding 95 % of the population in parts of Liberia, Nigeria and Cameroon) and not necessarily gender specific although Lukhele (1990, p26) noted the considerable role of women, who establish and join these groups to augment low household incomes. According to Bouman (1995, p371) “self-help groups with saving and lending as their primary function consist of two basic types, those with rotating and non-rotating funds”. Those with rotating funds are referred to as ROSCAs (Rotating Savings or Credit Associations) whilst ASCRAs refer to Accumulating Savings and Credit Associations.

Livelihood diversification is not a static concept but is spatially and temporally dynamic, affected by both exogenous and endogenous events that affect rural households and, is variable for household characteristics such as gender and wealth (Block & Webb, 2001). According to Block and Webb (2001) research has increasingly highlighted the positive association not only between livelihood diversification and wealth accumulation but also between this diversification and households’ ability to cope with exogenous shocks, principally through consumption smoothing (Bryceson, 1999; Barrett *et al.*, 2001). Poor households with limited resources encounter entry barriers to preferred livelihood strategies, highlighting the importance of land-based strategies (Block & Webb, 2001). However, even these strategies can entail economic barriers. Dekker (2004) describes that with a greater diversity of livelihood strategies comes less reliance on kinship and community-support networks. Findings on the influence of gender on livelihood diversification are variable. Whilst Block and Webb (2001) describe female-headed households as having less diverse livelihood strategies, Niehof (2004) notes cases where female-headed households are more diversified. Other factors that affect a household’s ability to diversify include the household development cycle as well as the household’s social resources (Niehof, 2004).

Within the South African context rural households are reliant on a mix of off-farm and land based livelihood strategies. Off-farm activities include a significant contribution made by and a reliance on government grants, local waged employment (either formal, informal, full-time or seasonal) and migrant remittances. The range of land-based strategies includes arable farming (both fields and home gardens), animal husbandry (including the diverse range of goods and services from all livestock, including small-stock) and the consumption and trade of natural resources (Shackleton *et al.*, 2001). In addition to the direct-use values associated with these activities, is the largely unrecognised contribution that these strategies may make in seeing households through periods of uncertainty. Bryceson and Fonseca (2006) describes that in most of Africa, despite diversification into off-farm strategies, households maintain investments in land-based strategies as a cushion against shocks that affect non-farm activities whether this be large-scale economic shocks or idiosyncratic household shocks such as the death or retrenchment of the breadwinner.

3.1.2 Off-farm livelihood strategies, asset accumulation and savings

With respect to off-farm activities in the South African context, transfers from urban areas and government sources have been identified as the “mainstay of the rural economy in many areas” (Shackleton *et al.*, 2001, p581). Government grants in the form of old-age pensions, child-support and disability grants, in many cases, constitute the primary source of income for rural households particularly as high unemployment rates continue to be a challenge. Historical policies have left an imprint with respect to the country’s settlement patterns and as such the majority of South Africa’s rural population resides in former homeland areas characterised by poor development and high unemployment. Consequently, those who do seek and find employment generally do so in the urban areas, although they often remain tied to their rural bases either remitting on a regular basis or contributing when their households need. Migrant members contribute to household resources (Niehof, 2004). There are however households with members employed in both the formal and informal job markets, either on a full-time basis or temporarily/seasonally. The informal sector in South Africa is largely under-appreciated. Additionally, household members diversify into a range of micro-enterprises selling a variety of good and offering services. The contribution made by these various off-farm cash inflows towards livelihood security is two-fold. Firstly, they allow for immediate and accessible cash and secondly, they allow households to make investments into other livelihood strategies, thereby increasing their overall asset portfolio (DFID, 1999; Smith *et al.*, 2001). According to Block and Webb (2001) off-farm livelihood strategies are promoted in countries facing consumption and income shocks affecting land-based strategies. In addition to investing in other livelihood strategies, including those that are land-based, households with a regular cash income can invest in a variety of credit-providing institutions including rotating and accumulating groups (ROSCAs and ASCRAs). Africa, including South Africa, has been identified not only for the high membership rates but also for the diversity and abundance of these groups (Lukhele, 1990).

ROSCAs and ASCRAs, referred to locally as “*Stokvels*”, differ in nature from one to the next with respect to membership numbers, frequency of payments and out-payments and so forth however, generally the greatest distinction between the two categories is how they manage their funds (Lukhele, 1990; Bouman, 1995). ROSCAs operate in the manner that members each contribute to a general pool which is then immediately returned to one member. This rotates with each member allocated a turn to receive the entire pool. The frequency of out-payments as well as the pooled amount depends largely on the number of members and the size of their respective contributions. Monthly payments are common when people earn a monthly salary, or, as in the South African situation, receive a monthly government grant. As the groups operate in cycles, they are effective for planned expenses but serve little purpose for more unexpected expenditure. The membership of ROSCAs has been identified as an accurate way to subdivide communities according to wealth, as the wealthy and poor are frequently members of separate groups, with differing contributions (Bouman, 1995). Groups are usually established between people who know each other as a degree of trust is required in that payments will be made regularly (Lukhele, 1990).

ASCRA function differently. Although members are also required to pool money, this is not immediately redistributed but, rather allowed to accumulate. As with the ROSCAs, ASCRAs may operate on a short-term cyclical basis or, depending on the function, last over much longer periods of time. Many ASCRAs operate on an annual basis with members saving for a particular expense such as school fees or ceremonies (e.g. initiations and Christmas). Those that operate with longer time-horizons include burial societies. An important dimension of ASCRAs is their money-lending function. Members may take out a loan from the pool which is then repaid with interest. According to Bouman (1995) the conditions under which loans are granted are reasonably common, with emergencies given priority followed by consumption and then finally production loans. Rates of interest are generally high, although, this depends on the group itself with smaller, village-level groups offering lower interest rates than those more formalised urban-based credit groups. A further distinction between the categories is that, unlike ROSCAs which require regular contributions, ASCRAs are less fixed with respect to the amount and frequency of the contributions. As ASCRAs are generally more flexible in nature, their membership is more heterogeneous (Bouman, 1995). The money lending function of ASCRAs makes them more suitable for insuring members against unforeseen expenses.

3.1.3 Land-based livelihood strategies: arable agriculture, animal husbandry and the role of NTFPs

In a country such as South Africa where a large proportion of the population is located in rural areas, the contribution made by land-based livelihood strategies to the total livelihoods bundle needs to be addressed. These land-based strategies make an important financial and social contribution to livelihoods and include arable agriculture, livestock husbandry and the consumption and trade of natural resources (Shackleton *et al.*, 2001). According to Barnes (1999) animal husbandry and arable agriculture are significant land-use options. Dovie *et al.* (2006) considered contributions to households from various income sources and found that NTFPs constituted 19.3 %, livestock 22.7 %, crop production 15.5 %, formal cash income (jobs and grants) 26.9 % and informal income 15.6 %. Overall, wages and remittances contributed 42.2 % of income shares whilst land-based livelihood strategies contributed 57.5 %. Shackleton *et al.* (2001) identified numerous gaps in research on land-based strategies including the contribution made by small-stock and the range of livestock products, produce from home-gardens and mixed-cropping systems (including harvested “wild” foods) and the use and sale of NTFPs.

3.1.3.1 Arable agriculture

Arable agriculture practised by rural households occurs in both home-gardens as well as larger fields, with some households focussing on one or the other whilst others cultivate both. According to May *et al.* (2000) over one third of rural households in South Africa practice arable agriculture; if home-gardens are included the majority of rural households are cultivating some form of arable land (Kepe, 1997; May *et al.*, 2000; Shackleton *et al.*, 2000). Smallholder food production is an important aspect of rural livelihood sustainability and considered as a sector of the rural economy requiring further research and policy

development, particularly as the challenge to provide and maintain food self-sufficiency continues to grow (Dovie *et al.*, 2003). The contribution made by arable agriculture to rural livelihoods has often been under-appreciated as previous assessments have focussed on primary crops and end-harvests whilst failing to consider the range of products cultivated, account for consumption during the growing season as well as additional benefits such as livestock fodder, organic fertiliser and benefits associated with home-gardens such as shade and aesthetics (High & Shackleton, 2000; McAllister, 2000; Smith *et al.*, 2001; Dovie *et al.*, 2003). Agroforestry and intercropping are often not accounted for and whilst each crop may contribute less the total yield from these systems can be comparable to commercial monoculture systems (Shackleton *et al.*, 2000). Furthermore surplus produce is often stored or sold, given away as gifts (thereby contributing towards a households' social capital) or kept for seed for future seasons reducing potential input costs. Food self-sufficiency constitutes an important cost saving for rural households with limited cash incomes. Contributions from land-based strategies can be spatially and temporally variable (Dovie, 2001).

3.1.3.2 *Animal husbandry*

Animal husbandry is one of several land-based strategies that contribute towards the diversity of rural livelihoods through both livestock products and non-market benefits. This includes the ownership and maintenance of cattle as well as small-stock such as poultry, goats, sheep and pigs. The role played by livestock in rural households is multi-functional. At a functional level households invest in livestock for the range of goods and services they provide including meat and milk, draught power, transport, dung and cash sales (Campbell *et al.*, 1998; Shackleton *et al.*, 2000; Dovie *et al.*, 2006). Non-livestock owners also benefit from these goods and services and, gifts from livestock owners help in establishing kinship ties (Shackleton *et al.*, 2000; Dovie *et al.*, 2006). Taking these multiple goods and services into account, Dercon (1998) found returns from communal livestock systems to be comparable to those from commercial production. Additionally livestock have been recognised as serving an important socio-cultural function intricately linked to traditional ceremonies and social status. Livestock ownership (particularly cattle) has been associated with, and is often used as an indicator for wealth with wealthy households owning larger herds (Shackleton & Shackleton, 2006). Dercon (1998) also highlights the role of livestock in consumption smoothing. Cattle offer high returns and are relatively liquid thereby providing insurance against income shortfalls as well as providing collateral for investments in other livelihood strategies. According to Shackleton *et al.* (2000) whilst many livestock owners may not utilise the full range of products and services associated with livestock ownership, the option to do so is highly valued. Negatively though, investments into cattle ownership require a high initial capital outlay restricting those households without the available capital from investing in this form of insurance. Shackleton *et al.* (1999) draw attention to small-stock, often ignored in assessments of subsistence animal husbandry, but an important component in the sense that small-stock is often easier to liquidate and cash sales can finance investments in cattle. Herd owners aim to maximise the yield of consumable products and increase their investment size (Dovie *et al.*, 2006).

3.1.3.3 *Non-timber forest products (NTFPs)*

The consumption and trade in natural resources is widely practiced by rural communities throughout the developing world with communities making use of an extensive range of NTFPs and species for food, energy, shelter, medicines, tools and fibre (Appasamy, 1993; Gakou *et al.*, 1994; Chopra, 1997; Khare *et al.*, 2000; Shackleton *et al.*, 2001; Shackleton *et al.*, 2002). When incorporated into the livelihood strategies of rural households, this range of NTFPs aids in reducing households' vulnerability to risk. This use of NTFPs is to meet basic household needs, involves the sale of resources in local, regional and national markets to generate cash income and, serves an important gap filling or safety-net function (Shackleton *et al.*, 2001; Angelsen & Wunder, 2003). There are few rural households that do not use NTFPs as part of their livelihood strategies, but the extent of use varies depending on factors such as availability, accessibility, household characteristics and preferences (Shackleton *et al.*, 2001). Socio-economic factors influence resource use therefore within any given community use may vary depending on factors such as household wealth, gender of the household head as well as the gender composition of the household members (Cavendish, 2000; Shackleton & Shackleton, 2006). Cavendish (2000) found the contribution made by NTFPs to rural livelihoods to be an important one, in competition with other incomes, yet despite this it is often overlooked as a livelihood strategy and land-use option. The use and sale of NTFPs constitutes a land-based livelihood strategy that is receiving increasing recognition for its contribution towards sustaining rural livelihoods and alleviating poverty.

The diversification of livelihood strategies, whilst argued to be a potential poverty trap, is seen as a means for rural households to spread the risk to which they are vulnerable across their entire asset base. Off-farm income sources, assets and savings as well as the different land-based strategies provide households with options for coping through both consumption smoothing and income generation. When assessing rural households and how they strive to achieve their livelihood outcomes and ensure livelihood security the complete range of livelihood strategies needs to be considered. This chapter sets out to establish a base-line understanding of the diversity of assets and activities of rural households in two sites within South Africa and in doing so provides the context for examining the suite of coping strategies from which these household can and do draw when facing times of uncertainty or crisis. Furthermore, it briefly establishes the role of NTFPs within the households' livelihoods and how this role compares to other livelihood strategies. This allows for the rural safety-net function of NTFPs to be compared to the other insurance options households have at their disposal.

3.2 Results

3.2.1 The diversity of livelihood strategies

3.2.1.1 *Livelihood diversity*

Households in both villages have adopted a diversity of livelihood strategies, both off-farm and land-based. The off-farm livelihood strategies include a reliance on government grants (namely old-age pensions, child-

support grants and disability grants), wages from both formal and informal employment opportunities and, migrant remittances. Members of various households are also self-employed providing a range of services and selling a variety of products both within their own community and to the surrounding areas. The land-based livelihood strategies adopted by households include arable agriculture, animal husbandry and, the use and sale of NTFPs. These various livelihood strategies contribute directly towards livelihood security and also allow for the acquisition of assets (including various household assets and livestock) and the investment in various saving schemes.

With respect to the average number of livelihood strategies adopted per household, there is no significant difference between the two villages (Table 3-1), nor are the differences as determined by household wealth and gender of the de jure household head significant (Table 3-2). This suggests that livelihood diversity is a common feature to households irrespective of these characteristics however, the particular strategies adopted need to be considered.

Table 3-1 Average number of livelihood strategies per household – stratified by village (Mean ± SE)

	Dyala	Dixie	T/Z	Significance
Total number of livelihood strategies/household	4.7 ± 0.2	4.3 ± 0.2	1.5	>0.05

Table 3-2 Average number of livelihood strategies per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
Dyala	5.1 ± 0.2	4.3 ± 0.3	-1.3	>0.05	4.9 ± 0.2	4.2 ± 0.4	1.4	>0.05
Dixie	4.6 ± 0.3	4.0 ± 0.2	-0.9	>0.05	4.3 ± 0.2	4.3 ± 0.4	0.0	>0.05

3.2.1.2 *Employment and self-employment*

3.2.1.2.1 **Relative prevalence of employment and self-employment**

There is no significant difference between Dyala and Dixie with respect to the proportion of households with at least one employed member however this includes both formal and informal employment as well as full- and part-time employment. Dixie has significantly more households with one or more formally employed members as well as members involved in micro-enterprises or service provision. The difference with respect to informal jobs is not significant (Table 3-3). Of the total sample 53 % of households have at least one employed household member, either formally or informally employed. Thirty percent of households have members involved in micro-enterprises.

Table 3-3 Relative prevalence (%) of employment and self-employment (proportion of all households) – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
≥ one job/household	44.0	62.0	53.0	3.3	>0.05
Formally employed	34.0	58.0	46.0	5.7	<0.05
Informally employed	16.0	4.0	10.0	4.0	>0.05
Self-employed	20.0	40.0	30.0	4.8	<0.05

Taking household wealth and gender of the de jure household head into consideration, in Dyala there are no significant differences in the proportions of households with respect to overall employment, formal jobs, informal jobs or self-employment. In comparison, in Dixie a significantly greater proportion of wealthy households have at least one employed household member. The proportion of households with a formal job is also significantly different with 96 % of wealthy households having a formally employed household member compared to 20 % of poor households. No wealthy households have members employed in the informal job market although this is not significantly less than the proportion of poor households and equal proportions of wealthy and poor households have self-employed members. In Dixie formal jobs and not old-age pensions (as is the case in Dyala) distinguish the wealthy households from the poor households. As with Dyala there are no significant differences with respect to the gender of the de jure household head (Table 3-4). Self-employment includes selling snacks outside the schools, selling groceries, producing and selling jam, selling curios as well as providing services including construction and fridge repair.

Table 3-4 Relative prevalence (%) of employment and self-employment (proportion of all households) – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
≥ one job/ household	44.0	44.0	0.0	>0.05	45.5	41.2	0.8	>0.05
Formally employed	32.0	36.0	0.1	>0.05	36.4	29.4	0.2	>0.05
Informally employed	12.0	20.0	0.6	>0.05	15.2	17.7	0.1	>0.05
Self-employed	28.0	12.0	2.0	>0.05	27.3	5.9	3.2	>0.05
Dixie								
≥ one job/ household	96.0	28.0	24.5	<0.05	64.3	50.0	0.6	>0.05
Formally employed	96.0	20.0	29.6	<0.05	59.5	50.0	0.3	>0.05
Informally employed	0.0	8.0	2.1	>0.05	4.8	0.0	0.4	>0.05
Self-employed	40.0	40.0	0.0	>0.05	42.9	25.0	0.9	>0.05

With respect to the migrant remittances, these are not in all cases a regular contribution nor are they always in the form of cash but may include a variety of gifts and contributions. Maintaining ties with migrant members not only ensures these gifts and contributions but also establishes a safety-net with households able to rely on migrant members for assistance during times of need. Households also rely on support from family, friends and neighbours within the same community. These kin relations together with those

maintained with migrant members constitute a household's social capital. The role of kinship and community support networks will be discussed in more detail in Chapter 5.

3.2.1.2.2 Differences in the average number of employed and self-employed members per household

With respect to the average number of jobs per household, at a village level there is no significant difference in the overall average number of employed members per household however when this is broken down, households in Dixie have a significantly greater average number of formally employed household members as well as self-employed members whilst households in Dyala have a significantly greater average number of informally employed members per household (Table 3-5).

Table 3-5 Average number of employed and self-employed members per household – stratified by village (Mean ± SE)

	Dyala	Dixie	T/Z	Significance
Average number employed (total)	0.6 ± 0.1	0.8 ± 0.1	-1.3	>0.05
Average number formally employed	0.4 ± 0.1	0.8 ± 0.1	-2.4	<0.05
Average number informally employed	0.2 ± 0.1	0.1 ± 0.0	2.0	<0.05
Average number self-employed	0.3 ± 0.1	0.5 ± 0.1	-2.0	<0.05

In Dyala there are no significant differences for either household wealth or gender of the de jure household head whether taking the total sample, or just those households with employed and/or self-employed members, into account. In comparison, in Dixie wealthy households have significantly more formally (and total) employed members per household than their poor counterparts. Gender of the de jure household head has no affect. Isolating those households with formally, informally or self-employed members there are no significant differences for either household wealth or gender of the de jure household head (Table 3-6).

Table 3-6 Average number of employed and self-employed members per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala								
Av. No. employed (total)	0.6 ± 0.2	0.7 ± 0.2	0.3	>0.05	0.7 ± 0.2	0.6 ± 0.2	0.1	>0.05
Av. No. formally employed	0.4 ± 0.1	0.4 ± 0.1	0.3	>0.05	0.5 ± 0.1	0.4 ± 0.2	0.5	>0.05
Av. No. informally employed	0.2 ± 0.1	0.2 ± 0.1	0.7	>0.05	0.2 ± 0.1	0.2 ± 0.1	-0.2	>0.05
Av. No. self-employed	0.5 ± 0.2	0.1 ± 0.1	-1.5	>0.05	0.1 ± 0.1	0.1 ± 0.1	1.8	>0.05
Dixie								
Av. No. employed (total)	1.3 ± 0.1	0.3 ± 0.1	-4.8	<0.05	0.8 ± 0.1	0.8 ± 0.3	0.3	>0.05
Av. No. formally employed	1.3 ± 0.1	0.2 ± 0.1	-5.1	<0.05	0.8 ± 0.1	0.8 ± 0.3	0.1	>0.05
Av. No. informally employed	0.0 ± 0.0	0.1 ± 0.1	1.4	>0.05	0.1 ± 0.0	0.0 ± 0.0	0.6	>0.05
Av. No. self-employed	0.5 ± 0.1	0.4 ± 0.1	-0.1	>0.05	0.5 ± 0.1	0.3 ± 0.2	1.0	>0.05
Households with employed and self-employed members								
Dyala								
Av. No. employed (total)	1.4 ± 0.2	1.5 ± 0.2	0.2	>0.05	1.5 ± 0.2	1.3 ± 0.2	0.6	>0.05
Av. No. formally employed	1.3 ± 0.2	1.2 ± 0.2	-0.1	>0.05	1.3 ± 0.1	1.2 ± 0.2	0.1	>0.05
Av. No. informally employed	1.7 ± 0.3	1.2 ± 0.2	-1.3	>0.05	1.4 ± 0.3	1.3 ± 0.3	0.2	>0.05
Av. No. self-employed	1.7 ± 0.4	1.0 ± 0.0	-1.1	>0.05	1.6 ± 0.3	1.0 ± 0.0	0.5	>0.05
Dixie								
Av. No. employed (total)	1.3 ± 0.1	1.1 ± 0.1	-0.6	>0.05	1.3 ± 0.1	1.5 ± 0.3	-0.8	>0.05
Av. No. formally employed	1.3 ± 0.1	1.2 ± 0.2	-0.4	>0.05	1.3 ± 0.1	1.5 ± 0.3	0.8	>0.05
Av. No. informally employed	0.0 ± 0.0	1.0 ± 0.0	-	-	1.0 ± 0.0	0.0 ± 0.0	-	-
Av. No. self-employed	1.2 ± 0.1	1.1 ± 0.1	-0.4	>0.05	1.2 ± 0.1	1.0 ± 0.0	0.4	>0.05

3.2.1.3 Government grants

3.2.1.3.1 The proportion of households receiving government grants

On average 39 % of the sampled households receive at least one child-support grant, 23 % an old-age pension and 11 % receive a disability grant (Table 3-7). With respect to the two villages the difference in the proportion of households receiving child-support grants is not significant but a significantly greater proportion of households in Dyala receive old-age pensions and disability grants.

Table 3-7 Proportion of all households (%) receiving government grants – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Child-support grant (CSG)	30.0	48.0	39.0	3.4	>0.05
Old-age pension (OAP)	34.0	12.0	23.0	6.8	<0.05
Disability grant (DG)	18.0	4.0	11.0	5.0	<0.05

During the wealth ranking exercises in Dyala, old-age pensions were identified as a criterion for defining wealth with those households receiving an old-age pension being classified as wealthy. In Dyala there is a

significant difference in the proportion of wealthy and poor households receiving old-age pensions with 52 % of the wealthy households receiving at least one old-age pension per household compared to only 16 % of the poor households (Table 3-8). There is no significant difference in Dixie, where formal employment plays a greater role in distinguishing those households that are wealthy or poor. The difference in proportions of male- and female-headed households receiving an old-age pension is not significant for Dyala but is for Dixie. In Dixie a significantly greater proportion of female-headed households receive old-age pensions. There are no significant differences in child-support or disability grants for either village as determined by household wealth or gender of the de jure household head.

Table 3-8 Proportion of all households (%) receiving government grants – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
CSG	24.0	36.0	0.9	>0.05	30.3	29.4	0.0	>0.05
OAP	52.0	16.0	7.2	<0.05	30.3	41.2	0.6	>0.05
DG	24.0	12.0	1.2	>0.05	21.2	11.8	0.7	>0.05
Dixie								
CSG	44.0	52.0	0.3	>0.05	45.2	62.5	0.8	>0.05
OAP	8.0	16.0	0.8	>0.05	2.4	62.5	23.0	<0.05
DG	4.0	4.0	0.0	>0.05	4.8	0.0	0.4	>0.05

3.2.1.3.2 Average number of government grants received per household

Not only do a greater proportion of households in Dyala receive an old-age pension or disability grant but they also receive a significantly greater number of these grants per household. This is when taking the total sample into consideration. When comparing only those households receiving these grants, the differences are not significant. The difference in the average number of child-support grants per household between Dyala and Dixie is not significant (Table 3-9).

Table 3-9 Average number of government grants received per household – stratified by village (Mean ± SE)

	Dyala	Dixie	T/Z	Significance	Dyala	Dixie	T/Z	Significance
	All households				Grant receiving households			
CSG	0.5 ± 0.1	0.7 ± 0.1	-1.5	>0.05	1.7 ± 0.3	1.5 ± 0.2	1.3	>0.05
OAP	0.5 ± 0.1	0.1 ± 0.1	2.8	<0.05	1.5 ± 0.1	1.2 ± 0.2	1.3	>0.05
DG	0.2 ± 0.1	0.1 ± 0.0	2.2	<0.05	1.0 ± 0.0	1.0 ± 0.0	0.0	>0.05

Wealthy households in Dyala receive significantly more old-age pensions per household than their poor counterparts (Table 3-10). This holds true across the total sample as well as for only those households receiving old-age pensions. There are no significant differences in the average number of child-support grants or disability grants received by wealthy and poor or male- and female-headed households. However,

when considering only those households receiving an old-age pension, the male-headed households receive a significantly higher average number of old-age pensions than the female-headed households - reflecting that for male-headed households both adults may be of pensionable age whereas for female-headed households, she is likely to be either single or widowed. In Dixie the average number of old-age pensions, child-support and disability grants per household, is not significantly different for either wealth or gender with the exception of old-age pensions, with female-headed households receiving a greater average number per household. This applies only when taking the total sample into consideration. No female-headed households receive disability grants (Table 3-10). The greater proportion of female-headed households receiving old-age pensions, together with those receiving a greater average number of pensions per household, is a reflection of the wealth ranking exercise and the available employment opportunities for members of the Dixie community. Employment opportunities in the game reserves and those offering better pay include positions as trackers and guides. Young to middle-aged men are favoured for these positions and as a result, households with a male member (usually the head) within this age group, who has found employment, are the wealthier households in the community. The poor households consist of young men living alone, recently married couples without an accumulated asset base, or are male-headed with no employed members and no members old enough to receive an old-age pension. Those households with a female-head receiving an old-age pension fall into either category depending on the other income sources/livelihood strategies of the household.

Table 3-10 Average number of government grants received per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
Dyala								
CSG	0.4 ± 0.2	0.6 ± 0.2	0.8	>0.05	0.5 ± 0.2	0.5 ± 0.2	0.1	>0.05
OAP	0.9 ± 0.2	0.2 ± 0.1	-3.0	<0.05	0.6 ± 0.2	0.5 ± 0.2	-0.2	>0.05
DG	0.2 ± 0.1	0.1 ± 0.1	-1.1	>0.05	0.2 ± 0.1	0.1 ± 0.1	0.8	>0.05
Dixie								
CSG	0.8 ± 0.2	0.6 ± 0.1	0.1	>0.05	0.6 ± 0.1	1.0 ± 0.3	-1.2	>0.05
OAP	0.1 ± 0.1	0.2 ± 0.1	0.8	>0.05	0.1 ± 0.0	0.8 ± 0.3	-4.8	<0.05
DG	0.1 ± 0.0	0.1 ± 0.0	0.0	>0.05	0.1 ± 0.0	0.0 ± 0.0	0.6	>0.05
Dyala								
CSG	1.8 ± 0.3	1.7 ± 0.3	<u>-0.4</u>	>0.05	1.7 ± 0.2	1.8 ± 0.5	<u>0.2</u>	>0.05
OAP	1.7 ± 0.1	1.0 ± 0.0	-2.1	<0.05	1.8 ± 0.1	1.1 ± 0.1	2.3	<0.05
DG	1.0 ± 0.0	1.0 ± 0.0	-	-	1.0 ± 0.0	1.0 ± 0.0	-	-
Dixie								
CSG	1.7 ± 0.3	1.2 ± 0.1	-1.1	>0.05	1.4 ± 0.2	1.6 ± 0.3	-0.9	>0.05
OAP	1.5 ± 0.5	1.0 ± 0.0	-1.6	>0.05	1.0 ± 0.0	1.2 ± 0.2	-0.4	>0.05
DG	1.0 ± 0.0	1.0 ± 0.0	-	-	1.0 ± 0.0	0.0 ± 0.0	-	-

3.2.1.4 *Credit providing institutions and other saving schemes*

3.2.1.4.1 **Proportion of households with saving schemes**

Households in both villages invest and manage their finances in a variety of ways. With respect to saving schemes, of the total number of households sampled, 62 % have invested in some form of saving scheme. These include burial societies (39 %), rotating and accumulating stokvels (31 %), bank accounts (18 %) and insurance schemes (3 %). Within each of these broader categories are various options, for example, whilst some households are members of larger, more formalised societies (either burial or credit), others are members of societies formed within the village itself or with members from surrounding villages. Other households have invested in bank accounts or accounts with the post office whilst insurance schemes include medical aid. Whilst there is no significant difference between the villages when taking “savings” as a whole into account, there are differences between the different types of “savings”. The proportions vary between the two villages depending on the scheme in question, so whilst a significantly greater proportion of Dyala households have invested in burial societies, in Dixie significantly more households are members of rotating and/or accumulating stokvels and have bank accounts (Table 3-11).

Of households with savings, 81.8 % in Dyala have a burial society – almost double the proportion in Dixie. In Dixie, 72.4 % are members of at least one stokvel and 44.8 % have bank accounts – in both cases this is double the Dyala equivalents. These differences are significant (Table 3-11).

Table 3-11 Proportion of households (%) owning saving schemes – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
All households					
Savings (Total)	66.0	58.0	62.0	0.7	>0.05
Burial societies	54.0	24.0	39.0	9.5	<0.05
Stokvels*	20.0	42.0	31.0	5.7	<0.05
Bank accounts	10.0	26.0	18.0	4.3	<0.05
Insurance schemes	4.0	2.0	3.0	0.3	>0.05
Households with saving schemes					
Burial societies	81.8	41.4	61.6	10.8	<0.05
Stokvels*	30.3	72.4	51.4	10.9	<0.05
Bank accounts	15.2	44.8	29.9	6.6	<0.05
Insurance schemes	6.1	3.5	9.5	0.2	>0.05

* Includes both rotating and accumulating credit groups.

Ownership of a saving scheme and membership of stokvels and burial societies is affected by household wealth (Table 3-12). In both villages a significantly greater proportion of wealthy households have some form of savings: 96 % and 92 % of wealthy households in Dyala and Dixie respectively. In Dyala the differences in proportions of wealthy and poor households with burial societies, stokvels and bank accounts are all significant. No poor households have bank accounts and there is no difference in the proportions

with insurance schemes. The same applies for Dixie. No poor households reported having burial societies or insurance schemes. Gender of the de jure household head, does not significantly affect the ownership/membership of a saving scheme although group discussions in Dixie indicated the actual member of a stokvel is usually a women. A regular income, whether in the form of a government grant or wages (and related to this, household wealth) allows for investments into these schemes.

When just taking those households with a saving scheme into account, there are no significant differences for either wealth or gender of the de jure household head, with the exception of burial societies in Dixie: no poor households reported having a burial society whilst more than 50 % of wealthy households are members of a burial society (Table 3-12).

Table 3-12 Proportion of households (%) owning saving schemes – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Savings	96.0	36.0	20.1	<0.05	72.7	52.9	1.9	>0.05
Burial societies	84.0	24.0	18.1	<0.05	60.6	41.2	1.7	>0.05
Stokvels*	32.0	8.0	4.5	<0.05	24.2	11.8	1.1	>0.05
Bank accounts	20.0	0.0	5.6	<0.05	15.2	0.0	2.9	>0.05
Insurance schemes	4.0	4.0	0.0	>0.05	3.0	5.9	0.2	>0.05
Dixie								
Savings	92.0	24.0	23.7	<0.05	61.9	37.5	1.6	>0.05
Burial societies	48.0	0.0	15.8	<0.05	26.2	12.5	0.7	>0.05
Stokvels*	68.0	16.0	13.9	<0.05	45.2	25.0	1.1	>0.05
Bank accounts	44.0	8.0	8.4	<0.05	30.9	0.0	3.4	>0.05
Insurance schemes	4.0	0.0	1.0	>0.05	2.4	0.0	0.2	>0.05
Households with saving schemes								
Dyala								
Burial societies	87.5	66.7	1.9	>0.05	83.3	77.9	0.1	>0.05
Stokvels*	33.3	22.2	0.4	>0.05	33.3	22.2	0.4	>0.05
Bank accounts	20.8	0.0	2.2	>0.05	20.8	0.0	2.2	>0.05
Insurance schemes	4.2	11.1	0.6	>0.05	4.2	11.1	2.2	>0.05
Dixie								
Burial societies	52.2	0.0	5.3	<0.05	42.3	33.3	0.1	>0.05
Stokvels*	73.9	66.7	0.1	>0.05	73.1	66.7	0.1	>0.05
Bank accounts	47.8	33.3	0.4	>0.05	50.0	0.0	2.7	>0.05
Insurance schemes	4.4	0.0	0.3	>0.05	3.9	0.0	0.1	>0.05

* Includes both rotating and accumulating credit groups.

3.2.1.4.2 Average number of saving schemes owned per household

Whilst there is no significant difference in terms of total savings, households in Dyala have, on average, a significantly greater number of burial societies per household (Table 3-13). Households in Dixie on the

other hand, have a significantly greater average number of stokvels per household. When looking specifically at those households with savings though, the differences are not significant.

Table 3-13 Average number of saving schemes per household – stratified by village (Mean ± SE)

	Dyala	Dixie	T/Z	Significance	Dyala	Dixie	T/Z	Significance
	All households				Households with saving schemes			
Savings	0.9 ± 0.1	1.1 ± 0.2	-0.1	>0.05	1.5 ± 0.1	1.9 ± 0.2	-1.8	>0.05
Burial societies	0.6 ± 0.1	0.3 ± 0.1	3.1	<0.05	1.1 ± 0.1	1.1 ± 0.1	0.3	>0.05
Stokvels *	0.2 ± 0.1	0.5 ± 0.1	-2.5	<0.05	1.1 ± 0.1	1.3 ± 0.1	-0.9	>0.05

* Includes both rotating and accumulating credit groups.

In both villages the wealthy households have a significantly greater average number of total saving schemes per household (Table 3-14). This includes burial societies, stokvels, bank accounts and insurance schemes. In both villages the wealthy households also have a significantly greater average number of burial societies and stokvels per household. When only considering those households with savings, in both villages the wealthy households have a significantly greater average number of total savings per household however, for burial societies and stokvels individually, the difference is not significant. The differences are not significant for gender.

Table 3-14 Average number of saving schemes per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala								
Savings	1.5 ± 0.1	0.4 ± 0.1	-4.8	<0.05	1.1 ± 0.2	0.7 ± 0.2	1.5	>0.05
Burial societies	0.9 ± 0.1	0.3 ± 0.1	-3.9	<0.05	0.7 ± 0.1	0.5 ± 0.2	1.2	>0.05
Stokvels*	0.4 ± 0.1	0.1 ± 0.1	-2.1	<0.05	0.2 ± 0.1	0.2 ± 0.1	0.9	>0.05
Dixie								
Savings	1.9 ± 0.2	0.3 ± 0.1	-5.2	<0.05	1.2 ± 0.2	0.4 ± 0.2	1.9	>0.05
Burial societies	0.5 ± 0.1	0.0 ± 0.0	-3.9	<0.05	0.3 ± 0.1	0.1 ± 0.1	0.8	>0.05
Stokvels*	0.9 ± 0.2	0.2 ± 0.1	-3.6	<0.05	0.6 ± 0.1	0.3 ± 0.2	1.2	>0.05
Households with saving schemes								
Dyala								
Savings	1.6 ± 0.1	1.1 ± 0.1	-2.0	<0.05	1.5 ± 0.1	1.3 ± 0.2	-0.6	>0.05
Burial societies	1.1 ± 0.1	1.2 ± 0.2	0.5	>0.05	1.1 ± 0.1	1.1 ± 0.1	0.3	>0.05
Stokvels*	1.1 ± 0.1	1.0 ± 0.0	-0.3	>0.05	1.0 ± 0.0	1.5 ± 0.5	-1.0	>0.05
Dixie								
Savings	1.6 ± 0.1	1.1 ± 0.1	<u>-2.1</u>	<0.05	1.5 ± 0.1	1.3 ± 0.2	<u>1.7</u>	>0.05
Burial societies	1.1 ± 0.1	0.0 ± 0.0	-	-	1.1 ± 0.1	1.1 ± 0.0	0.0	>0.05
Stokvels*	1.3 ± 0.1	1.3 ± 0.3	0.0	>0.05	1.3 ± 0.1	1.0 ± 0.0	0.6	>0.05

* Includes both rotating and accumulating credit groups.

3.2.1.4.3 Proportion of households that drew from household savings in the last two years

Although households may have a saving scheme, the nature of the scheme may not allow the household to make withdrawals if and when they choose. Bank accounts obviously do so but most burial societies do not allow the savings to be accessed except for a funeral whilst accessing savings in stokvels, depends on the nature of the group. Households with accumulating groups may take out loans to be repaid with interest whilst households with rotating groups need to wait for their turn to receive the pooled money. Households in both villages have drawn from their savings within the last two years. Reasons for doing so vary but include needing money to buy food, to cover medical expenses, to pay for school fees and related expenses, to cover/contribute to funeral expenses, to finance micro-enterprises and, to cover household expenses (Figure 3-1)

There is no significant difference between the two villages with respect to the proportion of households that have drawn from their savings within the last two years: this applies whether taking the total sample or only those households with a saving scheme into account (Table 3-15). The same applies when taking household wealth and gender of the de jure household head into account whether for the total sample or only those households with a saving scheme (Table 3-16). Of the total sample 17 % of households (or 25.9 % when isolating households with savings) have turned to their savings in the last two years.

Table 3-15 Proportion of households (%) that have drawn from their savings in the last two years – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Drawn from savings (All households)	16.0	18.0	17.0	0.1	>0.05
Drawn from savings (Households with savings)	24.2	27.6	25.9	0.1	>0.05

Table 3-16 Proportion of households (%) that have drawn from their savings in the last two years – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
Drawn from savings (All households)	24.0	8.0	2.4	>0.05	18.2	11.8	0.3	>0.05
Drawn from savings (Households with savings)	25.0	22.2	0.0	>0.05	25.0	22.2	0.0	>0.05
Dixie								
Drawn from savings (All households)	28.0	8.0	3.4	>0.05	19.1	12.5	0.2	>0.05
Drawn from savings (Households with savings)	30.4	16.7	0.5	>0.05	30.8	0.0	1.3	>0.05

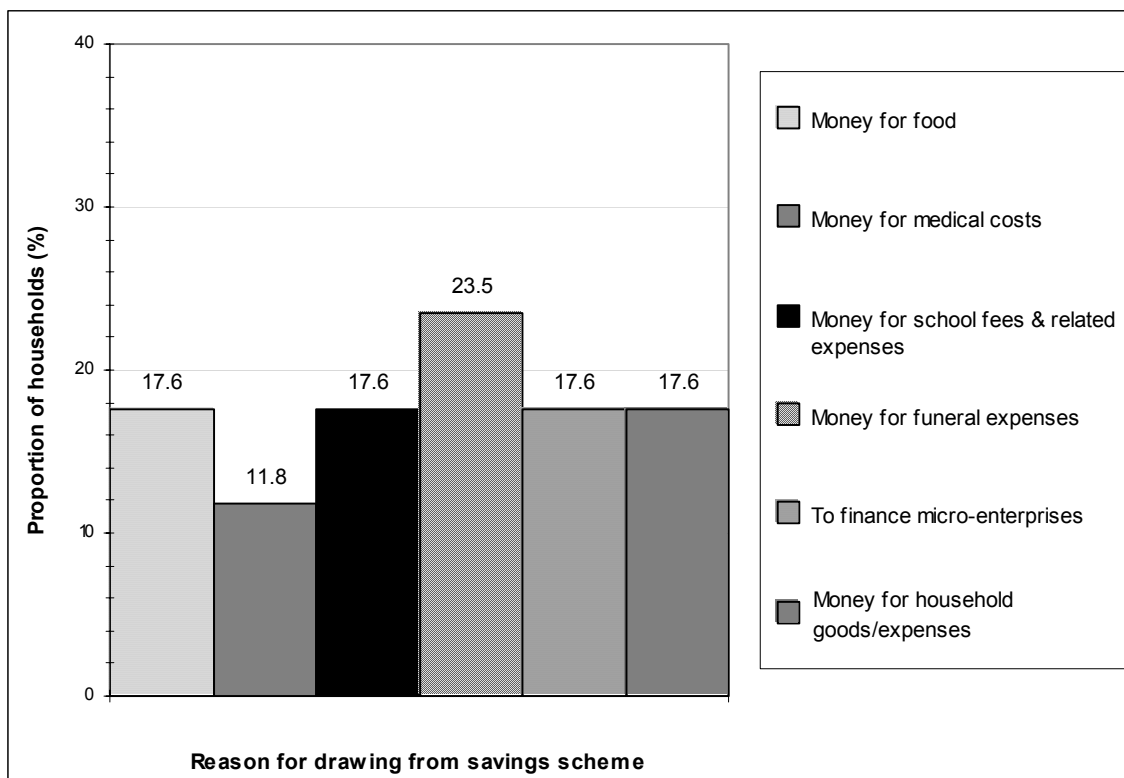


Figure 3-1 Reasons households drew from their savings over the two year period

Over the last two years households have drawn from their savings for various reasons. Of those that have drawn 23.5 % claimed from their burial societies to cover costs associated with funerals. This was the most common reason for drawing. Equal proportions of households stated they had drawn because the household needed money for food, for school fees and related costs, to purchase various household goods (e.g. paraffin) and cover household expenses (e.g. building expenses), to finance a variety of micro-enterprises and, to cover costs associated with illness or injury within the household. Financing of micro-enterprises included buying stock for spaza shops and products for a hair-salon. Some households used the money for more than one purpose (Figure 3-1).

3.2.1.5 Asset ownership – a focus on selected household assets

Seven household assets were selected and considered for this section including radios, paraffin stoves, fridges, hi-fis, gas stoves, televisions and cars however, a range of other assets could be considered including agricultural implements and household furniture. The ownership of assets is an indicator of household wealth (Figure 2-1).

3.2.1.5.1 Proportion of households owning selected assets

Of the seven selected assets, radios (68 %) are owned by the greatest proportion of households followed by paraffin stoves (61 %), fridges (40 %) and hi-fis (38 %). An equal proportion of households own gas stoves and televisions (29 %) and 24 % of households in both villages own cars. With respect to inter-village differences, radios and paraffin stoves are owned by significantly greater proportions of households in Dyala (Table 3-17). The differences with respect to the other selected assets are not significant.

Table 3-17 Proportion of all households (%) owning selected assets – stratified by village

	Dyala	Dixie	Mean	χ^2	Significance
Radios	78.0	58.0	68.0	4.6	<0.05
Paraffin stoves	72.0	50.0	61.0	5.1	<0.05
Fridges	34.0	46.0	40.0	1.5	>0.05
Hi-fis	40.0	36.0	38.0	0.2	>0.05
Gas stoves	20.0	18.0	29.0	0.1	>0.05
Televisions	36.0	22.0	29.0	2.4	>0.05
Cars	24.0	24.0	24.0	0.0	>0.05

At an intra-village level there are differences in the ownership of selected assets as determined by household wealth (Table 3-18). In Dyala the majority of selected assets (fridges, gas stoves, televisions and cars) are owned by a significantly greater proportion of wealthy households. With respect to the poor households in Dyala, no assets other than radios and paraffin stoves are owned by more than 50 % of households. In Dixie all assets other than radios are owned by a significantly greater proportion of wealthy households. In Dixie no poor households own gas stoves, televisions or cars.

With respect to gender of the de jure household head, in Dyala all the selected assets are owned by a greater proportion of male-headed households however the difference is only significant for fridges and cars. The same applies Dixie although the difference is only significant for fridges.

Table 3-18 Proportion of all households (%) owning selected assets – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
Radio	88.0	68.0	2.9	>0.05	84.9	64.7	2.7	>0.05
Paraffin stove	80.0	64.0	1.6	>0.05	75.8	64.7	0.7	>0.05
Fridge	56.0	12.0	10.8	<0.05	45.5	11.8	5.7	<0.05
Hi-fi	52.0	28.0	3.0	>0.05	42.4	35.3	0.2	>0.05
Gas stove	36.0	4.0	8.0	<0.05	27.3	5.9	3.2	>0.05
Television	52.0	20.0	5.6	<0.05	45.5	17.7	3.8	>0.05
Car	44.0	4.0	10.9	<0.05	33.3	5.9	4.6	<0.05
Dixie								
Radio	72.0	44.0	4.0	>0.05	59.5	50.0	0.3	>0.05
Paraffin stove	68.0	32.0	6.5	<0.05	52.4	37.5	0.6	>0.05
Fridge	84.0	8.0	29.1	<0.05	52.4	12.5	4.3	<0.05
Hi-fi	60.0	12.0	12.5	<0.05	40.5	12.5	2.3	>0.05
Gas stove	36.0	0.0	10.9	<0.05	19.1	12.5	0.2	>0.05
Television	44.0	0.0	14.1	<0.05	23.8	12.5	0.5	>0.05
Car	48.0	0.0	15.8	<0.05	26.2	12.5	0.7	>0.05

3.2.1.5.2 Proportion of households that sold assets in the last two years

Households were questioned as to whether they had sold any assets in the preceding two years to meet any form of financial need. This question was not restricted to those assets discussed above but include any household assets excluding livestock, produce from arable land and NTFPs, are all dealt with in the relevant sections. Ten percent of the households in Dyala reported selling various household assets, a significantly greater proportion than in Dixie where no households reported the sale of household assets (Table 3-19). There are no significant differences when taking household wealth or gender of the de jure household head into account (Table 3-20). Reasons given by households for why they had sold assets included needing money to purchase food (49 %), to cover various household expenses (17 %), to pay school fees/buy uniforms (17 %) and to finance micro-enterprises (e.g. buying stock for spaza shops) (17 %) (Figure 3-2).

Table 3-19 Proportion of all households (%) that have sold assets in the last two years – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Sold assets	10.0	0.0	5.0	5.3	<0.05

Table 3-20 Proportion of all households (%) that have sold assets in the last two years – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	4.0	16.0	2.0	>0.05	9.1	11.8	0.1	>0.05
Dixie	-	-	-	-	-	-	-	-

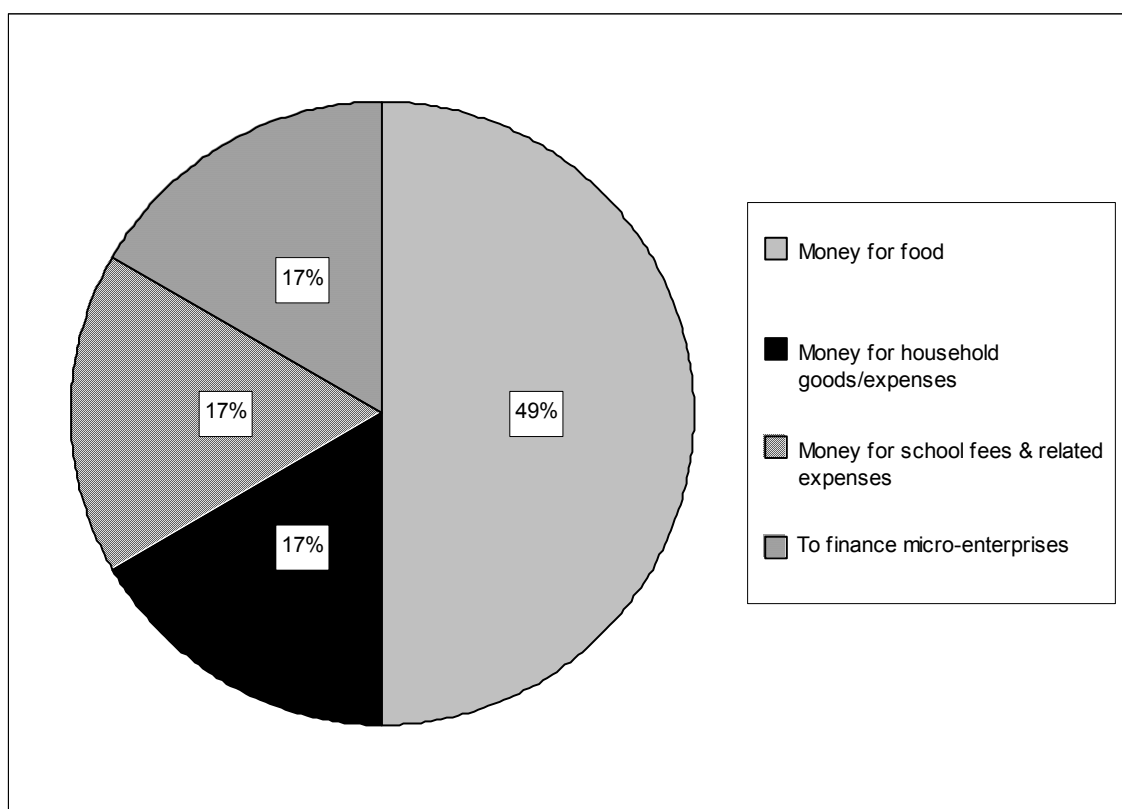


Figure 3-2 Reasons households sold assets over the two year period

3.2.1.6 *Arable agriculture – the contribution of fields and gardens*

3.2.1.6.1 **The proportion of households involved in arable agriculture**

Fifty-six percent of households practise some form of arable agriculture, either cultivating home-gardens, fields or both. However, of those with land set aside for arable agriculture, only 46 % had planted in the preceding two years. A significantly greater proportion of households in Dyala have arable land; 70 % compared to 42 % in Dixie. The difference is also significant for those households in Dyala that planted however, when taking only those households with arable land into consideration, the difference between the villages is not significant. Almost 82 % of households with arable land have planted in the last two years (Table 3-21).

Breaking arable agriculture down into the cultivation of gardens and fields, across the total sample 36 % of households have gardens whilst 26 % have fields. The difference between Dyala and Dixie is significant for the proportion of households with gardens but not for fields. A significantly greater proportion of households in Dyala have gardens. Of the households with gardens 89.4 % have planted in the last two years compared to 65.8 % of field-owning households. In Dyala 93.1 % of garden-owning households have planted compared to 50.0 % of field-owning households whilst in Dixie similar proportions of garden- and field-owning households have planted. The differences between the two villages with respect to the proportion of households that have planted gardens and those that have planted fields are not significant in either case.

Table 3-21 Proportion of households (%) involved in arable agriculture – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Arable agriculture (total)	70.0	42.0	56.0	7.9	<0.05
Planted last 2 years (total)	58.0	34.0	46.0	5.8	<0.05
Planted last 2 years (% farmers)	82.9	80.9	81.9	0.0	>0.05
Gardens	58.0	14.0	36.0	21.0	<0.05
Planted last 2 years (% garden owners)	93.1	85.7	89.4	0.4	>0.05
Fields	20.0	32.0	26.0	1.9	>0.05
Planted last 2 years (% field owners)	50.0	81.3	65.8	2.8	>0.05

In Dyala a significantly greater proportion of wealthy households have land allocated to arable agriculture however the difference is not significant in terms of the proportion of households that have planted (for either the total proportion or only those households with arable land). The difference in Dixie is not significant for households with land or those who have planted. Of households with arable land, more than 80 % of both wealth groups in either village have planted in the last two years. With respect to gender of the de jure household head, in Dyala a significantly greater proportion of male-headed households have land allocated for arable agriculture. The difference is not significant for Dixie. A significantly greater proportion of male-headed households in Dyala have planted in the last two years. This too is not significant for Dixie. Taking only households with arable land into account, the difference with respect to

gender is no longer significant in Dyala. In Dixie all female-headed households with arable land at their disposal, have planted in the last two years (Table 3-22).

With respect to the ownership and cultivation of gardens, there are no significant differences in either village between the wealthy and poor households (Table 3-22). One hundred percent of wealthy households in Dixie planted gardens. In terms of gender of the de jure household head, in Dyala a significantly greater proportion of male-headed households own gardens although there is no significant difference in the proportion of garden-owners planting. All of the female-headed households planted. In Dixie there is no significant difference in either proportion of owners or proportion of owners planting. Here too all female-headed households planted. In Dyala a significantly greater proportion of wealthy households own fields; the difference in Dixie is not significant. Of those households in Dyala with fields, no poor households have planted in the last two years whilst 62.5 % of wealthy households have, this is however not significant. In Dixie the difference in the wealthy and poor households planting is also not significant. With respect to gender, there are no significant differences for either village for field-owning households or those planting. In Dixie all of the female-headed households with fields planted over the two year period (Table 3-22).

Table 3-22 Proportion of households (%) involved in arable agriculture – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
Arable agriculture (All households)	88.0	52.0	7.7	<0.05	84.9	41.2	10.2	<0.05
Planted last 2 yrs (All households)	72.0	44.0	4.0	>0.05	72.7	29.4	8.6	<0.05
Planted last 2 yrs (% farmers)	81.8	84.6	0.1	>0.05	85.7	71.4	0.8	>0.05
Gardens	68.0	48.0	2.1	>0.05	72.7	29.4	8.6	<0.05
Planted last 2 yrs (% garden owners)	94.1	91.7	0.1	>0.05	91.7	100.0	0.5	>0.05
Fields	32.0	8.0	4.5	<0.05	21.2	17.7	0.1	>0.05
Planted last 2 yrs (% field owners)	62.5	0.0	2.5	>0.05	57.1	33.3	0.5	>0.05
Dixie								
Arable agriculture (All households)	44.0	40.0	0.1	>0.05	42.9	37.5	0.1	>0.05
Planted last 2 yrs (All households)	36.0	32.0	0.1	>0.05	33.3	37.5	0.1	>0.05
Planted last 2 yrs (% farmers)	81.8	80.0	0.0	>0.05	77.7	100.0	0.8	>0.05
Gardens	16.0	12.0	0.2	>0.05	14.3	12.5	0.0	>0.05
Planted last 2 yrs (% garden owners)	100.0	66.7	1.6	>0.05	83.3	100.0	0.2	>0.05
Fields	36.0	28.0	0.4	>0.05	33.3	25.0	0.2	>0.05
Planted last 2 yrs (% field owners)	77.8	85.7	0.2	>0.05	78.6	100.0	0.5	>0.05

In both villages group discussions indicated agricultural activity is governed by rainfall (Appendices 7-5 & 7-6) as well as seasonal agricultural adjustments with respect to crops planted.

3.2.1.6.2 Proportion of households storing and selling produce from their gardens and fields

Forty-one percent of the total sample store agricultural produce: 48 % of households in Dyala and 34 % in Dixie. This difference is not significant, nor is it significant when only taking agricultural households into account (Table 3-23). Of those with arable land 74.8 % store produce. Reasons for storing include providing food for the household, to keep as seed for the next seasons' crop and, as feed for the household's livestock. Many households reported that once these requirements had been satisfied, they seldom had sufficient surplus to sell.

When taking the total sample into account there is a significant difference between the villages with respect to the sale of agricultural produce. Eighteen percent of households in Dyala sell produce from their fields and/or home-gardens compared, to only 2 % of households in Dixie. For agricultural households only, 15.3 % reported selling. The sale of produce generally involved surplus amounts with households only selling once the household needs had been met although there are households that sell regularly (Table 3-23).

The sale of produce was not largely practiced in either village: only 15.2 % of the households sampled stated that they sold produce. Only households in Dyala reported selling produce from their gardens although both villages reported sales from their fields. This possibly corresponds with the higher proportion of households owning gardens in Dyala. In no case though was the difference in sales between the two villages significant (Table 3-23).

Table 3-23 Proportion of households (%) storing and selling agricultural produce – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
All households					
Storing	48.0	34.0	41.0	2.0	>0.05
Selling	18.0	2.0	10.0	7.1	<0.05
Households involved in arable agriculture					
Storing	68.6	80.9	74.8	1.0	>0.05
Selling	25.7	4.8	15.3	3.9	>0.05

With respect to household wealth, the difference in proportions of wealthy and poor households storing and wealthy and poor households selling are not significant for either village. Although no poor households in Dixie sell, this is not significantly different to the 4 % of wealthy households that do sell. These differences remain insignificant when taking only agricultural households into consideration. For gender of the de jure households head, in Dyala a significantly greater proportion of male-headed households store produce. This is not significant when taking only agricultural households into account. No female-headed households in Dixie sell produce (Table 3-24).

Table 3-24 Proportion of households (%) storing and selling agricultural produce – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Storing	56.0	40.0	1.3	>0.05	60.6	23.5	6.2	<0.05
Selling	28.0	8.0	3.4	>0.05	21.2	11.8	0.7	>0.05
Dixie								
Storing	36.0	32.0	0.1	>0.05	35.7	25.0	0.3	>0.05
Selling	4.0	0.0	1.0	>0.05	2.4	0.0	0.2	>0.05
Households involved in arable agriculture								
Dyala								
Storing	63.6	76.9	0.7	>0.05	71.4	57.1	0.5	>0.05
Selling	31.8	15.4	1.2	>0.05	25.0	28.6	0.0	>0.05
Dixie								
Storing	81.8	80.0	0.0	>0.05	83.3	66.7	0.5	>0.05
Selling	9.1	0.0	0.9	>0.05	5.6	0.0	0.1	>0.05

3.2.1.7 Animal husbandry

3.2.1.7.1 Proportion of households owning livestock

Across both villages the mean proportion of households owning livestock (including both cattle and small-stock) is 64 %. Whilst there is no significant difference in the proportion of households owning all livestock between Dyala and Dixie, there are differences between types of livestock owned, with a significantly greater proportion of households in Dyala owning cattle, goats and pigs (Table 3-25). In Dixie less than 15 % of households own cattle, goats or pigs: only 14 % of households own cattle compared to 42 % in Dyala. There is no significant difference between the two villages with respect to the proportion of households owning chickens. Chickens are owned by the greatest proportion of households in both villages followed by cattle, goats and pigs. Sheep and donkeys were only reported in Dyala however, only by 6 % of households; this difference is not significant in either case. More than 50 % of households in both villages own chickens (Table 3-25).

Of those households that own livestock, the difference between Dyala and Dixie remains significant for cattle and goats however not for pigs; 60 % of the Dyala livestock owners have cattle compared with 24.1 % of those in Dixie and, 48.6 % own goats compared to 17.2 % in Dixie. Of all livestock owning households, 81.7 % of households have chickens with all other livestock being owned by less than 50 % of households. Whilst in Dyala more than 30 % of livestock owning households have pigs, goats, cattle and/or chickens, in Dixie only chickens are owned by more than 30 % of livestock-owning households.

Table 3-25 Proportion of households (%) owning livestock – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
All households					
Livestock (total)	70.0	58.0	64.0	1.6	>0.05
Chickens	54.0	50.0	52.0	0.2	>0.05
Cattle	42.0	14.0	28.0	9.7	<0.05
Goats	34.0	10.0	22.0	8.4	<0.05
Pigs	28.0	10.0	19.0	5.3	<0.05
Sheep	6.0	0.0	3.0	3.1	>0.05
Donkeys	6.0	0.0	3.0	3.1	>0.05
Livestock owning households					
Chickens	77.1	86.2	81.7	0.9	>0.05
Cattle	60.0	24.1	42.1	8.3	<0.05
Goats	48.6	17.2	32.9	6.9	<0.05
Pigs	40.0	17.2	28.6	3.9	>0.05
Sheep	8.6	0.0	4.3	2.6	>0.05
Donkeys	8.6	0.0	4.3	2.6	>0.05

Livestock ownership is compared using household wealth and gender of the de jure household head as the basis of analysis (Table 3-26). When taking all households into account and considering household wealth, in Dyala, there is a significant difference between the proportion of poor and wealthy households owning livestock with 84 % of wealthy households owning livestock compared to 56 % of poor households. In Dixie the difference (for total livestock) between wealthy and poor is not significant. In terms of the different types of livestock, in Dyala significantly greater proportions of wealthy households own cattle, goats and pigs whilst there is no significant difference in the proportions owning chickens and donkeys. Of the wealthy households in Dyala, cattle (76 %) are owned by the greatest proportion followed by chickens (64 %), then goats (56 %). Of the poor households, the greatest proportion own chickens, however even this is less than 50 %. Goats and pigs are owned by equal proportions of households and by a greater proportion than those owning cattle. In Dixie only cattle are owned by a significantly greater proportion of wealthy households; for goats, pigs and chickens there are no significant differences (Table 3-26). In Dixie, chickens are owned by the greatest proportion of both wealthy and poor households. For wealthy households this is followed by cattle (24 %) and then equal proportions owning pigs and goats (16 %). Of the poor households, cattle, goats and pigs are owned by equal proportions – all by only 4 % of the sample. For livestock owning households (for each livestock type separately), in Dyala the difference for cattle and goats with respect to wealth, remains significant. In Dixie, when considering cattle-owning households, the difference is no longer significant. Of wealthy households with livestock, over 90 % in Dyala own cattle whilst more than 50 % own pigs, goats and chickens. In Dixie only chickens are owned by more than 50 % of wealthy households. One hundred percent of poor households own chickens whilst fewer than 10 % own other types of livestock.

In Dyala there is a significant difference between the proportions of male- and female-headed households owning livestock: more male-headed households own livestock. With respect to the types of livestock, for both male- and female-headed households, the greatest proportion own chickens. For male-headed households this is then followed by cattle, goats and pigs, with equal proportions owning sheep and donkeys. For the female-headed households, pigs are owned by the next greatest proportion whilst goats and cattle are owned by equal proportions, as are sheep and donkeys. There are no significant differences other than with cattle which, are owned by a significantly greater proportion of male-headed households. In Dixie, gender of the household head has no significant affect on the ownership of livestock. When only considering those households with livestock (Table 3-26), there are no significant differences.

Table 3-26 Proportion of households (%) owning livestock – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Livestock (total)	84.0	56.0	4.7	<0.05	81.8	47.1	6.5	<0.05
Chickens	64.0	44.0	2.0	>0.05	63.6	35.3	3.6	>0.05
Cattle	76.0	8.0	23.7	<0.05	54.6	17.7	6.3	<0.05
Goats	56.0	12.0	10.8	<0.05	42.4	17.7	3.1	>0.05
Pigs	44.0	12.0	6.4	<0.05	30.3	23.5	0.3	>0.05
Sheep	12.0	0.0	3.2	>0.05	6.1	5.9	0.0	>0.05
Donkeys	8.0	4.0	0.4	>0.05	6.1	5.9	0.0	>0.05
Dixie								
Livestock (total)	68.0	48.0	2.1	>0.05	57.1	62.5	0.1	>0.05
Chickens	52.0	48.0	0.1	>0.05	50.0	50.0	0.0	>0.05
Cattle	24.0	4.0	4.2	<0.05	11.9	25.0	0.9	>0.05
Goats	16.0	4.0	2.0	>0.05	7.1	25.0	2.4	>0.05
Pigs	16.0	4.0	2.0	>0.05	11.9	0.0	1.1	>0.05
Sheep	0.0	0.0	-	-	-	-	-	-
Donkeys	0.0	0.0	-	-	-	-	-	-
Livestock owning households								
Dyala								
Chickens	76.2	78.6	0.0	>0.05	77.8	75.0	0.0	>0.05
Cattle	90.5	14.3	20.3	<0.05	66.7	37.5	2.2	>0.05
Goats	66.7	21.4	6.9	<0.05	51.9	37.5	0.5	>0.05
Pigs	52.4	21.4	3.4	>0.05	37.0	50.0	0.4	>0.05
Sheep	14.3	0.0	2.2	>0.05	7.4	12.5	0.2	>0.05
Donkeys	9.5	7.1	0.1	>0.05	7.4	12.5	0.2	>0.05
Dixie								
Chickens	76.5	100.0	3.3	>0.05	87.5	80.0	0.2	>0.05
Cattle	35.3	8.3	2.8	>0.05	20.8	40.0	0.8	>0.05
Goats	23.5	8.3	1.1	>0.05	12.5	40.0	2.2	>0.05
Pigs	23.5	8.3	1.1	>0.05	20.8	0.0	1.3	>0.05
Sheep	-	-	-	-	-	-	-	-
Donkeys	-	-	-	-	-	-	-	-

3.2.1.7.2 Average number of livestock per household

With respect to the average number of livestock owned per household across all sampled households, households in Dyala own significantly greater numbers of cattle and goats than households in Dixie. The average number of cattle and goats per household in Dyala is similar: 3.2 ± 0.8 cattle per household and 3.1 ± 0.9 goats per household. Households in Dixie own significantly more pigs per households. The difference with respect to chickens is not significant and whilst no households in Dixie own either sheep or donkeys, the difference to Dyala with respect to the average number is not significant either (Table 3-27). When only considering livestock owners (each livestock type separately), there are no significant differences between the two villages with respect to average number per household. In both villages the most common livestock owned in terms of average number per household is chickens.

Table 3-27 Average number of livestock per household – stratified by village (Mean \pm SE)

	Dyala	Dixie	T/Z	Significance	Dyala	Dixie	T/Z	Significance
	All households				Livestock owning households (each type)			
Chickens	6.9 \pm 1.3	4.9 \pm 1.2	1.0	>0.05	12.8 \pm 1.6	9.9 \pm 1.9	<u>1.2</u>	>0.05
Cattle	3.2 \pm 0.8	1.2 \pm 0.6	2.9	<0.05	7.5 \pm 1.6	8.6 \pm 2.8	<u>-0.3</u>	>0.05
Goats	3.1 \pm 0.9	0.8 \pm 0.4	2.9	<0.05	9.2 \pm 1.8	7.8 \pm 1.9	<u>0.4</u>	>0.05
Pigs	0.5 \pm 0.1	0.6 \pm 0.3	2.1	<0.05	1.9 \pm 0.3	5.6 \pm 2.7	<u>-2.0</u>	<0.05
Sheep	0.5 \pm 0.4	0.0 \pm 0.0	1.8	>0.05	9.0 \pm 5.3	0.0 \pm 0.0	-	-
Donkeys	0.2 \pm 0.1	0.0 \pm 0.0	1.0	>0.05	3.3 \pm 1.2	0.0 \pm 0.0	-	-

In terms of household wealth, taking the total sample in account, wealthy households in Dyala own significantly higher numbers of cattle, goats and pigs than their poor counterparts, there is no significant difference in the average numbers of chickens, sheep and donkeys per household. No poor households in Dyala own sheep. When taking owners of each livestock type into account, the differences are no longer significant for household wealth. In Dixie the average number of cattle per household is significantly different between the two wealth groups for the total sample, with wealthy households owning greater average numbers per household. Of chicken-owning households, the wealthy households own significantly more per household. With respect to gender, male-headed households in Dyala own significantly more cattle and chickens per household than their female-headed counterparts. With respect to other livestock, there is no significant difference between the male- and female-headed households in terms of average number owned. In Dixie there are no differences based on gender of the de jure household head for any of the livestock types. No female-headed households in Dixie own pigs. With respect to livestock owning households across the entire sample, average numbers show no significant difference when considering either wealth or gender with the exception of average number of chickens owned by wealthy households in Dixie (Table 3-28).

Table 3-28 Average number of livestock per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala								
Chickens	9.3 ± 1.9	4.6 ± 1.5	-1.8	>0.05	8.8 ± 1.7	3.2 ± 1.4	2.1	<0.05
Cattle	6.0 ± 1.5	0.3 ± 0.2	-4.7	<0.05	3.7 ± 0.9	2.1 ± 1.6	2.3	<0.05
Goats	5.8 ± 1.6	0.5 ± 0.3	-3.4	<0.05	4.1 ± 1.2	1.4 ± 0.9	1.7	>0.05
Pigs	0.8 ± 0.2	0.3 ± 0.2	-2.3	<0.05	0.6 ± 0.2	0.4 ± 0.2	0.7	>0.05
Sheep	1.1 ± 0.8	0.0 ± 0.0	-1.8	>0.05	0.8 ± 0.6	0.1 ± 0.1	0.1	>0.05
Donkeys	0.2 ± 0.2	0.2 ± 0.2	-0.6	>0.05	0.3 ± 0.2	0.1 ± 0.1	0.1	>0.05
Dixie								
Chickens	7.2 ± 2.2	2.7 ± 0.8	-1.2	>0.05	5.4 ± 1.4	2.8 ± 1.3	0.4	>0.05
Cattle	2.3 ± 1.1	0.1 ± 0.1	-2.1	<0.05	1.1 ± 0.6	1.6 ± 1.4	-0.9	>0.05
Goats	1.4 ± 0.7	0.1 ± 0.1	-1.5	>0.05	0.7 ± 0.4	1.4 ± 1.0	-1.4	>0.05
Pigs	1.0 ± 0.7	0.1 ± 0.1	-1.5	>0.05	0.7 ± 0.4	0.0 ± 0.0	1.0	>0.05
Sheep	0.0 ± 0.0	0.0 ± 0.0	-	-	0.0 ± 0.0	0.0 ± 0.0	-	-
Donkeys	0.0 ± 0.0	0.0 ± 0.0	-	-	0.0 ± 0.0	0.0 ± 0.0	-	-
Livestock owning households								
Dyala								
Chickens	14.5 ± 2.0	10.4 ± 2.6	<u>-1.3</u>	>0.05	13.8 ± 1.9	9.2 ± 2.5	<u>1.2</u>	>0.05
Cattle	7.9 ± 1.7	3.5 ± 0.5	<u>-0.8</u>	>0.05	6.8 ± 1.4	11.7 ± 7.8	<u>-1.1</u>	>0.05
Goats	10.3 ± 2.1	4.3 ± 0.3	<u>-1.3</u>	>0.05	9.6 ± 2.1	7.7 ± 2.9	<u>0.4</u>	>0.05
Pigs	1.8 ± 0.3	2.3 ± 0.3	<u>0.9</u>	>0.05	2.1 ± 0.3	1.5 ± 0.3	<u>1.1</u>	>0.05
Sheep	9.0 ± 5.3	0.0 ± 0.0	-	-	13.0 ± 6.0	1.0 ± 0.0	<u>1.2</u>	>0.05
Donkeys	3.0 ± 2.0	4.0 ± 0.0	<u>0.3</u>	>0.05	4.5 ± 0.5	1.0 ± 0.0	<u>4.0</u>	>0.05
Dixie								
Chickens	13.9 ± 3.3	5.6 ± 1.6	<u>-2.3</u>	<0.05	10.7 ± 0.0	5.5 ± 0.0	<u>0.9</u>	>0.05
Cattle	9.7 ± 3.0	2.0 ± 0.0	<u>-0.9</u>	>0.05	9.4 ± 3.7	6.5 ± 4.5	<u>-0.4</u>	>0.05
Goats	9.0 ± 1.9	3.0 ± 0.0	<u>-1.4</u>	>0.05	9.3 ± 2.7	5.5 ± 2.5	<u>-0.9</u>	>0.05
Pigs	6.5 ± 3.2	2.0 ± 0.0	<u>-0.6</u>	>0.05	5.6 ± 2.7	0.0 ± 0.0	-	-
Sheep	-	-	-	-	-	-	-	-
Donkeys	-	-	-	-	-	-	-	-

3.2.1.7.3 Proportion of households that sold livestock in the last two years

With respect to the sale of livestock there is no significant difference between the villages in terms of the proportions of households that reported selling livestock in the last two years. This applies across the total sample as well as for livestock owners exclusively. Across the total sample 22 % of households sold livestock (Table 3-29).

Table 3-29 Proportion of households (%) that sold livestock in the last two years – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Sale of livestock (All households)	28.0	16.0	22.0	2.1	>0.05
Sale of livestock (Households with livestock)	37.1	27.6	32.4	0.7	>0.05

With respect to household wealth, wealthy and poor households in both villages sold livestock during the two year period preceding the research however, the differences in proportions of wealthy and poor selling for both Dyala and Dixie, are not significant. In Dyala both male- and female-headed households sold livestock. Across the total sample the difference is significant with 39.4 % of male-headed households having sold compared to 5.9 % of female-headed households. When taking only livestock owning households into account though, this difference is no longer significant. In Dixie, no female-headed households reported selling livestock however this is not significantly less than the proportion of male-headed households that did sell (Table 3-30).

Table 3-30 Proportion of households (%) that sold livestock in the last two years – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
All households	40.0	16.0	3.6	>0.05	39.4	5.9	6.3	<0.05
Households with livestock	42.9	28.6	0.7	>0.05	44.4	12.5	2.7	>0.05
Dixie								
All households	24.0	8.0	2.4	>0.05	19.1	0.0	1.8	>0.05
Households with livestock	35.3	16.7	1.2	>0.05	33.3	0.0	2.3	>0.05

Households listed a variety of reasons for selling livestock (Figure 3-3). Reasons included needing money to cover household expenses/purchase household goods (40.9 %), for food (31.8 %) and for school fees and related expenses (22.7 %) and for medical expenses (4.5 %). Households sold because there was an available market (e.g. someone in the community wanted a cow slaughtered for a traditional ceremony) (18.2 %) whilst others sell on a regular basis (13.6 %). Others sold to invest money elsewhere (9.1 %). In some cases the money made from the sale of livestock covered multiple expenses.

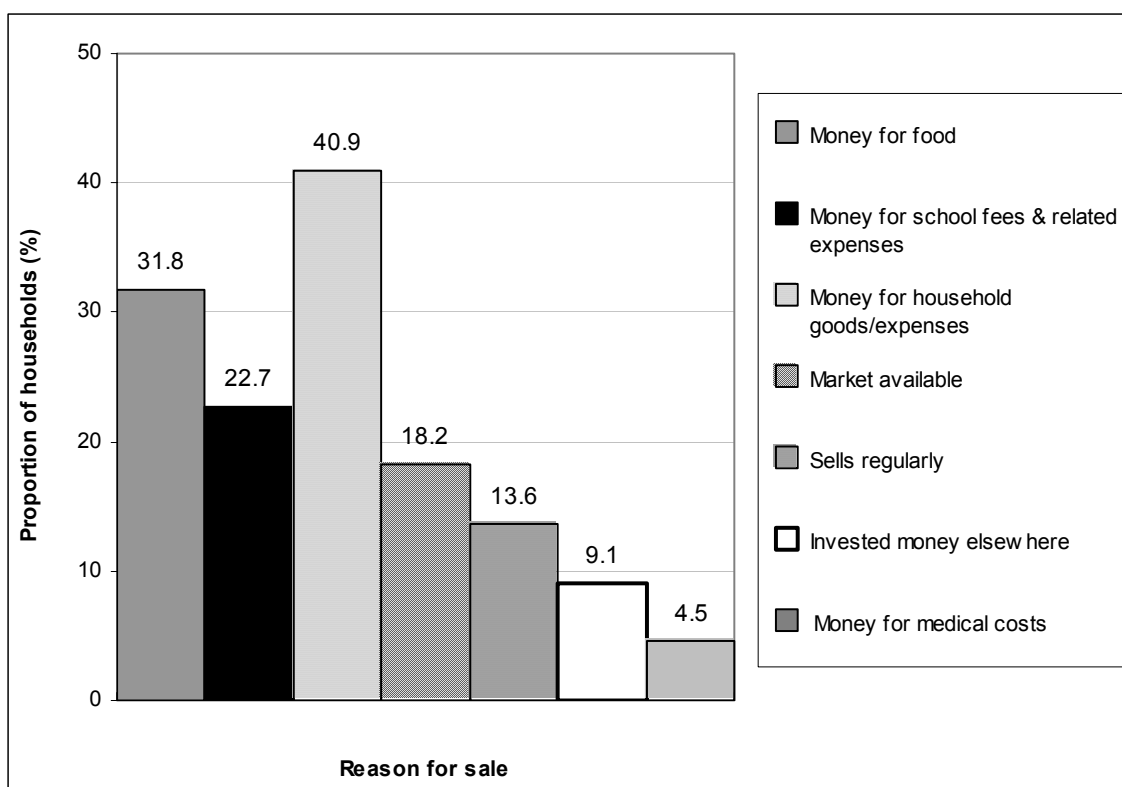


Figure 3-3 Reasons households sold livestock over the two year period

3.2.1.8 *Non-timber forest products (NTFPs)*

The following section gives a brief overview of rural households' use of non-timber forest products. NTFPs are discussed in greater detail in the following chapter but are noted here for their contribution towards the total suite of livelihood strategies adopted by rural households.

3.2.1.8.1 **Households' use of non-timber forest products**

All of the households sampled make use of non-timber forest products (NTFPs). Households in Dixie listed seventeen predominant resources compared to fourteen mentioned in Dyala and in terms of the mean number of resources used per household, households in Dixie use significantly more than those in Dyala (Table 3-31). In Dyala the minimum number of resources used by any one household was four compared to eight in Dixie whilst the maximum noted in Dyala was eleven whilst households in Dixie were using as many as sixteen different resources. At the intra-village level, with respect to the influence of household wealth and gender of the de jure household head on the average number of resources used per household, neither proved significant (Table 3-32). However, it should be noted that number of resources used is not necessarily indicative of reliance on those resources/significance of contribution.

Table 3-31 Total number of resources used per village and mean number used per household (Mean \pm SE)

	Dyala	Dixie	T/Z	Significance
Total number of resources used per village	14.0	17.0	-	-
Mean number resources used per household	7.2 \pm 0.2	10.2 \pm 0.2	<u>-10.6</u>	<0.05

Table 3-32 Average number of resources used per household – stratified by household wealth and gender of the de jure household head (Mean \pm SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
Dyala	6.9 \pm 0.4	7.4 \pm 0.3	<u>1.1</u>	>0.05	7.2 \pm 0.4	7.4 \pm 0.3	<u>-0.7</u>	>0.05
Dixie	11.3 \pm 0.4	12.1 \pm 0.4	1.2	>0.05	11.7 \pm 0.3	12.1 \pm 0.7	-0.9	>0.05

Of the eighteen resources listed, thirteen were common to both villages. No households in Dyala reported using seeds for decoration, reeds for weaving or consuming insects and fish: all significantly different to Dixie. No households in Dixie reported the consumption of wild edible mushrooms. Most of the resources with the exception of fuelwood, wild edible fruits, medicinal plants, wild honey and thatch grass show significant intra-village differences in the proportion of households using them. Most are used by significantly greater proportions of households in Dixie with the exception of grass hand-brushes and mushrooms (Table 3-33).

Table 3-33 Proportion of all households (%) using NTFPs – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Fuelwood	96.0	100.0	98.0	2.0	>0.05
Sand/soil/clay/termite mounds	92.0	100.0	96.0	4.2	<0.05
Wild edible herbs	80.0	100.0	90.0	11.1	<0.05
Wild edible fruits	88.0	84.0	86.0	0.3	>0.05
Medicinal plants	68.0	88.0	78.0	5.8	>0.05
Wood for household items, carvings & furniture	52.0	94.0	73.0	22.4	<0.05
Twig hand-brushes	46.0	96.0	71.0	30.4	<0.05
Grass hand-brushes	92.0	28.0	60.0	42.7	<0.05
Indigenous poles for fencing	42.0	70.0	56.0	7.9	<0.05
Weaving reeds	0.0	94.0	47.0	88.7	<0.05
Bushmeat	10.0	50.0	30.0	19.1	<0.05
Fish	0.0	52.0	26.0	35.1	<0.05
Wild honey	22.0	22.0	22.0	0.0	>0.05
Insects	0.0	38.0	19.0	23.5	<0.05
Indigenous poles for housing	2.0	28.0	15.0	13.3	<0.05
Thatch grass	14.0	16.0	15.0	0.1	>0.05
Mushrooms	12.0	0.0	6.0	6.2	<0.05
Seeds	0.0	8.0	4.0	4.2	<0.05

3.2.1.8.2 The purchase and sale of NTFPs

Whilst the greater proportion of households relies on NTFPs for direct household provisioning, there are also households that sell these products either full-time or on an ad hoc basis when the need or opportunity arises. Whilst some households sell in nearby regional centres, at local pension points and to visiting outsiders others sell to meet the need of households within the village itself. At total sample mean of 94 % of households reported purchasing at least one NTFP. This does not imply that this is the predominant manner with which households procure NTFPs but that in addition to collecting, some resources are purchased. The difference between the proportions of households in Dyala and Dixie that reported purchasing one or more NTFPs is not significant. Twenty-two percent of households sell NTFPs: the inter-village difference is not significant (Table 3-34).

With respect to household wealth, the difference in both villages between the proportions of wealthy and poor households that reported buying NTFPs is not significant. In terms of the sale of resources, no wealthy households in Dyala sell NTFPs, significantly less than the 28 % of poor households that do sell. In Dixie the difference is not significant with 24 % and 36 % of wealthy and poor households, respectively, involved in the sale of NTFPs. In both Dyala and Dixie male- and female-headed households buy NTFPs and are involved in the sale of these products however the difference between the genders is only significant for the purchase of NTFPs in Dixie. Here 100 % of male-headed households buy one or more NTFPs compared to 87.5 % of female-headed households (Table 3-35).

Table 3-34 Proportion of all households (%) buying and selling NTFPs – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total (Buying)	90.0	98.0	94.0	2.8	>0.05
Total (Selling)	14.0	30.0	22.0	3.7	>0.05

Table 3-35 Proportion of all households (%) buying and selling NTFPs – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
Buying	96.0	84.0	2.0	>0.05	87.8	94.1	0.5	>0.05
Selling	0.0	28.0	8.1	<0.05	9.1	23.5	1.9	>0.05
Dixie								
Buying	100.0	96.0	1.0	>0.05	100.0	87.5	5.4	<0.05
Selling	24.0	36.0	0.9	>0.05	31.0	25.0	0.1	>0.05

3.3 Summary of livelihood diversity: strategies, assets and savings

Table 3-36 Summary of livelihood strategies and assets (proportion of households) – stratified by household wealth and gender of the de jure household head [* marks significant differences]

Strategies	Wealth classes						Gender classes					
	Dyala			Dixie			Dyala			Dixie		
	Wealthy	Poor	Significant	Wealthy	Poor	Significant	Male-head	Female-head	Significant	Male-head	Female-head	Significant
Employment												
≥ 1 job/household	44.0	44.0		96.0	28.0	*	45.5	41.2		64.3	50.0	
Formally employed	32.0	36.0		96.0	20.0	*	36.4	29.4		59.5	50.0	
Informally employed	12.0	20.0		0.0	8.0		15.2	17.7		4.8	0.0	
Self-employed	28.0	12.0		40.0	40.0		27.3	5.9		42.9	25.0	
Government grants												
Child-support grant	24.0	36.0		44.0	52.0		30.3	29.4		45.2	62.5	
Old-age pension	52.0	16.0	*	8.0	16.0		30.3	41.2		2.4	62.5	*
Disability grant	24.0	12.0		4.0	4.0		21.2	11.8		4.8	0.0	
Saving schemes												
Total savings	96.0	36.0	*	92.0	24.0	*	72.7	52.9		61.9	37.5	
Burial societies	84.0	24.0	*	48.0	0.0	*	60.6	41.2		26.2	12.5	
Stokvels	32.0	8.0	*	68.0	16.0	*	24.2	11.8		45.2	25.0	
Bank accounts	20.0	0.0	*	44.0	8.0	*	15.2	0.0		30.9	0.0	
Insurance schemes	4.0	4.0		4.0	0.0		3.0	5.9		2.4	0.0	
Asset ownership												
Radio	88.0	68.0		72.0	44.0		84.9	64.7		59.5	50.0	
Paraffin stove	80.0	64.0		68.0	32.0	*	75.8	64.7		52.4	37.5	
Fridge	56.0	12.0	*	84.0	8.0	*	45.5	11.8	*	52.4	12.5	*
Hi-fi	52.0	28.0		60.0	12.0	*	42.4	35.3		40.5	12.5	
Gas stove	36.0	4.0	*	36.0	0.0	*	27.3	5.9		19.1	12.5	
T.V.	52.0	20.0	*	44.0	0.0	*	45.5	17.7		23.8	12.5	
Car	44.0	4.0	*	48.0	0.0	*	33.3	5.9	*	26.2	12.5	
Arable agriculture												
Total	88.0	52.0	*	44.0	40.0		84.9	41.2	*	42.9	37.5	
Gardens	68.0	48.0		16.0	12.0		72.7	29.4	*	14.3	12.5	
Fields	32.0	8.0	*	36.0	28.0		21.2	17.7		33.3	25.0	
Planted in last 2 years	72.0	44.0		36.0	32.0		72.7	29.4	*	33.3	37.5	
Animal husbandry												
HH with livestock	84.0	56.0	*	68.0	48.0		81.8	47.1	*	57.1	62.5	
Chickens	64.0	44.0		52.0	48.0		63.6	35.3		50.0	50.0	
Cattle	76.0	8.0	*	24.0	4.0	*	54.6	17.7	*	11.9	25.0	
Goats	56.0	12.0	*	16.0	4.0		42.4	17.7		7.1	25.0	
Pigs	44.0	12.0	*	16.0	4.0		30.3	23.5		11.9	0.0	
Sheep	12.0	0.0		0.0	0.0		6.1	5.9		0.0	0.0	
Donkeys	8.0	4.0		0.0	0.0		6.1	5.9		0.0	0.0	
NTFP use												
Households using	100.0	100.0		100.0	100.0		100.0	100.0		100.0	100.0	
Households buying	96.0	84.0		100.0	96.0		87.8	94.1		100.0	87.5	*
Households selling	0.0	28.0	*	24.0	36.0		9.1	23.5		31.0	25.0	
Tot. significant differences			16			13			7			3

Of the thirty-three selected categories in the above table, significant differences with respect to household wealth were noted in sixteen cases in Dyala and thirteen in Dixie. In all cases the significant difference favours the wealthy households (Table 3-36). For household wealth, categories where the most significant differences are evident include saving schemes and asset ownership. This compares to comparisons based on the gender of the de jure household head where only seven and three cases in Dyala and Dixie respectively were found to be significantly different (Table 3-36). With respect to gender, in all cases in Dyala where significant differences were noted, the difference favours the male-headed households. In Dixie on the other hand, of the three cases where significant differences were reported, two were in favour of the male-headed households and, the other female-headed households. For gender of the de jure household head, categories where significant differences were notable, include arable agriculture and animal husbandry in Dyala. All differences are significant in favour of the male-headed households. In Dixie there is no clear grouping in any of the categories.

3.4 Livelihood ranking

With respect to the ranking of different livelihood strategies in Dyala and their contribution to rural households, notable differences between genders include fields, livestock and livestock products, the use and sale of NTFPs and, kinship and community-support networks (Table 3-37). Men ranked the contribution made by fields, livestock and the sale of NTFPs higher than the women did. Women ranked the use of NTFPs and kinship as more important contributors to rural livelihoods. Discussions suggested that men ranked fields higher as fields are considered more the man's domain whilst women cultivate and focus on gardens. Livestock too are considered as the man's responsibility, particularly cattle, although in the workshops both male and female respondents noted benefits derived from livestock including various goods and services such as milk (for home consumption and sale), meat, draught power and income from the sale of livestock. Although women ranked the use of NTFPs higher, men considered the sale of NTFPs to be more important, particularly the sale of fuelwood. According to one respondent most households rely on government grants, the sale of fuelwood and arable agriculture. Men and women ranked the importance of kinship differently with women considering these relations of trust and reciprocity of greater importance: neighbours and friends within the community assist each other with food, money, labour and so forth. In most cases these relations are reciprocal. Overall group discussions indicated that social grants make the greatest contribution to people's livelihoods. The top five strategies ranked by men include old-age pensions, fields, child-support grants, gardens and the sale of NTFPs. The top five strategies ranked by women include child-support grants, old-age pensions, gardens, the use of NTFPs and kinship.

Table 3-37 Participatory Rural Appraisal ranking of livelihood strategies in Dyala (M = male; F = female)

Strategy	Rank										
	1	2	3	4	5	6	7	8	9	10	11
Old-age pensions	M	F									
Child-support grants	F		M								
Employment								F		M	
Self-employment								F	M		
Migrant remittances/contributions											F/M
Fields		M				F					
Gardens			F	M							
Livestock and livestock products						M				F	
Use of NTFPs				F			M				
Sale of NTFPs					M				F		
Kinship and community-support networks					F				M		

With respect to the ranking of livelihood strategies in Dixie both the men and women agreed that the most important livelihood strategy is the employment offered by the surrounding game reserves (Table 3-38). This is followed by old-age pensions. Women ranked the income from child-support grants higher than their male counterparts arguing that they are usually the ones who are responsible for applying for and collecting these grants. Men ranked livestock and livestock products highly explaining that livestock is their responsibility. Men ranked NTFPs notably higher explaining that they spend more time in the bush whilst the women are based in the household. Women ranked remittances highly as they rely on the money sent home for the household. Men argued that the remittances are not guaranteed because life in the urban areas is expensive. Men ranked micro-enterprises and self-employment higher than women did. The top five strategies ranked by men include employment, old-age pensions, self-employment, livestock and the use of NTFPs. Women ranked employment, old-age pensions, remittances, child-support grants and kinship as the most important contributors.

Table 3-38 Participatory Rural Appraisal ranking of livelihood strategies in Dixie (M = male; F = female)

Strategy	Rank										
	1	2	3	4	5	6	7	8	9	10	11
Old-age pensions		M/F									
Child-support grants				F						M	
Employment	M/F										
Self-employment			M			F					
Migrant remittances/contributions			F								M
Fields								M		F	
Gardens								F	M		
Livestock and livestock products				M					F		
Use of NTFPs					M						F
Sale of NTFPs						M	F				
Kinship and community-support networks					F		M				

3.5 Perceptions of changes in select livelihood strategies

Time trends for both communities highlight long-term shifts in people's livelihood strategies (Appendices 7-3 & 7-4).

3.5.1 Employment opportunities

With respect to perceptions of long-term changes in employment opportunities, respondents in both villages indicated a decrease in available jobs. Prior to the 1980s, people in Dyala worked as migrant labourers on the mines or on the white-owned farms in the surrounding area. In the 1980s there was a notable decrease in the number of jobs largely associated with the removal of white-farmers from the area. In the 1990s the closure of the saw-mill and retrenchments on the mines exacerbated unemployment (Table 2-7). Group discussion indicated few migrant labourers or seasonal workers. Whilst migrants are generally associated with remittances, group discussions indicated increased poverty with high migrancy rates as remittances aren't sent home and the household's social capital is weakened (less labour). In Dixie respondents indicated a decrease in available jobs over the last fifteen years. Group discussions explained this is related to country-wide increases in unemployment and retrenchments. According to respondents many retrenchments resulted from companies downsizing in the 1990s fearing political instability associated with the change in government as well as decreasing employment opportunities on commercial farms. Whilst the surrounding game reserves provide employment, this is spread between many of the neighbouring villages.

3.5.2 Animal husbandry

In Dyala, historical changes in animal husbandry have been largely influenced by the political climate, particularly the formation of the Ciskei and the concomitant removal of white-farmers from the region. According to respondents although households were allowed to keep limited small-stock during the pre-Ciskei period, they were not permitted to keep either cattle or goats. As such animal husbandry has only made a larger contribution to people's livelihoods over the last three decades. The contribution made by animal husbandry and livestock numbers increased with the formation of the Ciskei: the "removed" farmers sold their livestock when they left the area. Fluctuations in livestock numbers have occurred due largely to livestock losses during drought years but otherwise the contribution made by animal husbandry remains consistently high (Appendix 7-3). In Dixie the number of cows, goats and other livestock and the contribution they make to rural livelihoods has remained consistently high although, also with the exception of drought years when considerable livestock losses were experienced (Appendix 7-4).

3.5.3 Arable agriculture

In Dyala, as with animal husbandry, households were restricted from engaging in arable agriculture during the period when the surrounding land was owned by white farmers. This applies specifically to fields – households were able to cultivate home-gardens although the size of these was restricted. According to

respondents, as a result of the prohibition on fields and livestock, gardens made a crucial contribution to livelihood security at this time. With the formation of the Ciskei, households gained access to land for fields (although not free-hold) and gardens were enlarged. In 2002 the community was granted ownership over 700 ha of land designated for arable agriculture (Box 2-2). The amount of produce from arable land has increased parallel to increases in land availability with the exception of years of poor rainfall (Appendix 7-3). According to respondents, the cost of seed and lack of extension services place pressure on households involved in arable agriculture.

In Dixie, the number of fields cultivated as well as their productivity has remained constant with the exception of periods affected by drought. The cultivation and size of home-gardens has increased in recent years – the catalyst for this increase was severe drought. Home-gardens were easier to maintain during this time. This adaptive strategy has ‘persisted’ as people find home-gardens require fewer inputs than fields and are less prone to unpredictable weather patterns. Related to this is a slight decrease in the size of fields. The size of gardens as well as their productivity has increased (Appendix 7-4).

3.5.4 NTFPs

In both villages the overall use of NTFPs has decreased over time (Appendices 7-3 & 7-4). In Dyala respondents indicated decreased NTFP use to be related to the introduction of permits. In the time trends it coincides with the increase of fields and livestock but this relationship would need to be investigated in more detail (Appendix 7-3). In Dixie a decreased reliance on NTFPs coincides with the increase in gardens. Respondents in Dixie explained this overall decrease in use to be the result of the increasing availability of substitutes as well as the loss of knowledge of the “traditional ways” and the increase of western influences. Despite an overall decrease, different NTFPs have undergone different shifts (Appendix 7-4).

3.6 Discussion

3.6.1 Livelihood diversification

Households in both villages, irrespective of household wealth or gender of the de jure household head rely on a variety of livelihood strategies in order to attain and maintain their livelihood objectives (Table 3-39). This diversity of strategies is not significantly different between sites, between wealthy and poor households or between those with a male- or female-head suggesting that the majority of households diversify their livelihood portfolio in attempts to achieve their livelihood outcomes and livelihood security. Households are involved in both off-farm and land-based strategies. Across the total sample 53 % of households receive an income from a member/s either formally or informally employed; 30 % of households are involved in micro-enterprises/service provision (i.e. self-employed) and 60 % receive a government grant (including old-age pensions, child-support and disability grants). Despite the contribution made by off-farm strategies, many households still rely on land-based strategies to contribute to their livelihood portfolio. In both villages households are involved in arable agriculture, animal husbandry and, the use and sale of natural resources. More than half the households sampled have land designated for

arable agriculture (either fields or home-gardens). The majority of those with land had planted over the two year period in question. With respect to animal husbandry, 64 % of households reported owning livestock with the greatest proportion owning chickens, then cattle, goats and, pigs. All those sampled reported the use of a range of NTFPs. These findings support the growing livelihood diversification literature (Block & Webb, 2001; Dovie *et al.*, 2003; Niehof, 2004) and indicate that despite more than half the households receiving income from off-farm sources, similarly high proportions are involved in land-based strategies (Table 3-39). According to Shackleton *et al.* (2000) past assessments of communal lands have under-valued the contribution made to rural households. Block and Webb (2001) refer to interconnection between land-based and off-farm strategies. These were observed in both sites; for example households reported selling livestock to replenish bank accounts and to buy stock for spaza shops whilst others were able to invest in their herds and fields as a result of a regular income either in the form of wages or government grants.

Research on livelihood diversification has found variable associations between diversification and household wealth. Block and Webb (2001) found wealthy households had more diversified income streams whilst research in Uganda found the poorest and wealthiest households to have a less diverse livelihood portfolio than those intermediate households, with the poorest lacking the means to diversify whilst the wealthiest chose to specialise (Smith *et al.*, 2001). The intermediate group were engaged in a diversity of activities with aspirations of wealth accumulation and eventual specialisation. Poor households are less able to diversify not only because of a lack of financial capital but also because time is taken up with activities such as fuelwood and water collection (Niehof, 2004). Formal income allows for inputs into land-based livelihood strategies although Dovie (2001) found no significant correlation between wages and NTFPs; wages and livestock and; wages and crops. This study found that both wealthy and poor households diversify however the benefits from each strategy are different with wealthy households better positioned to capitalise on each strategy. For example, whilst both wealthy and poor households are involved in animal husbandry significantly more wealthy households own cattle and have a greater number of cattle per household. Poor households' livestock focus is on small-stock: cattle are expensive and therefore poor households are restricted from investing in them (Dercon, 1998). This is significant in the sense that cattle are more valuable, provide a greater range of products and are an important form of savings and insurance although it is argued that small-stock is easier to liquidate when the need arises (Dercon, 1998). Other examples of the nature of the strategy and its variable benefits being an important aspect to consider include government grants and waged labour. Although poor households also receive incomes from these two off-farm strategies, the grant is generally a child-support grant (one quarter the value of an old-age pension) and waged labour is informal and often temporary. Poor households rely on kinship as a strategy and in Dyala a significantly greater proportion of poor households are involved in the sale of NTFPs. Kinship and NTFPs as livelihood strategies require no capital outlay and are diversification options available to all households irrespective of wealth or gender of the *de jure* household head although other factors may restrict these strategies. All households reported the use of NTFPs suggesting that whilst poor households rely on NTFPs, wealthy households benefit from the "free" resources and the cost-saving offered, thereby allowing for investments in alternative strategies.

Gender has also been found to determine not only diversification as a whole but also the activities in which different genders diversify. Men and women have different options and responsibilities and therefore diversify differently, both as an overall strategy and when coping (Niehof, 2004). Men are often found to be engaging in a greater diversity of livelihood strategies than women and are more likely to diversify into off-farm sectors (Niehof, 2004) however, in Uganda female-headed households are being forced to engage increasingly in a variety of activities in response to crises (particularly HIV/AIDS) and continuing financial need (Smith *et al.*, 2001). These female-headed households are still less diverse than their male-headed counterparts although they perceive diversification to be important – suggesting barriers to diversification (Smith *et al.*, 2001). Shackleton and Shackleton (2004b) refer to a change and reversal of gender roles in response to the increasing need for cash income. Niehof (2004) noted traditional female-dominated activities in India, being usurped by men when potential returns increased as a result of changing demands and preferences. With respect to gender of the household head, *de facto* and *de jure* female heads have different options for diversification (Niehof, 2004). *De facto* female heads have greater opportunities to diversify than *de jure* female heads who are burdened with more household responsibilities and have fewer entitlements, restricting them from pursuing alternative strategies (Niehof, 2004). However, this too is not set in stone: in Kwa-Zulu Natal (South Africa), female-headed households were found to be in a better position to diversify than their male-headed counterparts because culture prescribed certain activities for male-heads, particularly land-based activities (Niehof, 2004). According to Niehof (2004) the gender dynamic of livelihood diversification is more insidious where high dependency ratios and opportunity costs associated with the collection of water and fuelwood place pressure on women.. In this study the gender of the *de jure* household head appears to have less of an influence on livelihood diversity with the overall total number of strategies per household being insignificantly different for gender of the *de jure* household head. This supports findings by Smith *et al.* (2001) of female-headed households diversifying in response to increasing vulnerability. Although the composite picture shows both male- and female-headed households investing in a diversity of livelihood strategies, certain strategies show differences for gender of the *de jure* head. A greater proportion of male-headed households in Dyala own and sell cattle and, have land designated for arable agriculture, particularly home-gardens. In Dixie a significantly greater proportion of female-headed households receive old-age pensions as well as a greater mean number per household. In Dyala male-headed households receive a greater mean number of pensions per household.

Table 3-39 Mean proportion of all households (%) involved in various livelihood activities

Livelihood activity	Proportion of households (%)
Off-farm activities/incomes	
Employment	53.0
Self-employment	30.0
Government grants	
- Grants (total)	60.0
- Old-age pension	23.0
- Child-support grant	39.0
- Disability grant	11.0
Land-based strategies	
Agriculture	
- Total arable agriculture	56.0
- Planted in last 2 years (agricultural households)	81.9
- Gardens	36.0
- Garden planted in last 2 years (garden owners)	89.4
- Fields	26.0
- Field planted in last 2 years (field owners)	65.8
- Sell agricultural produce (all households)	10.0
- Store agricultural produce (all households)	41.0
Livestock	
- Total livestock	64.0
- Chickens	52.0
- Cattle	28.0
- Goats	22.0
- Pigs	19.0
- Sale of livestock (all households)	22.0
NTFPs	
- Use	100.0
- Sale	22.0

3.6.1.1 *Off-farm livelihood strategies*

With respect to off-farm activities and income sources households in both villages are involved in waged employment and reported relying on government grants. In a group ranking exercise based on gender, men and women in both villages ranked employment, old-age pensions or child-support grants within the top two contributing strategies highlighting the importance of these off-farm income sources. Findings by Ambrose-Oji (2003) indicate that people perceive “hard cash” to be of greater importance than the direct-use values associated with strategies such as the consumption of NTFPs. Several households in the sample also had members who were self-employed either selling a variety of products or providing services to the community and surrounds. A small proportion reported regular migrant remittances: migrants contribute and provide a potential safety-net to a greater proportion than those receiving regular remittances. A regular income either in the form of wages or grants, allows households to make investments in a range of saving schemes with some households reporting more than one scheme, as such investments in these saving

schemes are positively correlated with household wealth. These schemes included burial societies, rotating and accumulating stokvels, bank accounts and insurance/medical aid schemes. A disposable income, whilst allowing households to invest in saving schemes, also allows for investments in a diversity of household assets therefore assets are associated with household wealth (Adams *et al.*, 1997). Waged labour and government grants make a significant contribution, and largely distinguish the wealthy households from the poor. This supports findings by Shackleton and Shackleton (2006) where wealthy households across three Eastern Cape villages are distinguished from their poor counterparts by a significantly greater number of jobs, old-age pensions and cattle per household.

3.6.1.1.1 Employment

Of the total sample 53 % of households were receiving off-farm income through waged labour. A greater proportion of households have formally employed members than informally employed and whilst there is no inter-village difference in the informal employment opportunities, a significantly greater proportion of households in Dixie have members involved in formal waged labour. This distinction is largely determined by opportunities presented in the surrounding area. In Dyala local formal employment opportunities are limited, predominantly with the Department of Water Affairs and Forestry (DWAF) through their Working for Water Programme and are often on a part-time basis. Although research from other villages in the Kat River valley (McMaster, 2002; Shackleton *et al.* 2002) has indicated seasonal employment opportunities in the citrus orchards, discussions in Dyala suggested that there are no seasonal workers. In Dyala there are significantly more informally employed members per household than in Dixie. With respect to Dixie, the greatest employers of people are the surrounding game reserves. This employment is generally full-time. In Dixie, full-time formal employment plays a greater role in distinguishing wealthy and poor households than in Dyala. In Dyala, old-age pensions define wealthy households. In both villages, informal employment includes jobs within the village itself where no formal contract is in place, for example women employed by other households to assist with household chores and men employed as herders.

In Dyala where formal jobs are limited, often part-time and largely provided by a government institution promoting equal job opportunities, there are no significant differences when taking either household wealth or gender of the de jure household head into account. In Dixie however formal employment distinguishes wealthy households from the poor not only in terms of the proportions of households but also the average number of formal jobs per household. In his research in Thorndale, a village close to Dixie, Dovie (2001) noted a negative correlation between formal and informal employment and also found a greater proportion of households to have formally employed members than casuals. With respect to gender of the de jure household head, both male- and female-headed households had formally and informally employed members with no significant differences for either village. This suggests that either female-headed households have male-members that are employed, or that with increasing hardship, women are diversifying into off-farm sectors (Smith *et al.*, 2001). The nature of employment opportunities as well as the income received may differ for genders though. For example Kotze (1992) notes that although both men and women in Dixie find formal employment in the neighbouring reserves, men are employed in high

paying positions and therefore still dominate in terms of available cash. Posel (2001) found female-headed households to be more economically vulnerable having fewer household members earning an income and those that do earn, earning less.

Self-employment opportunities included spaza shops, the provision of services (e.g. builders, thatchers and handy-men) as well as the permanent sale of NTFPs. A significantly greater proportion of households in Dixie has self-employed members as well as a greater average number per household. As with differences in employment, self-employment opportunities are also spatially diverse. The broader region in which Dixie is located is densely populated providing more markets and opportunities for self-employment. Additionally the surrounding reserves provide the opportunity for micro-enterprises providing curios to tourists. These opportunities are not present in Dyala. Whilst neither wealth nor gender of the de jure household head determines the overall involvement in micro-enterprises they might determine the activities in question this however requires further analysis. In Dixie wealthy households have more self-employed members per household. A possible explanation is that wealthy households have the available capital to invest in a variety of micro-enterprises, that household wealth frees up labour allowing more than one member to pursue alternative strategies (whilst poor households' labour is directed towards the collection of wood and water) and that wealthy households try to maximise on income sources in order to maintain a standard of living. Numerous households in Dixie are involved in the sale of curios to tourists. This sale of NTFPs was classified separately from those households selling fuelwood and other NTFPs on an ad hoc basis because for those households involved in the sale of curios, it is a permanent activity and generally constitutes their primary form of income. Additionally in most cases the households form part of a greater market chain, selling pre-made curios purchased from outside the village and re-sold at a designated point within the village. Several of those involved have formed a rotating stokvel to allow for the purchase of stock.

3.6.1.1.2 Government Grants

In many rural communities in South Africa, the reliance on government grants has been identified as an important livelihood strategy. These grants include old-age pensions (R 780), child-support grants (R 190) and disability grants (R 780). Households receive these grants on a monthly basis and in many cases they constitute the household's primary form of income. In many communities households classified as wealthy are those that receive at least one government grant – particularly an old-age pension. This study supports this particularly with respect to Dyala. Across the sample a mean proportion of 23 % of households receive old-age pensions, 39 % receive child-support grants and 11 % disability grants.

Although more households in Dyala receive old-age pensions and disability grants, this is more likely a reflection of the wealth ranking exercise than of the population dynamics of the two villages. In Dyala, as is the case in many South African rural areas, high unemployment has resulted in the situation where those households receiving a monthly pension are comparatively wealthy compared to the rest of the community (Shackleton & Shackleton, 2006). As such when the wealth ranking exercise was performed, those households receiving old-age pensions were singled out as “wealthy”. Dixie on the other hand is an

anomaly in that the rate of employment is high and, in most cases permanent. During the wealth ranking in Dixie, households with one or more permanently employed members were identified as wealthy. However, households receiving a monthly income in the form of an old-age pension are still relatively better off than those which receive none and as such it is likely that in Dixie these households fall into the “Middle” wealth category and therefore are not fully represented in the results. This argument is supported by the wealth differences within the two villages with a significantly greater proportion of wealthy households in Dyala receiving an old-age pension as well as more pensions per household whilst in Dixie this difference is not significant. With respect to gender, in Dyala male-headed households receive more old-age pensions per household. This is explained by households where both the male-head and his wife are pensioners but doesn't explain why in Dixie a greater proportion of female-headed households receive pensions and more pensions per household.

The higher proportion of households receiving child-support grants is not necessarily a reflection of young, emerging households. Wealthier female-headed households often consisted of a grandmother receiving an old-age pension and at least one or more of the grandchildren receiving a child-support grant. In these cases the parents are either working in the urban areas, have passed away or, as in one case, are in jail. When looking at the wealth and gender differences, neither village showed significant differences with respect to child-support and disability grants. This indicates that the amount given as child-support grants is not significant enough to be a determinant of household wealth. Few households receive a disability grant.

3.6.1.1.3 Savings

In both villages more than half the sampled households invest in some form of saving scheme including burial societies, stokvels, bank accounts and insurance schemes such as medical aid. Burial societies are the most common followed by stokvels. These schemes are in many cases multi-functional offering insurance against a variety of potential misfortunes, allowing households to save for anticipated expenses such as school fees as well as providing the finances (either through savings or loans) for investments into other livelihood strategies. Inter-village differences once again highlight the importance of taking cognisance of spatial variability when designing and implementing programs to support rural livelihoods, including the provision of credit. A greater proportion of households in Dyala have burial societies whilst stokvels are more prevalent in Dixie. With respect to the total number of saving schemes per household, the inter-village difference is not significant however households in Dyala have more burial societies per household whilst those in Dixie have more stokvels per household.

With respect to the socio-economic factors of wealth and gender of the *de jure* household head, Lukhele (1990) documented the influence of wealth on membership whilst Skoufias (2003) explains that poor households have limited access to credit. Household wealth significantly determines a households' ability to diversify through investments in savings and assets. The results of this study suggest that household wealth is largely determined by off-farm income sources particularly formal waged employment and old-age pensions. A regular income offers these households a degree of stability and security allowing them to invest in a variety of saving schemes knowing they can make the monthly payments. These saving schemes

have an important insurance value (especially when access to formal credit is limited) and contribute to the overall livelihood security of these households (Lukhele, 1990). In both villages a significantly greater proportion of wealthy households have money invested in burial societies, stokvels and bank accounts. In Dyala no poor households have bank accounts whilst in Dixie no poor households have burial societies. Additionally, wealthy households are able to invest in more than one type of saving scheme as well as more of each type. This is beneficial in that different schemes meet different needs. With respect to credit providing institutions, the nature of the institution itself determines whether or not households can draw from their savings during times of need or whether the savings can only be accessed at a predetermined time (Lukhele, 1990). In this sense the contribution that these institutions make towards the suite of household coping strategies depends on the nature of the crisis itself. For example, investments in burial societies are useful when households are faced with the shock of covering funeral expenses but this money usually cannot be accessed for other crises. Accumulating stokvels will often offer a service whereby group members can take out a loan to be paid back with interest within a set period whilst rotating groups can't do this as members are paid out on a rotating basis, usually once a month (Lukhele, 1990). Being able to take loans from accumulating stokvels offers insurance against unexpected expenses, whilst rotating groups help with expected expenses such as building or making alterations to the house. Many poor households can either not make the payments to these schemes or, cannot make them regularly and therefore lose their membership and their savings. The high proportion of households in Dixie with bank accounts is most likely linked to the high formal employment in the village with employers choosing to deposit monthly wages into a bank account rather than pay out in cash. This is supported by the fact that a significantly higher proportion of wealthy households have bank accounts.

Household wealth plays a greater role in determining the ability of households to save than the gender of the de jure household head although gender may affect which household member can access the savings. Gender of the de jure household head was not significant for either the proportion of households with savings or the number of savings per household. In Dixie, group discussions indicated that membership of stokvels was restricted to women whilst a number of female respondents stated that they were aware their husband had invested in a burial society/bank account but were unaware of the details as the husband controlled the finances. Lukhele (1990) found women to make up a high proportion of member of stokvels and burial societies.

Households in this study had accessed their savings over the two year period to cover a variety of expenses including, burial/funeral expenses, medical expenses, school fees, the purchase of food and household goods and to finance micro-enterprises. Across the sample, 26 % of households with savings had accessed their savings over the two years – the difference was not significant for location, wealth or gender. Lukhele (1990) noted stokvel savings contributing to similar expenses.

3.6.1.1.4 Household assets

Household assets constitute part of a household's financial capital (DFID, 1999). Previous work has used the ownership of various assets as a determinant of household wealth (Adams *et al.*, 1997). According to

Cavendish (2000) low household incomes are associated with low asset levels and financial savings – with the main assets including livestock, consumer durables and agricultural assets. Household wealth and a regular income allow households to invest in a variety of assets which households can choose to liquidate to meet financial need. In contrast, poor households have less assets to liquidate should the need arise and are likely to struggle in replenishing their asset base should it be depleted. Block and Webb (2001) found diversification to be associated with improved well-being and consumption and, the diversity of incomes and assets to be associated with improved livelihood security. Assets can either be bartered for necessary goods or, they can be sold for ready cash for covering expenses such as medical bills or school fees. Although only selected assets were considered in this study, most are owned by greater proportions of wealthy households although for lower value assets such as radios, the difference is not significant. With respect to gender of the de jure household head, in both villages a significantly greater proportion of male-headed households owned fridges and in Dixie they also owned cars. The reason for fridges is unclear but cars may be considered a status symbol and valued more by men than women. Block and Webb (2001) found poor and female-headed households with more concentrated assets struggled when faced with costs associated with food insecurity.

Although only a small proportion of households reported selling assets within the last two years, this does not preclude the option. Only households in Dyala reported selling household assets. Group discussions in Dixie indicated that the sale of assets was not common practice. In Dyala, the sale of assets was not significantly different between wealthy and poor households or between male- and female-headed households, indicating that it is a coping strategy utilised non-discriminately. However, the wealthy households with a greater asset base at their disposal as well as more valuable assets, are obviously “not spoilt for choice”. Furthermore, poor households that sell assets stand the risk of being unable to replace them in the future whereas wealthy households are likely to do so. If poor households cannot replace their assets, the sale of assets ultimately weakens the household by reducing their asset base and the possible coping strategies at their disposal (Niehof, 2004). Households may inadvertently be poorer afterwards and therefore prone to a downward spiral of increasing poverty and vulnerability (Niehof, 2004). Poor households with a more limited asset base are restricted in the choice of assets sold and may resort to selling essential, productive assets whereas wealthy households have assets they can dispose of without it affecting household functioning. Assets were sold to cover a variety of expenses including food and paraffin, to finance micro-enterprises and to buy school shoes. One household tried to sell paraffin stove to pay school fees but could not find a market and eventually resorted to kinship.

3.6.1.2 *Land-based livelihood strategies*

3.6.1.2.1 *Arable agriculture*

With respect to land-based strategies, households involved in arable agriculture were cultivating either home-gardens or fields or both. Although only 56 % of households have land set aside for cultivation, 81.9 % of these households had planted over the two year period, indicating that those households with land allocated for arable agriculture are still actively cultivating. A higher proportion of households have home-

gardens and of garden-owners almost 90 % had planted compared to 66 % of field-owners. This highlights not only the important contribution of home-gardens, one that is often unrecognised in analyses of agricultural activity in rural areas, but also the important contribution that arable agriculture makes to rural livelihood security (Shackleton *et al.*, 2001; Andrew & Fox, 2004). In his study, Dovie (2001) found 87 % of households cultivating a home-garden, McAllister (1998) however found very few households cultivating a homestead plot, with a greater focus on fields. Discussions in both Dyala and Dixie indicated that households prefer to cultivate gardens than fields because gardens are easier to protect from marauding livestock, require less fencing and household members are able to chase livestock away, they can be tilled by hand and more easily harvested with less labour, they require less inputs and are easier to irrigate. Fields require greater effort and inputs and are therefore more costly. As with other strategies there is the potential for spatial variability with significantly more households in Dyala having access to arable land (particularly home-gardens). The difference however is only significant for the ownership of land, not for recent cultivation indicating that households in Dyala with arable land either choose not to cultivate or are faced with barriers to cultivation such as absent extension services, high input costs, shortage of labour, poor climate and poor soils. Extension services and less expensive inputs may be easier to provide/access in the Bushbuckridge area (Dixie) where high population densities increase demand. In Dixie, the greater proportion of households own fields and over 80 % of field and garden owners respectively, had cultivated in the two year period. Once again, the results support the need to consider spatial variability. Dovie (2001) found 96 % of households in Thorndale, Limpopo province, to have arable land, considerably higher than the 42 % in Dixie and the 56 % mean, although this does not give an indication of actual cultivation.

An involvement in arable agriculture has been found to be determined by household characteristics including wealth and gender. Block and Webb (2001) noted that wealthy households diversify away from crops. Dovie *et al.* (2003) found the commercialisation of crops to be associated with the size of the area planted, income from wages, NTFPs and livestock ownership. Wealthy households are able to afford the inputs as well as save on costs such a tractor-hire through the use of draught power. Niehof (2004) identified differential relationships between household wealth and the diversity of crops planted with wealthy households planting diverse crops because of their access to more land and livestock whilst poor households diversified to ensure food security and to optimise characteristics including yield, harvest times, disease resistance and so forth. In Dyala significantly more wealthy households have access to arable land, particularly fields however the difference for proportion of households planting is not significant. Having land allocated for agriculture does not imply that households are able to cultivate on a regular basis: wealthy households that were not cultivating were in most case restricted by a shortage of labour (either because the adults were employed or too old). Other reasons given by both groups for not planting include the lack of fencing to protect crops from stray livestock, the cost of inputs and the expense involved in hiring tractors for ploughing. Although not significant, the high proportion of poor households with gardens compared to fields highlights the imbalance of land allocation as well as a preference for gardens: some respondents indicated a shortage of available land for fields. Of those households with fields, no poor households had planted in the two year period compared to the 62.5 % of wealthy households that had: poor households cannot afford to cultivate fields. By way of comparison, 94.1 % and 91.7 % of wealthy

and poor garden owners respectively, planted over the same period. In Dixie the difference for wealth is not significant for the proportions of households owning arable land (either gardens or fields) or the proportions planting.

With respect to household wealth and gender of the de jure household head, results suggest that these influence access to land but not necessarily the cultivation of that land. In Dyala significantly more male-headed households have arable land (particularly gardens) however the difference for cultivation is not significant. In Dixie the difference with respect to access to land (fields or gardens), as well as cultivation, is not significant for gender of the de jure household head although all female-headed households with land had planted in the two year period. With respect to gender, Dovie *et al.* (2003) noted a greater involvement of women in arable agriculture whilst men pursued off-farm options. According to Shackleton *et al.* (2000) women and female-headed households are often more dependent on land-based livelihood strategies.

Households derive multiple benefits from their gardens and fields including food for household consumption, seed for future crops, livestock feed and produce for sale. Group discussions also indicated households sharing surplus produce with friends and neighbours thereby contributing to kinship ties. Shackleton *et al.* (2000) describe access to arable land as an important safety-net which offers increased food security and helps to establish and maintain kinship ties through reciprocal labour-sharing for planting/harvesting as well as through gifts of produce. In both Dyala and Dixie households reported storing produce for various reasons including for household consumption, for livestock feed and as seed for the following season. Storing is not determined by site or wealth however significantly more male-headed households in Dyala reported storing agricultural produce. As there is no significant difference between the genders with respect to the cultivation of land this suggests male-headed households produce more and therefore are able to store or that female-headed households, concerned with food security consume what they harvest and rely on other sources for seed and livestock feed, including kinship ties. Niehof (2004) noted that whilst women cultivated subsistence crops, men cultivated crops to sell. Dovie *et al.* (2003) also reported the storage of seed to save on input costs and, that field owners store more. Wealthy households have less need to store produce and seed as they are better positioned to purchase alternative foods (i.e. vegetables) and seed. Whilst crops are predominantly used for home consumption, some households sell (McAllister, 1998; Dovie *et al.*, 2003). Dovie *et al.* (2003) found the sale of agricultural produce to be correlated with the area of land planted, non-farm income and ownership of livestock. If this is the case then one would expect wealthy households to dominate the sale of agricultural produce: this study found no association with household wealth. Gender of the de jure household head also showed no effect. Discussions indicated that whilst some households are involved in the sale of agricultural produce, this is generally once other needs have been met. According to Shackleton *et al.* (2000) only a small proportion of households sell agricultural produce with the majority benefiting from direct household consumption.

3.6.1.2.2 Animal husbandry

With respect to animal husbandry, 64 % of households reported owning livestock. This includes both cattle and small-stock. The greatest proportion of households own chickens (more than 50 %) followed by cattle.

Similar proportions of households own cattle, goats and pigs indicating that whilst cattle are generally the “coveted” livestock, goats and pigs represent an important aspect of animal husbandry. Dovie *et al.* (2006) found that cattle are the preferred livestock type because of the range of goods and services they offer however, households may initially invest in goats, selling them later to purchase cattle. Dercon (1998) reported goats to be a livestock type that’s easier to liquidate, although the returns are obviously not as high as for cattle. Animal husbandry appears to make a greater contribution to households in Dyala with a significantly greater proportion owning cattle, goats and pigs. Households also own a greater average number of cattle and goats per household. With respect to pigs, households in Dixie own a greater average number per household. A possible explanation for these inter-village differences is considerable livestock losses in Dixie resulting from drought. It is possible that households are either still in the process of re-establishing their herds or, that they have decided that the costs and risks involved in livestock ownership are too high and therefore they are investing in other strategies. Dovie (2001) noted high drought-related losses in nearby Thorndale.

This study found both household wealth and the gender of the de jure household head to influence livestock ownership, particularly cattle. In both villages, household wealth determines cattle ownership as well as the average number of cattle owned per household. In Dyala the proportion of wealthy households owning goats and pigs, as well as number per household, is also significant. Cattle in particular are considered an indicator of wealth (Dekker, 2004). This study supports this finding (Figure 2-1). With respect to livestock ownership as a whole, in Dyala significantly more wealthy households were involved in animal husbandry than their poor counterparts. In Dixie the difference is not significant, supporting findings by Dovie *et al.* (2006) that overall livestock ownership is not linked to household wealth – just the type of livestock owned. Dovie *et al.* (2006) noted more households owning goats than cattle because cattle are expensive. Households without livestock do not have the money to buy or the labour to manage them. Cavendish (2000) also noted entry barriers to poor households earning income shares from livestock and arable agriculture. With respect to gender of the de jure household head, in Dyala more male-headed households own livestock, particularly cattle. These households also own more cattle per household and interestingly, more chickens per household. Dovie *et al.* (2006) found gender to be a determining factor of livestock ownership with female-headed households owning no or less livestock. In Dixie gender of the de jure household head has no influence on livestock ownership. The lack of significant differences based on gender and wealth in Dixie (compared to Dyala) suggests that either the younger generation of wealthier, male-headed households do not aspire to livestock ownership, or that, as the male-head is not permanently based at the homestead, the de facto female head does not want to or cannot assume the responsibility of caring for livestock particularly larger livestock. It is also possible that livestock losses during the previous drought have temporarily equalised livestock ownership.

Animal husbandry has a range of associated benefits including milk, meat, draught power, dung and transport (Dovie *et al.*, 2006). In addition to these benefits, livestock (particularly cattle) have an important cultural value associated with ceremonies and bride-wealth, as well as an important “savings” function (Dekker, 2004). This savings or insurance function manifests through the sale of livestock (and livestock

products) to meet financial need, through the direct cost-saving offered and through the formation and maintenance of kinship ties with gifts of livestock and products. Whilst households may not sell their livestock regularly and may not utilise several of the associated benefits, the option of both have been reported as an important aspect of livelihood security (Shackleton *et al.*, 2001). In this study numerous respondents referred to their cattle as “their bank”. A third of livestock owners reported selling livestock over the two year period: in some cases this involved regular sale whilst in others, households sold to cover unexpected or expected expenses. Livestock is a commodity households can sell when facing crises. Not only do a greater proportion of wealthy households have this option open to them but as they own greater quantity of livestock, they are able to sell and still have enough breeding stock for numbers to replenish. If poor households sell they lose stock and stand the risk of not being able to replace it. Dovie *et al.* (2006) did not find the sale of livestock to be pronounced but this is probably because households prefer not to sell livestock unless necessary. According to Smith *et al.* (2001) the sale of livestock and crops allows for capital accumulation and diversification into off-farm sectors. Household wealth does not appear to influence the sale of livestock although the income earned may differ as a result of the different livestock types owned. In Dyala gender affects the sale with a greater proportion of male-headed households selling livestock although this is most likely related to the greater proportion of male-headed households owning livestock as well as greater numbers of cattle per household. The nature of the sale of livestock needs to be examined in more detail, particularly as to why households sell and what livestock they sell. It would need to be established whether the sale is a livelihood strategy or only a coping strategy. Different types of livestock obviously fetch a different price and therefore the choice of livestock sold may depend on the extent of the financial need – households with a greater variety and number of livestock have a more option when selling as a coping strategy. Dovie *et al.* (2006) noted that households with livestock sell in response to financial need and therefore use less NTFPs. When considering livestock as an asset that households can choose to liquidate to cover financial costs, not only is the ownership of livestock relevant (and the type of livestock owned) but the amount of livestock is also important. Households with very few livestock may struggle to rebuild numbers leaving them vulnerable to future shocks. Additionally, the available markets might differ making some types of livestock harder to sell to meet immediate need. Dovie (2001) identified similar reasons for selling livestock: to pay school fees, to purchase household items, for capital for trading and to buy meat.

3.6.1.2.3 The consumption and trade of natural resources

The consumption and trade of natural resources has been found to make a notable contribution to the livelihood security of rural households in developing countries at a global scale. Rural households make use of a variety of products and species for both direct household consumption and sale (Cavendish, 2000; Shackleton *et al.*, 2001). The proportion of households can be high particularly for key resources such as fuelwood and wild foods (Cavendish, 2000; Dovie, 2001; Dovie, 2003). This study supports these findings: all households sampled reported the use of NTFPs including wild foods, medicinal plants, fuelwood, construction materials, household utensils, fencing materials, brushes and reed products, with wild edible herbs and fruit, sand and fuelwood being used by more than 80 % of households. Most households use

these resources for direct household consumption, however there are households involved in the trade of various products, either on an ad hoc basis or full-time. Households procure their NTFPs either through self-collection or by purchasing resources, either from others in the community, in the nearby regional centres or local pension point markets (Shackleton & Shackleton, 2004b).

There is a spatial distinction in resource use with households in Dixie using significantly more NTFPs per household than those in Dyala. With respect to intra-village differences neither household wealth nor gender of the de jure household head influences the use of NTFPs in terms of the average number of resources used per household. These household characteristics play a greater role in influencing the procurement and sale of NTFPs. With respect to the procurement of NTFPs, across the total sample 94 % of households were found to be purchasing at least one NTFP: neither household wealth nor gender of the de jure household head influence the proportion of households purchasing NTFPs, with the exception of Dixie where a significantly greater proportion of male-headed households buy at least one product. Despite this however most NTFPs are procured through self-collection. Twenty-two percent of households purchase NTFPs. In Dixie the difference in proportions is not significantly different for either household wealth or gender of the de jure household head. In Dyala gender has no influence however wealth does with only poor households selling NTFPs.

Poor households have been found to be reliant on a greater diversity of products as well as greater quantities (Campbell *et al.*, 1997; Shackleton & Shackleton, 2006). Cavendish (2000) found resource use varies with income with wealthy households using greater quantities of resources whilst the poor are more dependent on the contribution made, particularly by wild foods. Additionally poor households are highly dependent on the incomes from selling NTFPs which is then used to invest in other livelihood sectors. Shackleton and Shackleton (2006) and Cocks *et al.* (in press) however found the relationship between household wealth and proportion of households using (and the quantity used) to be negligible although, wealth does determine the manner with which households procure their NTFPs as well as whether or not they sell these products. Although this study did not consider quantities of NTFPs used, the findings support those of Shackleton and Shackleton (2006): wealth does not significantly determine the use of resources in terms of the proportion of households using NTFPs and the average number used per household. Shackleton and Shackleton (2006) also found a high proportion of households purchasing NTFPs with minimal difference in the proportion of wealthy and poor households purchasing at least one product. This substantiates the findings of this study. With respect to the sale of NTFPs, in terms of the overall sale of NTFPs, in Dyala a greater proportion of poor households were selling NTFPs either on an ad hoc or full-time basis. In Dixie the difference is not significant supporting arguments that where sufficient incomes can be made, wealthy households diversify into the sale of NTFPs in response to opportunity and to maintain a standard of living (Cavendish, 2000). With a greater market in the surrounding area as well as the opportunity to sell curios to tourists, wealthy households in Dixie trade in NTFPs to supplement other income sources. It should be noted that number of resources used as well as the trade in NTFPs is not necessarily indicative of reliance on those resources or the significance of contribution made: as Cavendish (2000) highlights, although wealthy households dominate the use of NTFPs, in terms to income share, the

poor depend more on the contribution made from both use and sale. Shackleton *et al.* (2001) also distinguish between those that sell out of need and those that are responding to opportunity.

In addition to wealth factors, the collection and use of NTFPs has been described strongly linked to gender (Cavendish, 2000; Dovie, 2001). The gender of the household head as well as the gender composition of the household members play a role in determining what resources are used, how they're procured and whether they are traded or not. The relationship between gender and resource use is determined to some extent by the physical nature of the work but also by existing gender roles. For example, women, traditionally concerned with household food security, are largely responsible for the collection of wild foods (with the exception of bushmeat). Men on the other hand use NTFPs related to the construction of houses and livestock enclosures (Shackleton *et al.*, 2001). Although women and female-headed households are considered to use and rely on a greater range of NTFPs (Shackleton & Shackleton, 2004b), findings from this study show no significant relationship between gender of the *de jure* household head and the overall use of NTFPs (with respect to the average number of resources used per household) and, the sale of NTFPs. Shackleton *et al.* (2001) found differences in the resources sold as well as the type of trade, with women selling when cash is required for the household and men dominating the trade in income-generating resources. There is however a relationship between gender and the procurement of NTFPs with 100 % of male-headed households in Dixie purchasing one or more NTFPs. This supports findings by Cavendish (2000). The use and sale of NTFPs is examined in more detail in Chapter 4.

According to Shackleton *et al.* (2001) in addition to the direct-use values associated with these land-based strategies (including the use of NTFPs), there is the potential and largely unrecognised rural safety-net function offered. This safety-net comes in the form of cost-saving through the direct-use of various goods and services offered by livestock, agriculture and NTFPs, as well as the option of selling products to meet financial needs. Shackleton *et al.* (2001) argue that this value is potentially higher than the direct-use value offered by these various strategies.

3.6.2 Spatial and temporal variability in livelihood diversification

Research on livelihood diversification indicates that the combination of strategies adopted by rural households is dynamic and fluid with households changing the variety and diversity of activities in response to changing opportunities and constraints (De Jong *et al.*, 2000; Block & Webb, 2001; Niehof, 2004). In addition to being temporally determined, the range of livelihood strategies is also spatially variable. This spatial variability has been shown in this study with differences between the two sites in terms of both off-farm and land-based livelihood strategies. Seasonal calendars (Appendices 7-5 & 7-6) and time trend exercises (Appendices 7-3 & 7-4) for both sites show temporal variability as determined by fluctuations and changes in the social, political and bio-physical environments in which the communities exist. Livelihoods shift as households respond to new opportunities and react to short-term shocks as well as long-term trends. Individual strategies and their contribution to livelihoods are also in a permanent state of flux for example, land-based strategies, such as arable agriculture (rain-fed agriculture in particular) vary both regionally as well as seasonally and are subject to long-term climatic fluctuations (Dovie, 2001;

Niehof, 2004). Respondents indicated decreasing employment opportunities, an overall decrease in NTFP use but a constant, if not increasing reliance, on arable agriculture and animal husbandry. Smith *et al.* (2001) highlights the importance of bearing this dynamic nature of livelihoods in mind when planning programs for rural development and poverty alleviation.

3.7 Conclusion

This chapter has shown livelihood diversification is a common feature of rural households irrespective of household wealth or gender of the de jure household head. Despite this however, within each strategy there are differences influenced by these household characteristics particularly wealth. According to Niehof (2004) there is no simple relationship between diversification and wealth or gender. A cash income allows for investments in assets and saving schemes. The number of formal jobs, old-age pensions, cattle, assets and saving schemes distinguish wealthy households from poor and suggests that whilst both groups diversify by investing in different strategies, assets and saving schemes, the wealthy households diversify more positively. Wealthy households are better positioned to respond to new income-making opportunities. This is shown in Dixie where wealthy households have more self-employed members per household, many of which have responded to market for curios created by tourists visiting the neighbouring game reserves. The findings emphasise the range of off-farm and land-based strategies in which rural households engage (Block & Webb, 2001; Shackleton *et al.*, 2001). This diversity of livelihood strategies needs to be recognised in assessments of rural households (Shackleton *et al.*, 2000). Additionally the high proportion of households involved in land-based strategies, including the use of NTFPs, highlights the important contribution these strategies make to rural livelihoods. Communal lands are all too often considered to be unproductive systems with households relying to a greater extent on off-farm strategies, and are often ignored in national statistics, in development programmes and in policy debate (Shackleton *et al.*, 2001). Access to natural resources (including NTFPs) contributes towards livelihoods and rural safety-nets.

Livelihood diversification has been identified as a strategy for maximising incomes from a variety of sources and opportunities as well as, a coping mechanism through which households endeavour to spread risk. According to DFID (1999) livelihood diversification gives households more choice and flexibility when dealing with crises. Livelihood diversification is considered as a means to cope with crises with households either diversifying pre-emptively or in reaction to a crisis. In light of the objectives of this study, it is the contribution the range of strategies make to rural households' ability to cope that is of interest. This chapter has shown that over a two year period households sold livestock and household assets and relied on their saving schemes in response to both expected and unexpected expenses. If households are more secure by having a greater range of activities and assets at the disposal, then one can conclude that gender of the de jure household head does not significantly determine diversification and therefore ability to cope however, household wealth does with wealthy households having more assets to sell, more savings to draw from, more stable and regular non-farm income sources (both wages and government grants) and higher value livestock..

CHAPTER FOUR: THE USE AND SALE OF NTFPS IN RURAL LIVELIHOODS

4.1 Introduction

4.1.1 NTFP use – an overview

The contribution made by non-timber forest products (NTFPs) to rural livelihoods has received increasing attention over the last decade (Belcher *et al.*, 2005; Shackleton & Shackleton, 2006). This land-based livelihood strategy has been considered from various aspects including the direct-use value of the variety of products households utilize on a day-to-day basis and, the contribution that the commercialisation and realization of the value of NTFPs may make towards the sustainable use of products and the broader ecosystems in which they are found (Belcher *et al.*, 2005). Of recent interest is the potential for these products to contribute towards poverty alleviation and their role as a form of natural insurance, particularly in light of the Millennium Development Goals to significantly reduce global poverty by 2015. Whilst the contribution of NTFP commercialisation towards poverty alleviation is now being questioned, the empirical data on the safety-net role and how this contributes is still sparse (Belcher *et al.*, 2005). This potential safety-net role may be of greater value to rural households than the cost-saving offered through the direct-use of these products, although the value of this natural insurance is often only an option value and not always realised. Neumann and Hirsch (2000) and Wunder (2001) point out that NTFPs provide a range of products which, when incorporated into the livelihood strategies of rural people aid in reducing their vulnerability to risks and provide a possible safety-net to households during periods of vulnerability both as a direct-cost saving as well as a possible source of income through the sale of these products. Shackleton and Shackleton (2004a) emphasise the importance of this cost-saving function in that it allows for households to invest in other livelihood and coping options. Whilst some products may be used regularly for direct household consumption and trade, others are used less frequently as gap-fillers and safety-nets (Belcher *et al.*, 2005).

Throughout the developing world rural communities from a diversity of ecosystems, make use of an extensive range of NTFPs and species for food, energy, shelter, medicines, tools and fibre (Appasamy, 1993; Chopra, 1997; Gakou *et al.*, 1994; Khare *et al.*, 2000; Shackleton *et al.*, 2002; Dovie, 2003; Fisher, 2004; McSweeney, 2005). The contribution made by NTFPs towards rural households is through direct household provisioning, the sale of products to generate an alternative and often crucial source of cash and through the safety-net function for both consumption- and income-smoothing (Shackleton *et al.*, 2001; Angelsen & Wunder, 2003; Belcher *et al.*, 2005; McSweeney, 2005). In certain cases NTFPs have been identified as the key income source for rural households (Pattanayak & Sills, 2001; De Merode *et al.*, 2004) although as Ambrose-Oji (2003) indicates, NTFPs are generally one of several livelihood strategies adopted. According to Adams *et al.* (2000) the contribution made by NTFPs is significant on regional and national scales and is equivalent to other sectors such as arable agriculture. For example, Dovie (2003)

found the income share from NTFPs to be greater than that from cash crops and informal cash income. Other commentators have noted contributions to total livelihood incomes ranging from less than 20 % to more than 50 % (Cavendish, 2000; Godoy *et al.*, 2000; Narendran *et al.*, 2001; Ambrose-Oji, 2003; Fisher, 2004). Campbell *et al.* (2002) found the income from NTFPs to be important to rural households in Zimbabwe with poorer households deriving a greater income share from NTFPs than wealthy households, for both direct household consumption and sale. Despite this though there is often little recognition or support for this livelihood strategy (Crook & Clapp, 1998). According to Shackleton and Shackleton (2006) the value rural households derive from NTFPs, particularly with respect to the sale of these products, is influenced by the context as well as factors such as proximity to markets, the currency strength, the opportunities costs involved in the collection and trade, the diversity of available resources and the abundance of key resources. De Merode *et al.* (2004) found wild foods to have a smaller role in household consumption but a greater role in trade and income generation however Crook and Clapp (1998) warn that the economic potential of collecting activities can be limited and that the income earned from collecting can be variable.

There are few rural households that do not use NTFPs as part of their livelihood portfolio, but the extent of use, the quantities used and the value derived vary both spatially and temporally (Cavendish, 2000; Shackleton & Shackleton, 2006). Angelsen & Wunder (2003) differentiate between ‘forest dependence’ and using accessible natural resources that offer a cheap alternative. In a comparison of 61 cases of the use and management of commercial NTFPs, Belcher *et al.* (2005) corroborate statements on the need to take individual contexts into account. NTFPs are attractive to the rural poor because whilst they are labour-intensive, they require little capital investment or skills (Angelsen & Wunder, 2003), they are free and may be easily obtainable (Cavendish, 2000; Shackleton *et al.*, 2000), although Kepe (2002) documented numerous factors that affect or govern their use. Factors such as land tenure, resource availability and accessibility, institutional dynamics, available alternatives and, population dynamics (age, wealth and gender) affect the use of NTFPs (Byron & Arnold, 1999; Cousins, 1999; Cavendish, 2000; Shackleton & Shackleton, 2000; McSweeney, 2003; Shackleton & Shackleton, 2006). These dynamics together with the heterogeneous nature of communities imply that resource use in any particular community is likely to be variable. Shackleton and Shackleton (2006) draw attention to the importance of recognising the significant socio-economic differentiation within communities (and between communities) when targeting management interventions and designing policy aimed at sustainable resource use. Additionally, to support rural households in their own endeavours to secure a sustainable livelihood it is necessary to have an understanding of the livelihood strategies (including the use of NTFPs) in which they engage and how these differ between wealth groups, genders, age profiles and so forth.

For this study, two household characteristics namely household wealth and gender of the de jure household head were selected as points for comparison.

4.1.1.1 *Household wealth and NTFP use*

With respect to the influence of household wealth on the use of NTFPs, the general perception is that a greater proportion of poorer households utilise NTFPs, that poorer households utilise these resources more frequently and in greater quantities and, are more reliant on these resources than their wealthy counterparts (Cavendish, 2000; Narendran *et al.*, 2001). Cavendish (2000) points out however, that little is known of how household “type” affects use. Findings on the relationship between household wealth and NTFP use are mixed and complex (Demmer *et al.*, 2002). According to Shackleton and Shackleton (2006) the cost-saving offered through the use of NTFPs is more important to poor households than wealthy ones although both groups benefit from the range of products and services offered. Findings from research in Zimbabwe and elsewhere highlight that although NTFPs contribute a large proportion to most households’ income, in terms of quantity, wealthy households tend to consume more, although the poor may be more resource dependent (Cavendish, 2000; Wunder, 2001; Kepe, 2002; De Merode *et al.*, 2004). These findings lead Ambrose-Oji (2003) to suggest that wealthy households should be considered in the development of conservation strategies which often focus exclusively on poorer groups. To contrast however, Chopra (1997) found in India that as household wealth increased and allowed for purchasing alternatives, the amount of natural resources used per household decreased. In Cameroon, NTFPs were found to make a greater contribution to the livelihoods of middle income groups, with wealthy and poor households benefiting to a lesser degree (Ambrose-Oji, 2003). These middle income groups benefited predominantly through income generated through the trade of NTFPs particularly curios/crafts. Barriers to poor households’ reliance on NTFPs were identified, including social constraints as well as NTFPs offering an insecure income source for households seeking livelihood security (Ambrose-Oji, 2003). In South Africa, recent findings by Shackleton and Shackleton (2006) and Cocks *et al.* (in press) have shown wealth to have less of an impact in terms of the proportion of households consuming NTFPs but to still influence the manner in which households procure their NTFPs as well as whether or not households are involved in the sale of these products.

Shackleton and Shackleton (2006) found that increasing household wealth allows for the purchase of resources whilst poorer households predominantly procure their resources through self-collection. A greater proportion of poorer households are involved in the sale of NTFPs, either full-time or on an ad hoc basis in response to periods of increased financial need (Shackleton & Shackleton, 2006). However even this wealth distinction is not necessarily consistent. Other findings report that wealthier households dominate the commercialisation of certain NTFPs: whilst many poor households may sell during times of need, the wealthier ones with access to capital, transport and markets, earn more from commercialisation (Kepe, 2002; Angelsen & Wunder, 2003). There is the risk that access to resources important to the rural poor is prevented by elite groups within the same community or external parties who wish to exploit the resources for personal gain (Cavendish, 2000; Ambrose-Oji, 2003). Angelsen and Wunder (2003) show a relationship between wealth and rules of access whereby powerful, wealthy parties redefine the existing rules of access especially where existing tenure is informal. These factors together with better control over the marketing chain gives them an advantage over poorer households in using NTFPs as a pathway out of poverty.

Ambrose-Oji (2003) found middle to upper income households were able to risk diversification into NTFP use and commercialisation as a result of having alternative livelihood strategies as fall-back options as well as sufficient capital to invest in specialised NTFP-based ventures. Fisher (2004) however suggests that the income derived from the use of NTFPs contributes towards reducing inequality between households more so than other income sources including waged labour, self-employment, the sale of assets and cash transfers. According to Belcher *et al.* (2005) NTFP production is one of several potential livelihood strategies adopted by rural households but less likely than other strategies to result in significant economic differentiation between producing and non-producing households.

4.1.1.2 Gender and NTFP use

In many rural areas gender is a determinant of social differentiation, with women (and female-headed households) generally being poorer than men. The use of NTFPs is often determined by gender with certain NTFPs being labelled as 'women's goods' whilst others are used and controlled by men. According to these socially constructed roles, women generally dominate NTFP use with men involved more in off-farm activities or agriculture. Of households interviewed in the Bushbuckridge region of South Africa, it was found that women collected NTFPs in 73 % of the cases whilst men only collected in 27 % (Dovie, 2003). Khare *et al.* (2000) found in India that 98 % of women versus 91 % of men are involved in NTFP collection. However, even within more general NTFP use there are different roles, with the use and collection strongly linked to the gender of the individual as well as existing gender roles and rights (Cavendish, 2000). As such men tend to dominate activities such as hunting and construction, whilst trade is focussed on carvings or poles (Cavendish, 2000; Shackleton & Shackleton, 2000). Women on the other hand are concerned with household food security and therefore with the collection of wild foods and fuelwood. Other resources dominated by women are determined by the skills required to make the final product, for example women collect reeds to make reed mats and other woven products either for household consumption or trade (Cavendish, 2000). In Zimbabwe, research found that men are generally associated with activities that involve the collection and use of wood and with hunting whilst women collect wild edible fruits and herbs (Cavendish, 2000). The roles are usually unequal with women having less power and ownership over resources. To some extent these gender differences result from the physical nature of the work, however in many cases they are the result of age-old patterns of use. Cavendish (2000) found that for those activities requiring more than one adult labourer, both men and women will participate.

Female-headed households are generally more vulnerable than their male-headed counterparts and have been found to be more dependent on the contribution made by NTFPs, to dominate the collection of NTFPs and to benefit more from the trade of NTFPs particularly in the sense that it allows them (in most cases) to remain home-based and therefore does not negatively detract from other household responsibilities (Shackleton & Shackleton, 2004b). Even this correlation is not consistent however: Niehof (2004) noted cases where de jure female-headed households were more secure than their male-headed counterparts. For female-headed households where the woman is unable to leave her family in pursuit of alternative livelihood strategies, NTFPs play a crucial role in livelihood sustainability. For these households trade

often provides a rural safety-net during times of need as household responsibilities prevent it from becoming a full-time occupation. The use of NTFPs as determined by the gender of the household head also varies depending on whether de jure or de facto head is taken into consideration. De facto female-headed households often have alternative forms of income (e.g. migrant remittances) and are therefore less vulnerable than de jure female-headed households and less dependent on the contribution made by NTFPs. These gender dynamics need to be taken into account when considering resource use.

4.1.2 Gaps and research needs

According to Shackleton *et al.* (2002) many rural households in South Africa make use of NTFPs however there is limited empirical data on the resources used, the amounts used and frequency of use. Despite an understanding that NTFP use may be governed by a host of factors including household characteristics such as wealth and gender of the household head, the increasing number of studies in Southern Africa have predominantly given a composite picture of this use, with a focus on communities as a whole or resource use across broader regions (Shackleton & Shackleton, 2006). There is a research gap in terms of the variability of use and dependence on NTFPs within communities as determined by these household characteristics (Cavendish, 2000; Kepe, 2002; Shackleton & Shackleton, 2006). According to Shackleton and Shackleton (2006) socio-economic changes affecting households may result in changes in NTFP use. With respect to the rural safety-net role of NTFPs, if the factors that govern and maybe limit NTFP access and/or use on a daily basis are still at play when NTFPs are used as a rural safety-net, the benefit of this function may be lost to some people. In addition to this, the sale of NTFPs (as a manifestation of the rural safety-net function) may also be controlled by factors such as gender and wealth. Kepe (2002) argues that a person's social differentiation determines their power within the community and affects their access to and use of natural resources. To fully grasp the contribution made by NTFPs to rural livelihoods and to make a positive contribution towards policy and management debates it is necessary to consider this variability both within and between sites. With respect to poverty alleviation and the effective targeting of programmes to assist in meeting the Millennium Development Goals, cognisance needs to be given to the possibility of variable receptivity within communities (McSweeney, 2003).

Recognising the potential variability of NTFP use within any given community, as determined by a complex mix of variables, this study has endeavoured to contribute towards the research gap surrounding these issues, particularly in Southern Africa. This study provides quantitative data on the relationship between household wealth and gender of the de jure household head and, various aspects of NTFP use. The research has considered the proportion of households using particular products, the frequency of use, the average number of species used, how households procure their NTFPs (i.e. through collection or purchasing) and, which households are involved in the trade of NTFPs. Additionally, the study has also attempted to give an overview of the role of NTFPs as a rural livelihood strategy and how this strategy compares to others adopted by rural households, including both off-farm and land-based strategies (Chapter 3). Examining the contribution made by the individual strategies as well as the overall melange, sets the scene for the investigation of how rural livelihood diversity contributes towards a household's ability to

cope with a variety of risks, shocks and trends (Chapter 3). Examining the role of NTFPs as a daily-net provides the foundation for investigating the rural safety-net role of these products. This chapter, together with the previous chapter on rural livelihoods, assets and activities, contributes towards an understanding of rural livelihoods and in doing so, it sets the detailed context of resource use within the two study villages within which the role of safety-nets is later examined.

4.2 Results

4.2.1 Total number of resources used per household

Households in both Dyala and Dixie use a variety of NTFPs. Between both villages, eighteen resource groups were identified, fourteen of which are used in Dyala and seventeen in Dixie. In Dyala seven (38.9 %) and in Dixie eleven (61.1 %) of the listed resources are used by more than 50 % of the sampled households. Those resources used by more than 50 % of total households sampled include fuelwood; sand; wild edible herbs; wild edible fruits; medicinal plants; wood for household items, carvings and furniture; twig hand-brushes; grass hand-brushes and, indigenous poles for fencing. With respect to the mean number of resources used per household, households in Dixie use a significantly higher number of resources than their Dyala counterparts (Table 4-1).

Table 4-1 Total number of resources used per village and mean number used per household (Mean ± SE)

	Dyala	Dixie	T/Z	Significance
Total number of resources used per village	14.0	17.0	-	-
Mean number resources used per household	7.2 ± 0.2	10.2 ± 0.2	-10.6	<0.05

In terms of intra-village differences in the average number of resources used per household, there are no significant differences in either village for either household wealth or gender of the de jure household head (Table 4-2).

Table 4-2 Average number of resources used per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
Dyala	6.9 ± 0.4	7.4 ± 0.3	<u>1.1</u>	>0.05	7.2 ± 0.4	7.4 ± 0.3	<u>-0.7</u>	>0.05
Dixie	11.3 ± 0.4	12.1 ± 0.4	1.2	>0.05	11.7 ± 0.3	12.1 ± 0.7	-0.9	>0.05

In terms of specific resources, most of those identified are used in both sites with the exceptions being that no households in Dyala reported the consumption of fish or insects, the collection and use of reeds for weaving or the use of seeds for decorative items and jewellery, and, in Dixie no households reported consuming wild edible mushrooms. The top five resources across both villages, in terms of proportion of households using, are fuelwood, sand/soil/clay/termite mounds for building (henceforth “sand”), wild

edible herbs, wild edible fruits and medicinal plants. Each of these five is used by more than two thirds of the sampled households across both villages and within each. The top five resources in Dyala include fuelwood, sand, grass hand-brushes, wild edible fruits and wild edible herbs. In Dixie all the sampled households use fuelwood, wild edible herbs and sand, whilst 94 % of households use reeds for weaving and wood for various household items, carvings and furniture (Table 4-3). Those NTFPs used by less than 50 % include reeds for weaving, fish, insects, seeds, mushrooms, bushmeat, wild honey, indigenous housing poles and thatch grass.

When stratifying the listed resources by village, there are significant differences in the proportions of households consuming in the case of thirteen NTFPs. Those resources where no significant differences exist between the two villages include fuelwood, wild edible fruits, medicinal plants, wild honey and thatch grass. With respect to those resources where significant differences do exist, in all but two cases a greater proportion of households in Dixie use the resources. The exceptions to this are wild edible mushrooms which were only reported in Dyala and grass hand-brushes (Table 4-3).

Table 4-3 Proportion of all households (%) using NTFPs – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Fuelwood	96.0	100.0	98.0	2.0	>0.05
Sand/soil/clay/termite mounds	92.0	100.0	96.0	4.2	<0.05
Wild edible herbs	80.0	100.0	90.0	11.1	<0.05
Wild edible fruits	88.0	84.0	86.0	0.3	>0.05
Medicinal Plants	68.0	88.0	78.0	5.8	>0.05
Wood for household items, carvings & furniture	52.0	94.0	73.0	22.4	<0.05
Twig hand-brushes	46.0	96.0	71.0	30.4	<0.05
Grass hand-brushes	92.0	28.0	60.0	42.7	<0.05
Indigenous poles for fencing	42.0	70.0	56.0	7.9	<0.05
Weaving reeds	0.0	94.0	47.0	88.7	<0.05
Bushmeat	10.0	50.0	30.0	19.1	<0.05
Fish	0.0	52.0	26.0	35.1	<0.05
Wild honey	22.0	22.0	22.0	0.0	>0.05
Insects	0.0	38.0	19.0	23.5	<0.05
Indigenous poles for housing	2.0	28.0	15.0	13.3	<0.05
Thatch grass	14.0	16.0	15.0	0.1	>0.05
Mushrooms	12.0	0.0	6.0	6.2	<0.05
Seeds	0.0	8.0	4.0	4.2	<0.05

Within each village resource use was analysed using household wealth and gender of the de jure household head as means for stratification. In both villages household wealth does not significantly determine the proportion of households using various wild resources with the exception of two resources in Dixie, namely indigenous poles for fencing and insects. Indigenous poles for fencing are used by a significantly greater proportion of poor households whilst insects are consumed by a significantly greater proportion of wealthy households. Taking the mean for wealthy and poor households respectively, the top four resources in terms of proportion of households using them are the same (Table 4-4).

Of the resources used in Dyala (Table 4-4) all are used by both wealthy and poor households with the exception of indigenous housing poles which are only used by 4 % of the wealthy households. All the poor households rely on fuelwood. Grass hand-brushes and wild edible mushrooms are used by equal proportions of wealthy and poor households. The greatest proportion of wealthy households reported using fuelwood and grass hand-brushes (92 %) whilst the greatest proportion of poor households reported using fuelwood (100 %). Of the resources used in Dixie (Table 4-4) all are used by both wealthy and poor households. Fuelwood, sand and wild edible herbs are used by all households irrespective of wealth or gender. Equal proportions of wealthy and poor households use wild edible fruits and thatch grass and all the wealthy households use wood for household items, twig hand-brushes and weaving reeds (Table 4-4).

Table 4-4 Proportion of all households (%) using NTFPs - stratified by household wealth

	Dyala				Dixie				Mean	
	Wealthy	Poor	X ²	Significance	Wealthy	Poor	X ²	Significance	Wealthy	Poor
Fuelwood	92.0	100.0	2.1	>0.05	100.0	100.0	0.0	>0.05	96.0	100.0
Sand/soil/clay/termite mounds	88.0	96.0	1.1	>0.05	100.0	100.0	0.0	>0.05	94.0	95.0
Wild edible herbs	76.0	84.0	0.5	>0.05	100.0	100.0	0.0	>0.05	88.0	92.0
Wild edible fruits	84.0	92.0	0.8	>0.05	84.0	84.0	0.0	>0.05	84.0	88.0
Medicinal Plants	60.0	76.0	1.5	>0.05	84.0	92.0	0.8	>0.05	72.0	84.0
Wood for household items, carvings & furniture	60.0	44.0	1.3	>0.05	100.0	88.0	3.2	>0.05	80.0	66.0
Twig hand-brushes	32.0	60.0	3.9	>0.05	100.0	92.0	2.1	>0.05	66.0	76.0
Grass hand-brushes	92.0	92.0	0.0	>0.05	24.0	32.0	0.4	>0.05	58.0	62.0
Indigenous poles for fencing	48.0	36.0	0.7	>0.05	56.0	84.0	4.7	<0.05	52.0	60.0
Bushmeat	8.0	12.0	0.2	>0.05	44.0	56.0	0.7	>0.05	26.0	34.0
Fish	0.0	0.0	-	-	40.0	64.0	2.9	>0.05	20.0	32.0
Insects	0.0	0.0	-	-	48.0	28.0	2.1	<0.05	24.0	14.0
Weaving reeds	0.0	0.0	-	-	100.0	88.0	3.2	>0.05	50.0	44.0
Wild honey	20.0	24.0	0.1	>0.05	24.0	20.0	0.1	>0.05	22.0	22.0
Indigenous poles for housing	4.0	0.0	1.0	>0.05	16.0	40.0	3.6	>0.05	10.0	20.0
Thatch grass	12.0	16.0	0.2	>0.05	16.0	16.0	0.0	>0.05	14.0	16.0
Mushrooms	12.0	12.0	0.0	>0.05	-	-	-	-	6.0	6.0
Seeds	0.0	0.0	-	-	4.0	12.0	1.1	>0.05	2.0	6.0

Gender also plays no significant role in the determining the proportion of households using wild resources with the exception of the use of medicinal plants in Dyala. These are used by a significantly greater proportion of female-headed households. In Dyala no female-headed households use indigenous poles for housing and none reported the consumption of bushmeat. Fuelwood and wild edible fruits are used by all female-headed households; no resource is used by 100 % of male-headed households. In Dixie all the female-headed households own household items or furniture made from indigenous wood, products woven from reeds and use twig hand-brushes. Conversely, no female-headed households use seeds for decorative items or jewellery (Table 4-5). In none of these cases however is the difference with the male-headed

households significant. With respect to the most common resources as determined by the proportion of households using them, the pattern for gender is not as clear as with wealth.

Table 4-5 Proportion of all households (%) using NTFPs - stratified by gender of the de jure household head

	Dyala				Dixie				Mean	
	Male-head	Female-head	X ²	Significance	Male-head	Female-head	X ²	Significance	Male-head	Female-head
Fuelwood	93.9	100.0	1.1	>0.05	100.0	100.0	0.0	>0.05	96.9	100.0
Sand/soil/clay/termite mounds	90.9	94.1	0.2	>0.05	100.0	100.0	0.0	>0.05	95.5	97.1
Wild edible herbs	72.7	94.1	3.2	>0.05	100.0	100.0	0.0	>0.05	86.4	97.1
Wild edible fruits	81.8	100.0	3.5	>0.05	83.3	87.5	0.1	>0.05	82.6	93.8
Medicinal Plants	57.6	88.2	4.9	<0.05	88.1	87.5	0.0	>0.05	72.9	87.9
Wood for household items, carvings & furniture	60.6	35.3	2.9	>0.05	92.9	100.0	0.6	>0.05	76.8	67.7
Twig hand-brushes	42.4	52.9	0.5	>0.05	95.2	100.0	0.4	>0.05	68.8	76.5
Grass hand-brushes	90.9	94.1	0.2	>0.05	28.6	25.0	0.0	>0.05	59.8	59.6
Indigenous poles for fencing	36.4	52.9	1.3	>0.05	71.4	62.5	0.3	>0.05	53.9	57.7
Bushmeat	15.2	0.0	2.9	>0.05	52.4	37.5	0.6	>0.05	33.8	18.8
Fish	-	-	-	-	52.4	50.0	0.0	>0.05	26.2	25.0
Insects	-	-	-	-	35.7	50.0	0.6	>0.05	17.9	25.0
Weaving reeds	-	-	-	-	92.9	100.0	0.6	>0.05	46.5	50.0
Wild honey	30.3	5.9	3.9	>0.05	19.1	37.5	1.3	>0.05	24.7	21.7
Indigenous poles for housing	3.0	0.0	0.5	>0.05	23.8	50.0	2.3	>0.05	13.4	25.0
Thatch grass	18.2	5.9	1.4	>0.05	14.3	25.0	0.6	>0.05	16.3	15.5
Mushrooms	15.2	5.9	0.9	>0.05	-	-	-	-	7.6	2.9
Seeds	-	-	-	-	9.5	0.0	0.8	>0.05	4.8	0.0

4.2.2 Detailed use of specific NTFPs

Resources used by more than 50 % of the total sample (i.e. across both villages) are examined in more detail. This includes nine resources namely indigenous fuelwood; sand; wild edible fruits and herbs; medicinal plants; indigenous wood for household items, furniture and carvings; twig hand-brushes; grass hand-brushes and indigenous fencing poles (Table 4-5). Each resource is examined with respect to the proportion of households using the resource; how the household procures the resource (i.e. by buying it or collecting it themselves) as well as whether or not households are involved in the trade of the respective resources. Where applicable the frequency of use is considered as well as the average number of species or items consumed/used/owned per household. Where relevant, seasonal differences in use have been considered.

4.2.2.1 *Indigenous fuelwood*

4.2.2.1.1 **Proportion of households using indigenous fuelwood**

The majority of households in Dyala use indigenous fuelwood throughout the year. The proportion of households using fuelwood increases slightly during the winter months however this is not significant. In Dixie all households use fuelwood throughout the year although discussions indicated differences in quantities used with greater quantities required in winter when wood is needed for both cooking and heating (Table 4-6). Differences in the proportion of users are not significant for either household wealth or gender of the de jure household head in either village. Seasonal differences are also not significant (Table 4-7).

Table 4-6 Proportion of all households (%) using indigenous fuelwood, showing seasonal differences in use – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total (Summer)	94.0	100.0	97.0	3.1	>0.05
Total (Winter)	96.0	100.0	98.0	2.0	>0.05
X ²	0.2	0.0	-	-	-
Significance	>0.05	>0.05	-	-	-

Table 4-7 Proportion of all households (%) using indigenous fuelwood, showing seasonal differences in use - stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
Summer	88.0	100.0	3.2	>0.05	90.9	100.0	1.6	>0.05
Winter	92.0	100.0	2.1	>0.05	93.9	100.0	1.1	>0.05
X ²	0.2	0.0	-	-	0.2	0.0	-	-
Significance	>0.05	>0.05	-	-	>0.05	>0.05	-	-
Dixie								
Summer	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
Winter	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
X ²	0.0	0.0	-	-	0.0	0.0	-	-
Significance	>0.05	>0.05	-	-	>0.05	>0.05	-	-

4.2.2.1.2 **Frequency of use of indigenous fuelwood**

Irrespective of season there is no significant difference in the frequency with which wealthy and poor households use fuelwood. This applies to both Dyala and Dixie. Nor are there significant differences between male- and female-headed households in either village. Only female-headed and poor households in Dixie use fuelwood on a daily basis throughout the year. With respect to seasonal changes in the frequency of use, in Dyala wealthy and male-headed households significantly increase their frequency of use from summer to winter. In Dixie the frequency of use remains constant throughout the year (Table 4-8).

Table 4-8 Frequency of indigenous fuelwood use (days per week) – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala								
Summer	4.5 ± 0.5	5.6 ± 0.4	1.8	>0.05	5.0 ± 0.4	5.2 ± 0.5	-0.2	>0.05
Winter	6.8 ± 0.4	6.6 ± 0.3	0.5	>0.05	6.4 ± 0.3	6.7 ± 0.4	-0.7	>0.05
T/Z	-2.9	-2.3	-	-	-2.8	-2.5	-	-
Significance	<0.05	<0.05	-	-	<0.05	<0.05	-	-
Dixie								
Summer	6.7 ± 0.3	7.0 ± 0.0	1.0	>0.05	6.8 ± 0.2	7.0 ± 0.0	-0.4	>0.05
Winter	6.7 ± 0.3	7.0 ± 0.0	1.0	>0.05	6.8 ± 0.2	7.0 ± 0.0	-0.4	>0.05
T/Z	0.0	0.0	-	-	0.0	0.0	-	-
Significance	>0.05	>0.05	-	-	>0.05	>0.05	-	-
User households only								
Dyala								
Summer	4.9 ± 0.5	5.6 ± 0.4	1.4	>0.05	5.3 ± 0.4	5.2 ± 0.5	0.2	>0.05
Winter	6.8 ± 0.2	6.6 ± 0.3	-0.5	>0.05	6.8 ± 0.2	6.7 ± 0.4	-0.0	>0.05
T/Z	-3.5	-2.3	-	-	-3.3	-2.5	-	-
Significance	<0.05	<0.05	-	-	<0.05	<0.05	-	-
Dixie								
Summer	6.7 ± 0.3	7.0 ± 0.0	1.0	>0.05	6.8 ± 0.2	7.0 ± 0.0	-0.4	>0.05
Winter	6.7 ± 0.3	7.0 ± 0.0	1.0	>0.05	6.8 ± 0.2	7.0 ± 0.0	-0.4	>0.05
T/Z	0.0	0.0	-	-	0.0	0.0	-	-
Significance	>0.05	>0.05	-	-	>0.05	>0.05	-	-

4.2.2.1.3 Procurement of indigenous fuelwood

Whilst wealth and gender appear to have little impact on the proportion of households using fuelwood or the frequency with which they use it, household wealth does affect the manner in which households procure their wood. In both villages all poor households collect their wood; this is significantly greater than the proportion of wealthy households that do so. In contrast only wealthy households buy wood; this too is significantly different to their poor counterparts. No poor households buy wood. With respect to how wealthy households procure their wood, there is some overlap indicating that some households both buy and collect their wood.

Gender of the de jure household head does not significantly determine the means by which households procure their wood. This applies to both villages. Additionally neither collecting nor buying is specific to one gender but rather there are both male- and female-headed households that collect their wood and households that buy. For both genders the majority of households collect their wood (Table 4-9). Households buy wood from others within the community, buying head-loads or tractors loads. Personal observations were made of people collecting head-loads, bakkies (pick-ups) and wheel barrows of fuelwood. Respondents in Dixie noted the threat of outside harvesters.

Table 4-9 Proportion of households (%) collecting and buying indigenous fuelwood – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting	72.0	100.0	8.1	<0.05	81.2	94.1	1.4	>0.05
Buying	32.0	0.0	9.5	<0.05	21.2	5.9	1.9	>0.05
Dixie								
Collecting	84.0	100.0	4.4	<0.05	92.9	87.5	0.3	>0.05
Buying	28.0	0.0	8.1	<0.05	14.3	12.5	0.0	>0.05
User households only								
Dyala								
Collecting	78.3	100.0	6.1	<0.05	87.1	94.1	0.6	>0.05
Buying	34.8	0.0	10.4	<0.05	22.6	5.9	2.2	>0.05
Dixie								
Collecting	84.0	100.0	4.4	<0.05	92.9	87.5	0.3	>0.05
Buying	28.0	0.0	8.1	<0.05	14.3	12.5	0.0	>0.05

4.2.2.1.4 Sale of indigenous fuelwood

With respect to the sale of indigenous fuelwood, no wealthy households in either village sell fuelwood, only poor households do: the difference is significant. The sale of fuelwood is not determined by gender of the de jure household head. In Dyala both male- and female-headed households sell wood. In Dixie only the male-headed households do so however at 9.5 % this is not significantly greater than the female-headed households (Table 4-10). Group discussions in Dixie highlighted that the frequency and quantity of wood sold depends on the market, available transport as well as need. In Dyala respondents indicated that the frequency of sales varies with some people selling regularly whilst other only sell when they need money. In both villages respondents indicated seasonal fluctuations in fuelwood sales (Appendices 7-5 & 7-6). During discussions in Dyala on the diversity of livelihood strategies it was noted that households rely on three primary strategies namely: government grants, the sale of fuelwood, and arable agriculture. Respondents noted that those who sell fuelwood don't receive government grants.

Table 4-10 Proportion of households (%) selling indigenous fuelwood – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala	0.0	24.0	6.8	<0.05	9.1	17.7	0.8	>0.05
Dixie	0.0	16.0	4.4	<0.05	9.5	0.0	0.8	>0.05
User households only								
Dyala	0.0	24.0	6.3	<0.05	9.7	17.7	0.6	>0.05
Dixie	0.0	16.0	4.4	<0.05	9.5	0.0	0.8	>0.05

4.2.2.2 *Sand, soil, clay and termite mounds*

4.2.2.2.1 **Proportion of households using sand, soil, clay or termite mounds**

Ninety-six percent of households across both villages use sand, soil, clay, termite mounds or a combination of these when building and repairing their houses. In Dixie all households have used sand in the construction of their households whilst in Dyala 92 % have done so. Houses constructed by white farmers prior to the formation of the Ciskei are now occupied by community members, explaining why the proportion of households using sand for construction and repairs is significantly less than in Dixie (Table 4-11). Within each village however neither household wealth nor gender of the de jure household head significantly distinguishes the proportions of households using sand for construction (Table 4-12). In Dyala houses are commonly built using a pole frame filled with sand, soil or clay. Soil is also used to make a type of paint. In Dixie sand is collected for the manufacture of bricks. Most houses are constructed using these bricks although homestead plots may have more than one structure on them and not all are constructed using the same materials. Households in Dixie also collect “sand” from termite mounds in the surrounding area and use this for building although discussions indicated this to be the poorer households.

Table 4-11 Proportion of all households (%) using sand, soil, clay or termite mounds – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	92.0	100.0	96.0	4.2	<0.05

Table 4-12 Proportion of all households (%) using sand, soil, clay or termite mounds – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	88.0	96.0	1.1	>0.05	90.9	94.1	0.2	>0.05
Dixie	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05

4.2.2.2.2 **Procurement of sand, soil, clay or termite mounds**

In Dyala the procurement of sand is restricted to households collecting the sand themselves, irrespective of wealth or gender of the de jure household head, although they may hire transport to get the sand back to the homestead. There is no significant difference between the proportions of wealthy and poor or, male- and female-headed households collecting sand. In Dixie sand is both collected and bought. The difference in procurement is significant for wealth with a greater proportion of poor households collecting sand whilst the wealthy households predominantly buy sand. Gender does not play a determining role (Table 4-13).

Table 4-13 Proportion of households (%) collecting and buying sand, soil, clay or termite mounds – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting	88.0	96.0	1.1	>0.05	90.9	94.1	0.2	>0.05
Buying	0.0	0.0	-	-	0.0	0.0	-	-
Dixie								
Collecting	20.0	60.0	8.3	<0.05	38.1	50.0	0.4	>0.05
Buying	88.0	48.0	9.2	<0.05	69.1	62.5	0.1	>0.05
User households only								
Dyala								
Collecting	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
Buying	0.0	0.0	-	-	0.0	0.0	-	-
Dixie								
Collecting	20.0	60.0	8.3	<0.05	38.1	50.0	0.4	>0.05
Buying	88.0	48.0	9.2	<0.05	69.1	62.5	0.1	>0.05

4.2.2.2.3 Sale of sand, soil, clay or termite mounds

No households in Dyala sell sand – this is reflected in the fact that all households collect their own sand (Tables 4-13 & 4-14). In Dixie however where a large proportion of households buy their sand, there are obviously households involved in the sale of sand. Only wealthy and male-headed households sell sand. The difference is significant for household wealth. The sale of sand is limited to one family group (several households) within the village who together own a tractor and trailer with which they collect large quantities of sand for sale. Labour and profits is shared between the households.

Table 4-14 Proportion of households (%) selling sand, soil, clay or termite mounds – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala	0.0	0.0	-	-	0.0	0.0	-	-
Dixie	8.0	0.0	2.1	>0.05	4.8	0.0	0.4	>0.05
User households only								
Dyala	0.0	0.0	-	-	0.0	0.0	-	-
Dixie	8.0	0.0	2.1	>0.05	4.8	0.0	0.4	>0.05

4.2.2.3 Wild edible fruits

4.2.2.3.1 Proportion of households consuming wild edible fruits

Wild edible fruits are consumed by 86 % of households across both villages. In both villages similarly high proportions of households consume these fruit: the difference is not significant (Table 4-15). Wild edible fruits are the third most commonly used resource overall, after fuelwood and wild edible herbs.

Table 4-15 Proportion of all households (%) consuming wild edible fruits – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	88.0	84.0	86.0	0.3	>0.05

Neither household wealth nor gender of the de jure household head significantly determines the proportion of households consuming wild edible fruits. This applies to both villages. In Dixie equal proportions of wealthy and poor households consume wild edible fruits. With respect to gender, in Dyala all the female-headed households consume wild edible fruits however this is not significantly more than the proportion of male-headed households. The pattern is similar in Dixie (Table 4-16).

Table 4-16 Proportion of all households (%) consuming wild edible fruits – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	84.0	92.0	0.8	>0.05	81.8	100.0	3.5	>0.05
Dixie	84.0	84.0	0.0	>0.05	83.3	87.5	0.1	>0.05

4.2.2.3.2 Average number of wild edible fruit species consumed per household

A number of different fruit species were identified in both villages although certain species are consumed by greater proportions of households (Tables 4-18 & 4-19). Whilst neither household wealth nor gender of the de jure household head significantly determine whether households consume wild edible fruits or not, in Dyala the gender of the de jure household head significantly affects the average number of species of wild edible fruits consumed per household. Female-headed households consume a greater average number of fruit species per household. The same distinction is not found in Dixie. In both villages the poor households consume a higher number of species on average; however this is not significantly different to the number of species consumed by the wealthy households (Table 4-17).

Table 4-17 Average number of wild edible fruit species consumed per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala	1.8 ± 0.3	2.4 ± 0.3	<u>1.4</u>	>0.05	1.7 ± 0.2	2.9 ± 0.2	<u>-3.2</u>	<0.05
Dixie	3.5 ± 0.5	3.7 ± 0.5	0.4	>0.05	3.7 ± 0.4	3.3 ± 0.6	0.2	>0.05
User households only								
Dyala	2.2 ± 0.3	2.6 ± 0.2	<u>1.1</u>	>0.05	2.1 ± 0.2	2.9 ± 0.2	<u>-2.3</u>	<0.05
Dixie	4.2 ± 0.5	4.4 ± 0.5	0.5	>0.05	4.4 ± 0.4	3.7 ± 0.4	0.5	>0.05

Table 4-18 Proportion of all households (%) in Dyala consuming wild edible fruit species and the frequency of consumption

	Proportion of households (%)
<i>Scutia myrtina</i> (Cat-thorn; Isiphingo)	
Proportion of households consuming (%)	72.0
Frequency of consumption (days per week)	2.6 ± 0.4
<i>Opuntia ficus-indica</i> (Prickly Pear; Itdlofiya)	
Proportion of households consuming (%)	58.0
Frequency of consumption (days per week)	0.7 ± 0.2
<i>Dovyalis rotundifolia</i> (Dune Sourberry; Umqokolo)	
Proportion of households consuming (%)	42.0
Frequency of consumption (days per week)	1.1 ± 0.3
<i>Harpephyllum caffrum</i> (Wild Plum; Umgwenya)	
Proportion of households consuming (%)	10.0
Frequency of consumption (days per week)	0.1 ± 0.0
*Other: <i>Psychotria capensis</i> (Bastard Lemonwood, Umgxube); <i>Pappea capensis</i> (Jacket-plum, Ilitye); <i>Rubus rigidus</i> (Bramble, Iqunube); <i>Scolopia mundii</i> (Rooipeer/Mountain Saffron, Umnguni); <i>Celtis africana</i> (White Stinkwood, Umvumvu); <i>Capparis sepiaria</i> (Wild Caper-bush, Incum-ncum); <i>Ehretia rigida</i> (Puzzle Bush, Iqwaka)	

* Other: species consumed by less than 10 % of households consuming wild edible fruits

Table 4-19 Proportion of all households (%) in Dixie consuming wild edible fruit species and the frequency of consumption

	Proportion of households (%)
<i>Diospyros mespiliformis</i> (Jackalberry; Ntoma)	
Proportion of households consuming (%)	70.0
Frequency of consumption (days per week)	2.3 ± 0.4
<i>Ximenia caffra</i> (Large Sourplum; Ntsengele) OR <i>Ximenia Americana</i> (Small Sourplum; Thunduluka-ntsongo)	
Proportion of households consuming (%)	66.0
Frequency of consumption (days per week)	1.6 ± 0.3
<i>Euclea divinorum</i> (Magic Guarri; Nhlangua) OR <i>Euclea natalensis</i> (Natal Guarri; Nhlangua)	
Proportion of households consuming (%)	54.0
Frequency of consumption (days per week)	1.2 ± 0.3
<i>Vangueria infausta</i> (Wild Medlar; Mapyila/Masununguri)	
Proportion of households consuming (%)	32.0
Frequency of consumption (days per week)	0.6 ± 0.2
<i>Strychnos spinosa</i> (Green Monkey Orange; Masala)	
Proportion of households consuming (%)	30.0
Frequency of consumption (days per week)	0.5 ± 0.2
<i>Strychnos madagascariensis</i> (Spineless Monkey Orange; Nkwakwa)	
Proportion of households consuming (%)	16.0
Frequency of consumption (days per week)	0.4 ± 0.2
<i>Ficus</i> sp. (<i>Ficus sur/stuhlmannii/sycamorus</i>)	
Proportion of households consuming (%)	16.0
Frequency of consumption (days per week)	0.6 ± 0.3
<i>Sclerocarya birrea subsp. caffra</i> (Marula; Nkanyi)	
Proportion of households consuming (%)	12.0
Frequency of consumption (days per week)	0.4 ± 0.2
*Other: <i>Manilkara mochisia</i> (Lowveld Milkberry; Tinwambu); <i>Berchemia discolor</i> (Red Ivory; Nkuhuma); <i>Bridelia mollis</i> (Velvet Strawberry; Maguava ya nhova); <i>Heteromorpha trifoliata</i> (Parsley Tree; Timbezana); <i>Flueggea virosa</i> (White-berry Bush; Xihlangasi); <i>Mystoxylon aethiopica</i> (Kooboo Berry; Ximpana); <i>Ehretia amoena</i> (Sandpaper Bush; Ximunyamunya); <i>Ziziphus mucronata</i> (Buffalo Thorn; Mbhafa); <i>Carissa edulis</i> (Arabian numnum; Ntshuguri); <i>Grewia caffra</i> (Climbing Raisin; Nsipana); <i>Lannea stuhlmannii</i> (False Marula; Xibombonkanyi); <i>Parinari curatellifolia</i> (Mobola Plum; Mbulwa); <i>Flacourtia indica</i> (Governor's Plum; Xivambula); <i>Annona senegalensis</i> (Wild Custard Apple; Maphovana)	

* Other: species consumed by less than 10 % of households consuming wild edible fruits

Other species mentioned during the group discussions in Dixie include *Terminalia sericea* (Silver Cluster-leaf; Nkonola) and the pods from various *Combretum* species which are used to make a type of tea. The fruit from *Strychnos madagascariensis* is also used for tea and the seeds are dried and crushed into a powder used as an appetite suppressant. The fruit from *Sclerocarya birrea subsp. caffra* is valued for its multiple uses. The fruits and nuts are eaten and the fruit used in the production of beer and jam. The beer is sold in the summer months, often to cover household expenses such as school fees.

4.2.2.3.3 Frequency of consumption of wild edible fruits

The frequency of consumption of wild edible fruits by households across both villages has been calculated for the individual species and not for “wild edible fruits” as a whole (Tables 4-18 & 4-19). Species are seasonal and therefore the frequency depends on the availability of different species throughout the year. The frequency with which households consume these different species is given for the village as a whole and has not been stratified according to household wealth or gender of the de jure household head. In both villages particular species are not only consumed by greater proportions of households but are also consumed more frequently.

4.2.2.3.4 Procurement of wild edible fruits

Households either collect the fruits themselves or they buy from others. The majority of households across both villages, irrespective of household wealth or gender of the de jure household head, collect their own fruit. The purchase of fruit is limited to a few households and in most cases, a few select species. Household wealth, which does not significantly determine the proportion of households consuming wild edible fruits, also has little effect on the manner with which the fruit is procured (Table 4-20). This applies to both the collection and purchase of fruits with neither being significant for household wealth and although no poor households in Dixie buy their fruit, this is not significantly different to the 8 % of wealthy households that do buy. When isolating those households that consume wild edible fruits, in both villages 100 % of poor households collect their own fruits whilst equal proportions (90.5 %) of wealthy households do so. No poor households in Dixie buy fruit compared to 4.4 % of poor households in Dyala. In Dixie 9.5 % of wealthy households buy fruit whilst 19.1 % of wealthy households in Dyala do so (Table 4-20).

In Dyala all female-headed households collect fruit, a significantly greater proportion than the male-headed households. This gender distinction is however restricted to Dyala and to the collection of fruits with there being no significant difference in the proportions of male- and female-headed households buying fruit in either village (Table 4-20). In both villages both female- and male-headed households purchase fruit. When taking only those households that do consume wild edible fruits into consideration, there are no significant differences for either wealth or gender (Table 4-20). The purchase of fruits in Dyala is limited to one species in particular, namely *Opuntia ficus-indica*, an invasive cactus type plant with a sweet fruit that is collected and sold by households in the surrounding areas during the months of December and January. Because of its invasive nature it is targeted for removal by the Working for Water Programme and therefore is not easy to find in the Maasdorp-Jurieshoek valley.

Table 4-20 Proportion of households (%) collecting and buying wild edible fruits – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting	76.0	92.0	2.4	>0.05	75.8	100.0	4.9	<0.05
Buying	16.0	4.0	2.0	>0.05	12.1	5.9	0.5	>0.05
Dixie								
Collecting	76.0	84.0	0.5	>0.05	80.9	75.0	0.2	>0.05
Buying	8.0	0.0	2.1	>0.05	2.4	12.5	1.8	>0.05
User households only								
Dyala								
Collecting	90.5	100.0	2.3	>0.05	92.6	100.0	1.3	>0.05
Buying	19.1	4.4	2.4	>0.05	14.8	5.9	0.8	>0.05
Dixie								
Collecting	90.5	100.0	2.1	>0.05	97.1	85.7	1.7	>0.05
Buying	9.5	0.0	2.1	>0.05	2.9	14.3	1.7	>0.05

4.2.2.3.5 Sale of wild edible fruits

No households in either village sell wild edible fruits. Discussions indicated that households buy wild edible fruits from people outside the respective villages.

4.2.2.4 Wild edible herbs

4.2.2.4.1 Proportion of households consuming wild edible herbs

Household consumption of wild edible herbs was considered for both summer and winter. During the summer months 90 % of the total sample reported consuming wild edible herbs. This decreased to 74 % during winter. In terms of village level differences in consumption, all the households in Dixie consume wild edible herbs during the summer, a significantly greater proportion than the 80 % of households in Dyala. In winter the proportion of households in Dixie decreases to 84 % and is significantly less than the proportion consuming during summer. In Dyala the proportion of households decreases to 64 % during the winter months and whilst this is not significantly less than those households consuming during summer, it is significantly less than the equivalent winter value for Dixie (Table 4-21). Both villages show the same decrease, namely sixteen percentage points. The herbs are more prolific during the summer months particularly after periods of good rains.

Table 4-21 Proportion of all households (%) consuming wild edible herbs – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total (Summer)	80.0	100.0	90.0	11.1	<0.05
Total (Winter)	64.0	84.0	74.0	5.2	<0.05
X ²	2.1	5.6			
Significance	>0.05	<0.05	-	-	

There are no significant differences in the proportions of households consuming wild edible herbs when stratifying the households by household wealth or gender of the de jure household head (Table 4-22). This applies in both villages. Across all groups the proportion of households decreases from summer to winter. In Dixie all households consume herbs during the summer irrespective of household wealth or gender of the de jure household head. With respect to seasonal changes in use, in Dixie the reduction in the proportion of male-headed and poor households consuming from summer to winter is significant. This is not the case with either the wealthy or female-headed households (Table 4-22). In Dixie households dry these herbs during the summer months and store them for use during the winter. The drying of herbs is not practised in Dyala.

When isolating “user” households, seasonal differences in the proportions of poor, male-headed and female-headed households consuming herbs, become significant in Dyala with smaller proportions consuming during winter. The pattern in Dixie remains unchanged (Table 4-22). In Dixie all female-headed households consume throughout the year.

Table 4-22 Proportion of households (%) consuming wild edible herbs – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Summer	76.0	84.0	0.5	>0.05	72.7	94.1	3.2	>0.05
Winter	68.0	60.0	0.4	>0.05	60.6	70.6	0.5	>0.05
X ²	1.1	1.7			0.7	1.4		
Significance	>0.05	>0.05	-	-	>0.05	>0.05	-	-
Dixie								
Summer	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
Winter	88.0	80.0	0.6	>0.05	80.9	100.0	1.8	>0.05
X ²	1.5	6.4			5.6	0.0		
Significance	>0.05	<0.05	-	-	<0.05	>0.05	-	-

Wild edible herbs, referred to as “imifino” (Xhosa) or “morogo” (Tsonga) include a variety of species. During the PRA exercises in the respective villages, respondents listed a number of these. Eight different species were listed in both villages (Tables 4-23 & 4-24).

Table 4-23 List of wild edible herbs collected and consumed in Dyala (Participatory Rural Appraisal)

Vernacular name	English Name	Botanical name
Umsobo-sobo	Black nightshade	<i>Solanum nigrum</i>
Ihlaba	Common dandelion	<i>Taraxacum officinale</i>
Irhawu	Nettle	<i>Urtica urens</i>
Utyutu	Pigweed	<i>Amaranthus hybridus var. hybridus</i>
Imbikicane	Common lambsquarter	<i>Chenopodium album</i>
Unojenti	Hairy Cat's Ear	<i>Hypochoeris radicata</i>
Unoyakyaka	-	<i>Phytolacca heptandra</i>
Isiqwasau	-	-

Table 4-24 List of wild edible herbs collected and consumed in Dixie (Participatory Rural Appraisal)

Vernacular name	English Name	Botanical name
Guxe	-	<i>Corchorus tridens</i>
Bangala	Spider-wisp	<i>Cleome gynandra</i>
Nkaka	African cucumber	<i>Momordica balsamina</i>
Cheke	Pigweed	<i>Amaranthus hybridus</i>
Muxidji	Blackjack	<i>Bidens pilosa</i>
Xidwava	Goosefoot	<i>Chenopodium album</i>
Swikondle	-	<i>Eriosema sp.</i>
Dinda	Devil's thorn	<i>Dicerocaryum eriocarpum</i>

4.2.2.4.2 Frequency of consumption of wild edible herbs

There are no significant differences in the frequency with which households consume wild edible herbs as determined by either wealth or gender. The only exception is in Dixie where during the summer months poor households consume wild edible herbs more frequently than their wealthy counterparts. The overall pattern applies to both the summer and winter consumption as well as for the total sample and just “user” households. The frequency with which households consume wild edible herbs decreases during winter when the herbs are less available. In Dyala the reduction in frequency is significant for both wealth and gender. Frequencies also decrease significantly for households in Dixie with the exception of female-headed households. Differences in frequency as governed by seasonal availability are more significant than differences between wealth groups or households with male- or female-heads (Table 4-25). During group discussions in both villages, respondents indicated that whilst most households consume wild edible herbs they are consumed in greater quantities and more frequently when households don't have the money to buy herbs/vegetables.

Table 4-25 Frequency of wild edible herb consumption (days per week) – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala								
Summer	2.2 ± 0.4	2.8 ± 0.5	<u>1.0</u>	>0.05	2.2 ± 0.4	3.2 ± 0.5	<u>-1.7</u>	>0.05
Winter	0.6 ± 0.3	0.4 ± 0.1	-0.6	>0.05	0.5 ± 0.2	0.5 ± 0.2	-0.8	>0.05
T/Z	3.1	4.3	-	-	3.5	4.2	-	-
Significance	<0.05	<0.05	-	-	<0.05	<0.05	-	-
Dixie								
Summer	2.1 ± 0.3	3.7 ± 0.5	2.5	<0.05	2.9 ± 0.3	3.0 ± 0.6	-1.0	>0.05
Winter	1.4 ± 0.2	1.9 ± 0.4	-0.3	>0.05	1.6 ± 0.3	2.0 ± 0.3	-1.8	>0.05
T/Z	2.2	3.2	-	-	3.8	1.5	-	-
Significance	<0.05	<0.05	-	-	<0.05	>0.05	-	-
User households only								
Dyala								
Summer	2.9 ± 0.4	3.3 ± 0.4	0.6	>0.05	3.0 ± 0.4	3.4 ± 0.5	-0.6	>0.05
Winter	0.8 ± 0.4	0.4 ± 0.1	-0.3	>0.05	0.7 ± 0.3	0.5 ± 0.2	0.4	>0.05
T/Z	<u>3.9</u>	<u>6.3</u>	-	-	<u>4.8</u>	4.5	-	-
Significance	<0.05	<0.05	-	-	<0.05	<0.05	-	-
Dixie								
Summer	2.1 ± 0.3	3.7 ± 0.5	2.5	<0.05	2.9 ± 0.3	3.0 ± 0.6	-1.0	>0.05
Winter	1.4 ± 0.2	1.9 ± 0.4	0.3	>0.05	1.6 ± 0.3	2.0 ± 0.3	-1.2	>0.05
T/Z	2.3	2.7	-	-	3.4	1.6	-	-
Significance	<0.05	<0.05	-	-	<0.05	>0.05	-	-

4.2.2.4.3 Procurement of wild edible herbs

Wild edible herbs are either collected by the household themselves or bought from other people who have collected. In Dyala no households buy their herbs, they all self-collect. The collection of herbs is not significantly different for either household wealth or gender of the de jure household head. In Dixie, the majority of households collect with only a small proportion buying herbs. Equal proportions of wealthy and poor households collect and although a greater proportion of wealthy households buy their herbs, this is not significantly different. There is no overlap between poor households collecting and buying suggesting that the small proportions that buy are an exception rather than the norm. Some wealthy households both collect and buy. With respect to gender, the female-headed households only procure their herbs through collection – no households buy herbs. Fewer male-headed households collect and only male-headed buy however this is not significantly different to the female-headed households (Table 4-26). The wild edible herbs are collected from fields/gardens and other disturbed lands within and surrounding the respective communities. Some households plant these herbs but otherwise they are self-propagating. People who buy the herbs buy them in the nearest regional centres, at monthly pension points or from people who sell house-to-house within the villages.

Table 4-26 Proportion of households (%) collecting and buying wild edible herbs – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting	76.0	84.0	0.5	>0.05	72.7	94.1	3.2	>0.05
Buying	0.0	0.0	-	-	0.0	0.0	-	-
Dixie								
Collecting	96.0	96.0	0.0	>0.05	95.2	100.0	0.4	>0.05
Buying	16.0	4.0	2.0	>0.05	11.9	0.0	1.1	>0.05
User households only								
Dyala								
Collecting	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
Buying	0.0	0.0	-	-	0.0	0.0	-	-
Dixie								
Collecting	96.0	96.0	0.0	>0.05	95.2	100.0	0.4	>0.05
Buying	16.0	4.0	2.0	>0.05	11.9	0.0	1.1	>0.05

4.2.2.4.4 Sale of wild edible herbs

In Dyala wild edible herbs are neither bought nor sold indicating there is little potential for trade in this resource. In Dixie households both buy and sell these herbs. It is only a small proportion of poor and male-headed households that sell: the differences are not significantly different to their wealthy and female-headed counterparts (Table 4-27).

Table 4-27 Proportion of households (%) selling wild edible herbs – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala	0.0	0.0	-	-	0.0	0.0	-	-
Dixie	0.0	8.0	2.1	>0.05	4.8	0.0	0.4	>0.05
User households only								
Dyala	0.0	0.0	-	-	0.0	0.0	-	-
Dixie	0.0	8.0	2.1	>0.05	4.7	0.0	0.4	>0.05

4.2.2.5 Medicinal plants

4.2.2.5.1 Proportion of households using medicinal plants

On average 78 % of households, across both villages, use medicinal plants: in Dixie 88 % of households use plants for medicinal purposes, a significantly greater proportion than the 68 % of households in Dyala (Table 4-28). Household wealth does not significantly determine the use of medicinal plants. In Dyala a

significantly greater proportion of female-headed households use medicinal plants however in Dixie the proportions of male- and female-headed households are similar and not significant (Table 4-29).

Table 4-28 Proportion of all households (%) using medicinal plants – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	68.0	88.0	78.0	5.8	<0.05

Table 4-29 Proportion of all households (%) using medicinal plants – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	60.0	76.0	1.5	>0.05	57.6	88.2	4.9	<0.05
Dixie	84.0	92.0	0.8	>0.05	88.1	87.5	0.0	>0.05

4.2.2.5.2 Frequency of use of medicinal plants

The frequency with which households use or rely on medicinal plants was not considered as this depends on the health and well-being of the households in question and may vary significantly from year to year as well as within each year.

4.2.2.5.3 Average number of medicinal plant species used per household

The household interviews and workshops identified twenty-eight different species of medicinal plants used by households in Dyala and thirty-four used in Dixie (Tables 4-31 & 4-32). These various plants are used in the treatment of a host of illnesses both in people and their livestock. In addition, many plants are used for reasons other than physical illnesses, for example, to bring a person luck. In both villages only a couple of species were reported by more than 20 % of the households.

With respect to differences in the average number of species used per household, wealth has no significant impact in either village however gender of the de jure household head does, although only in Dyala. In Dyala female-headed households use a significantly greater average number of species than their male counterparts whilst in Dixie gender does not significantly determine the average number of species used (Table 4-30). No differences are significant when focussing on “user” households as opposed to the total sample (Table 4-30).

Table 4-30 Average number of medicinal plant species consumed by households – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala	1.6 ± 0.3	1.9 ± 0.3	<u>0.6</u>	>0.05	1.4 ± 0.2	2.5 ± 0.4	<u>-2.5</u>	<0.05
Dixie	2.1 ± 0.3	2.8 ± 0.6	0.5	>0.05	2.3 ± 0.3	3.4 ± 1.7	-0.1	>0.05
User households only								
Dyala	2.7 ± 0.3	2.5 ± 0.3	-0.6	>0.05	2.4 ± 0.2	2.9 ± 0.4	-0.5	>0.05
Dixie	2.5 ± 0.3	3.0 ± 0.6	0.1	>0.05	2.6 ± 0.3	3.9 ± 0.9	-0.1	>0.05

Table 4-31 Proportion of all households (%) in Dyala using identified medicinal plants

Vernacular Name	Botanical Name	Proportion of households (%)
Iqwili/Umvuthuza	<i>Alepidia amatymbica</i>	65.7
Umathinga	<i>Asparagus africanus</i>	29.4
Umlhonyano	<i>Artemisia afra</i>	23.5
Uchithibhunga	<i>Rhoicissus digitata</i>	17.7
Usikolipati	<i>Dioscorea rupicola</i>	17.7
Ikhala/Iqhange	<i>Aloe ferrox</i>	14.7
Impepho	<i>Helichrysum sp.</i>	11.8
Isidumo	<i>Ilex mitis</i>	11.8
Inongwe (African Potato)	<i>Hypoxis argentea</i>	8.8
Umavumbhuka	<i>Ganaderma sp.</i>	8.8
Umanzamdaka	-	5.9
Intelezi	<i>Aloe (generic)</i>	2.9
Igwada	<i>Asclepias fruticosa</i>	2.9
Inceba	<i>Hermannia sp.</i>	2.9
Intolwane	<i>Elephantorrhiza elephantina</i>	2.9
Isilawu	<i>Behnia reticulata</i>	2.9
Itshongwe	<i>Pachycarpus concolor</i>	2.9
Ityholo	<i>Clematis brachiata</i>	2.9
Umasixabane	<i>Scilla sp.</i>	2.9
Itshamlilo	<i>Pentanisia prunelloides</i>	2.9
Ubulawu	<i>Alepidea serrata</i>	2.9
Umnquma	<i>Olea europaea subsp. africana</i>	2.9
Umkhwenkwe	<i>Pittosporum viridiflorum</i>	2.9
Umemezi	<i>Calodendrum capense</i>	2.9
Umvumvu	<i>Celtis africana</i>	2.9
Other: Umnyanja (<i>Phytolacca heptandra</i>); Gqogqa; Ukrakrayo		

Table 4-32 Proportion of all households (%) in Dixie using identified medicinal plants

Vernacular Name	Botanical Name	Proportion of households (%)
Mbumbununu	<i>Hyposis sp.</i>	72.7
Xitsalala	<i>Gardenia spatulifolia</i>	27.3
Dema	<i>Raphionacme galpinii</i>	18.2
Tetenye	<i>Phyllanthus reticulatus</i>	18.2
Nhlangula	<i>Euclea divinorum</i>	13.7
Nhlahlana	<i>Peltophorum africanum</i>	11.4
Nulu	<i>Balanites maughamii</i>	11.4
Mapipa	<i>Rapanea melanophloeos</i>	9.1
Nankole	<i>Adenium multiflorum</i>	9.1
Xikaya	<i>Acacia nigrescens</i>	6.8
Nkaya	<i>Acacia burkeii</i>	6.8
Budlhu	<i>Araujia sericifera</i>	6.8
Masala	<i>Strychnos spinosa</i>	4.6
Mhangana	<i>Olea europaea subsp. africana</i>	4.6
Thomana	-	4.6
Xikatsana	-	4.6
Swihlangwa	<i>Gymnosporia buxifolia</i>	4.6
Ntoma	<i>Diospyros mespiliformis</i>	4.6
Mbhava	<i>Ziziphus mucronata</i>	2.3
Femba	<i>Clerodendrum glabrum</i>	2.3
Mbhandzu	<i>Philenoptera violacea</i>	2.3
Mbozizi	<i>Heteromorpha trifoliata</i>	2.3
Morhotso	<i>Pterocarpus angolensis</i>	2.3
Mvhangazi	<i>Albizia versicolor</i>	2.3
Kwangelatilo	<i>Protoasparagus setaceus</i>	2.3
Mashelele	<i>Pterocarpus rotundifolius</i>	2.3
Xibaha	<i>Warburgia salutaris</i>	2.3
Xikukutsu	<i>Combretum apiculatum</i>	2.3
Xinopinopi	<i>Schotia brachypetala</i>	2.3
Ximpana	<i>Mystoxylon aethiopica</i>	2.3
Xirole	<i>Canthium ciliatum</i>	2.3
-	-	2.3

Terminalia sericea and various *Combretum* species were also mentioned during the group discussions.

4.2.2.5.4 Procurement of medicinal plants

Households either collect their own medicinal plants or buy them. General discussions indicated that those species used for treating more common illnesses are generally collected by the households themselves whilst less known species and illnesses (whether physical or not) involve a trip to a traditional healer. In Dyala both household wealth and gender of the de jure household head affect the manner in which households procure their medicinal plants. A significantly greater proportion of poor households collect their medicinal plants whereas, the difference between wealthy and poor households buying, is significant

in favour of the wealthy households. With respect to gender of the de jure household head, in Dyala there is no difference with respect to the collection of medicinal plants but a significantly greater proportion of female-headed households buy these plants: this only when taking the total sample into account. Whilst collection is the predominant form of procurement, the proportion of households buying is comparatively high. This compares with Dixie where a much smaller proportion reported purchasing their medicinal plants. In Dixie household wealth does not significantly determine the manner in which households procure their medicinal plants. Whilst a greater proportion of poor households collect their plants and none buy, neither of these proportions are significantly different to the wealthy households. There is no significant difference between male- and female-headed households in Dixie although no female-headed households buy medicinal plants (Table 4-33). People collect these plants from the surrounding and buy from traditional healers in the village itself or from healers/hawkers in nearby regional centres.

Table 4-33 Proportion of households (%) collecting and buying medicinal plants – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting	24.0	60.0	6.7	<0.05	39.4	47.1	0.3	>0.05
Buying	48.0	16.0	5.9	<0.05	21.2	52.9	5.2	<0.05
Dixie								
Collecting	80.0	92.0	1.5	>0.05	85.7	87.5	0.0	>0.05
Buying	8.0	0.0	2.1	>0.05	4.8	0.0	0.4	>0.05
User households								
Dyala								
Collecting	40.0	78.9	5.4	<0.05	68.4	53.3	0.8	>0.05
Buying	80.0	21.1	11.7	<0.05	36.8	60.0	1.8	>0.05
Dixie								
Collecting	95.2	100.0	1.1	>0.05	97.3	100.0	1.2	>0.05
Buying	9.5	0.0	2.3	>0.05	5.4	0.0	0.4	>0.05

4.2.2.5.5 Sale of medicinal plants

The sale of medicinal plants was not considered as this is done primarily by traditional healers and not individual households. Group discussions in both villages indicated that only those with the right knowledge of traditional medicines will sell although a greater proportion will self-medicate. People also mentioned the threat of outside harvesters.

4.2.2.6 *Indigenous wood for household utensils, handles, tools, carvings and furniture*

4.2.2.6.1 **Proportion of households using indigenous wood for household utensils, handles, tools, carvings and furniture**

Households in both villages make use of a variety of products carved from indigenous woods. These products are used in their homes, include agricultural implements and are, in some cases sold either within the village itself or to visiting outsiders (particularly tourists in the case of Dixie). Altogether 73 % of households own household utensils, handles, tools, carvings and/or furniture made from indigenous wood. A significantly greater proportion of households in Dixie own these products; 94 % compared to only 52 % of households in Dyala (Table 4-34). At an individual village level, in both villages differences for both household wealth and gender of the de jure household head are insignificant (Table 4-35).

Table 4-34 Proportion of all households (%) using indigenous wood for household utensils, handles, tools, carvings and furniture – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	52.0	94.0	73.0	22.4	<0.05

Table 4-35 Proportion of all households (%) using indigenous wood for household utensils, handles, tools, carvings and furniture – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	60.0	44.0	1.3	>0.05	60.6	35.3	2.9	>0.05
Dixie	100.0	88.0	3.2	>0.05	92.9	100.0	0.6	>0.05

Indigenous wood is used for a variety of items. In Dyala these items include cooking and stirring spoons (owned by 2 % and 10 % of households respectively), pestle and mortars (6 %), walking sticks (8 %), axe handles (28 %), hoe and pick handles (4 %), yokes (10 %) and fighting sticks (40 %). No households reported the ownership of wooden furniture, curios or plates/bowls (Table 4-37). All these items are used in Dixie with the exception of wooden stirring spoons. The most common item in Dixie is cooking spoons (94 %) whilst only 2 % of households reported owning yokes and fighting sticks (Table 4-37). With respect to wooden curios, respondents in Dyala indicated that there are no households making and/or selling wooden carvings. This is as a result of a poorly developed tourist market in the area and although there are some tourist facilities, demand for curios at these is met by other communities. In Dixie households sell curios to tourists visiting the neighbouring game reserves. Both wealthy and poor households sell although no female-headed households do so.

4.2.2.6.2 **Average number of household utensils, handles, tools, carvings and furniture**

With respect to the average number of different tools functional items and carvings owned per household, there are no significant differences for either household wealth or gender of the de jure household head.

This applies when taking the total sample as well as only those households with these items into account (Table 4-36).

Table 4-36 Average number of different wooden utensils owned per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala	1.3 ± 0.3	0.8 ± 0.2	-1.1	>0.05	1.2 ± 0.2	0.8 ± 0.4	1.6	>0.05
Dixie	3.4 ± 0.3	3.0 ± 0.4	-0.8	>0.05	3.3 ± 0.3	3.0 ± 0.5	0.3	>0.05
User households only								
Dyala	2.1 ± 0.4	1.7 ± 0.2	-0.1	>0.05	1.9 ± 0.3	2.2 ± 0.8	0.0	>0.05
Dixie	3.4 ± 0.3	3.5 ± 0.4	-0.0	>0.05	3.5 ± 0.3	3.0 ± 0.5	0.7	>0.05

Table 4-37 Proportion of all households (%) owning identified household utensils, handles, tools, carvings and furniture – stratified by village

	Dyala	Dixie	Mean
Cooking spoons	2.0	94.0	48.0
Hoe/pick handle	4.0	78.0	41.0
Axe handles	28.0	38.0	33.0
Fighting sticks	40.0	2.0	21.0
Pestle and mortar	6.0	26.0	16.0
Plates/bowls	0.0	20.0	10.0
Walking sticks	8.0	6.0	7.0
Stools/furniture	0.0	12.0	6.0
Curios (carvings)	0.0	10.0	5.0
Yokes	10.0	2.0	6.0
Stirring spoons	10.0	0.0	5.0
Other*: Cutting board/tray, machete handle, small table, hunting spear, ladder			

* Other: used by less than 5 % of all households

4.2.2.6.3 Procurement of indigenous wood for household utensils, handles, tools, carvings and furniture

Household utensils, handles, tools, carvings and furniture made from indigenous wood are either made by the household themselves or bought already carved from a variety of sources. In Dyala these utensils are predominantly made by the households with wood they have collected themselves. In Dixie households collect, although a large proportion of households have also bought their utensils. Some households both buy and collect depending on the individual types of utensils.

In Dyala neither household wealth nor gender of the de jure household head, significantly determine the manner in which households acquire their wooden household utensils, furniture and carvings. Whilst no

poor households purchase these items, this is not significantly different to the small proportion of wealthy households that do. Both male- and female-headed households collect and buy items. In Dixie household wealth does significantly determine the manner with which households procure various wooden items. A significantly greater proportion of poor households collect wood and make their own utensils, conversely a significantly greater proportion of wealthy households buy their utensils. There are households that both buy and collect (Table 4-38). When just taking “user” households into account the difference with respect to the proportions of wealthy and poor households buying their utensils, is no longer significant (Table 4-38). Gender has no significant impact with both male- and female-headed households collecting and making and, buying utensils, furniture and carvings.

In Dyala households reported collecting the wood from the community forest areas and along the river. Items are bought from community members or in regional centres. In Dixie wood is collected from communal land whilst items are bought from a variety of sources including from traders in nearby regional centres, at pension points, at tourist destinations as well as from people within the community. With respect to the curios, all households that sell these buy them from elsewhere and resell, although some households will supplement these with self-carved curios.

Table 4-38 Proportion of all households (%) owning identified household utensils, handles, tools, carvings and furniture – stratified by village

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting & making	60.0	44.0	1.3	>0.05	60.6	35.3	2.9	>0.05
Buying	12.0	0.0	3.2	>0.05	6.1	5.9	0.0	>0.05
Dixie								
Collecting & making	52.0	84.0	5.9	<0.05	64.3	87.5	1.7	>0.05
Buying	68.0	36.0	5.1	<0.05	54.8	37.5	0.8	>0.05
User households only								
Dyala								
Collecting	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
Buying	20.0	0.0	2.5	>0.05	10.0	16.7	0.2	>0.05
Dixie								
Collecting	52.0	95.5	11.0	<0.05	69.2	87.5	1.1	>0.05
Buying	68.0	40.9	3.5	>0.05	58.9	37.5	1.2	>0.05

4.2.2.6.4 Sale of indigenous wood for household utensils, handles, tools, carvings and furniture

No households in Dyala sell household utensils, handles, tools, carvings or furniture. This suggests that those households in the village that do buy these items either buy them from an outside source or there is a household that does sell but was not sampled. Households did indicate that for carvings in particular, no

households were selling as there was a poor tourist market and competition with other communities was high. In comparison, in Dixie households do sell household utensils, handles, tools, carvings and/or furniture. There is no significant difference in the proportions of wealthy and poor households selling these items. The difference with respect to gender of the de jure household head is also not significant (Table 4-39). Curios are the most common items sold: Dixie is well positioned to service the tourists visiting the neighbouring reserves. Whilst households do sell curios, many do not make them themselves but buy them from other communities and resell them. Many of these households have joined a “stokvel” where they each contribute money which is then handed out in rotation for the purchase of stock

Table 4-39 Proportion of households (%) selling indigenous wood for household utensils, handles, tools, carvings and furniture – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala	0.0	0.0	-	-	0.0	0.0	-	-
Dixie	16.0	28.0	1.1	>0.05	23.8	12.5	0.5	>0.05
User households only								
Dyala	0.0	0.0	-	-	0.0	0.0	-	-
Dixie	16.0	31.8	1.6	>0.05	25.6	12.5	0.6	>0.05

4.2.2.7 *Twig hand-brushes*

4.2.2.7.1 Proportion of households using twig hand-brushes

Twig hand-brushes are owned/used by a significantly greater proportion of households in Dixie than in Dyala (Table 4-40). In both villages differences for both household wealth and gender of the de jure household head are not significant. In Dixie wealthy and female-headed households all own twig hand-brushes (Table 4-41).

Table 4-40 Proportion of all households (%) using twig hand-brushes – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	46.0	96.0	71.0	30.4	<0.05

Table 4-41 Proportion of all households (%) using twig hand-brushes – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	32.0	60.0	3.9	>0.05	42.4	52.9	0.5	>0.05
Dixie	100.0	92.0	2.1	>0.05	95.2	100.0	0.4	>0.05

4.2.2.7.2 Average number of twig hand-brushes per household

In Dyala the poor households own a significantly greater average number of brushes per household than the wealthy households; there is no difference between the genders. Gender is also not significant in Dixie however wealth is. Unlike Dyala the wealthy households own a significantly greater average number of twig hand-brushes per household than the poor households (Table 4-42). When isolating the “user” households, there are no significant differences between the households for either wealth or gender (Table 4-42).

Table 4-42 Average number of twig hand-brushes owned per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala	0.3 ± 0.1	0.7 ± 0.1	2.0	<0.05	0.5 ± 0.1	0.5 ± 0.1	-0.6	>0.05
Dixie	1.6 ± 0.2	1.1 ± 0.1	-2.3	<0.05	1.4 ± 0.1	1.3 ± 0.2	0.1	>0.05
User households only								
Dyala	1.0 ± 0.0	1.1 ± 0.1	0.7	>0.05	1.1 ± 0.1	1.0 ± 0.0	0.8	>0.05
Dixie	1.6 ± 0.2	1.2 ± 0.1	-1.9	>0.05	1.5 ± 0.1	1.3 ± 0.2	0.4	>0.05

4.2.2.7.3 Procurement of twig hand-brushes

In Dyala most twig hand-brushes are collected and made by the households themselves; only a small proportion of households buy brushes. In Dixie the greater proportion of households buy their brushes. In Dyala no wealthy or male-headed households buy. Whilst household wealth has no significant impact on the manner with which households procure their twig hand-brushes in Dyala, there is a significant difference in Dixie. No wealthy households in Dixie collect and make their own brushes – a significantly greater proportion of poor households do. Conversely all the wealthy households buy their brushes. This is significantly greater than the proportion of poor households. The pattern applies for both the total sample and user households only. There are no significant differences for gender in either village (Table 4-43).

The brushes are different in nature between the two villages. In Dyala these brushes generally consist of twigs broken from a nearby bush which are used predominantly for sweeping the yard and are then discarded after a few days. In Dixie however, these brushes are produced using twigs from a particular species (*Athrixia phyllicoides*) not found in the Dixie area. They are traded throughout the region and are the preferred hand-brush for households (Shackleton, 2005). The nature of the brushes explains both inter- and intra-village differences in the manner in which the brushes are procured as well as differences in the average number of brushes owned per household. In Dyala households collect from their homesteads and surrounds and buy from hawkers in the nearby regional centre. In Dixie, the small proportion of households that do collect twigs for hand-brushes, collect from the surrounding bush although this is not the preferred species. Those that buy, buy from the monthly pension points or nearby regional centres.

Table 4-43 Proportion of households (%) collecting and buying twig hand-brushes - stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting & making	32.0	56.0	2.9	>0.05	42.4	47.1	0.1	>0.05
Buying	0.0	4.0	1.0	>0.05	0.0	5.9	1.9	>0.05
Dixie								
Collecting & making	0.0	16.0	4.4	<0.05	7.1	12.5	0.3	>0.05
Buying	100.0	76.0	6.8	<0.05	88.1	87.5	0.0	>0.05
User households only								
Dyala								
Collecting & making	100.0	93.3	0.6	>0.05	100.0	88.9	1.6	>0.05
Buying	0.0	6.7	0.6	>0.05	0.0	11.1	1.6	>0.05
Dixie								
Collecting & making	0.0	17.4	4.7	<0.05	7.5	12.5	0.2	>0.05
Buying	100.0	82.7	4.7	<0.05	92.5	87.5	0.2	>0.05

4.2.2.7.4 Sale of twig hand-brushes

No households in either village sell twig hand-brushes. In each village the lack of sale of these brushes is explained by the nature of the brushes.

4.2.2.8 Grass hand-brushes

4.2.2.8.1 Proportion of households using grass hand-brushes

Overall 60 % of sampled households utilise grass hand-brushes, however a significantly greater proportion of households in Dyala make use of these brushes (Table 4-44). These are the preferred brush in Dyala whilst twig hand-brushes are preferred in Dixie. Within each village there are no significant differences in the proportions of households using the brushes whether considering wealth or gender of the de jure household head (Table 4-45). In Dyala equal proportions of poor and wealthy households own and use grass hand-brushes. Group discussions in Dyala indicated these brushes are used for inside the house whilst twig hand-brushes are used outside. The brushes are valued for the two functions they serve – the first is purely functional whilst the other is cultural (traditional ceremonies).

Table 4-44 Proportion of all households (%) using grass hand-brushes – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	92.0	28.0	60.0	42.7	<0.05

Table 4-45 Proportion of all households (%) using grass hand-brushes – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	92.0	92.0	0.0	>0.05	90.9	94.1	0.2	>0.05
Dixie	24.0	32.0	0.4	>0.05	28.6	25.0	0.0	>0.05

4.2.2.8.2 Average number of grass hand-brushes per household

As with the proportion of households owning grass hand-brushes, there is no significant difference in the average number of brushes owned per household, irrespective of household wealth or gender of the de jure household head (Table 4-46). This applies when considering the total samples in both villages. When only taking “user” households into consideration, the situation in Dyala remains constant with no significant differences. Of user households in Dixie, the female-headed households own significantly more brushes per household than their male-headed counterparts.

Table 4-46 Average number of grass hand-brushes owned per household - stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala	1.4 ± 0.2	1.2 ± 0.1	-0.7	>0.05	1.4 ± 0.2	1.2 ± 0.1	0.6	>0.05
Dixie	0.3 ± 0.1	0.4 ± 0.1	0.7	>0.05	0.3 ± 0.1	0.5 ± 0.3	-0.2	>0.05
User households only								
Dyala	1.5 ± 0.1	1.4 ± 0.1	-0.8	>0.05	1.5 ± 0.1	1.3 ± 0.1	0.9	>0.05
Dixie	1.2 ± 0.2	1.3 ± 0.2	0.3	>0.05	1.1 ± 0.1	2.0 ± 0.0	-2.0	<0.05

4.2.2.8.3 Procurement of grass hand-brushes

With respect to the procurement of the brushes, households either, collect the grass and make the brushes themselves or they buy them from others. Brushes are purchased from people either within the community or, as is the case in Dixie, from traders based either in nearby regional centres or who travel between pension point markets. In both villages the majority of households buy their brushes with only a small proportion making them themselves. Common to both villages is that no wealthy households make their own brushes however this is not significantly less than proportion of poor households making brushes. There is also no significant difference in either site between wealthy and poor households with respect to the purchase of brushes (Table 4-47). In Dyala male- and female-headed households both make and buy: the differences between the genders are not significant for either. In Dixie no male-headed households make their own brushes – this is significantly different to the 12.5 % of female-headed households that do so. Both gender groups buy brushes with no significant difference in the proportions when taking the total sample into account (Table 4-47). When only “user” households are considered, the pattern for wealth

remains the same, however for gender it alters: all the male-headed households buy their brushes, a significantly greater proportion than the 50 % of female-headed households that buy theirs. No male-headed households make their brushes, significantly less than the 50 % of female-headed households that make theirs. There is no overlap with households both buying and collecting – those that collect, do so exclusively, as do those that buy. This clear distinction is possibly related to the skills required to produce the brushes.

In Dyala the grass used for the brushes is found predominantly in areas controlled by DWAF and therefore a permit is required in order for households to collect. In Dixie material for the bought brushes (*Festuca costata*) is harvested on the escarpment (Shackleton, 2005) whilst the small proportion of households that make their own brushes, collect a substitute from the communal lands. This collection is not controlled.

Table 4-47 Proportion of households (%) collecting and buying grass hand-brushes – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting & making	0.0	12.0	3.2	>0.05	6.1	5.9	0.0	>0.05
Buying	92.0	80.0	1.5	>0.05	84.9	88.2	0.1	>0.05
Dixie								
Collecting & making	0.0	4.0	1.0	>0.05	0.0	12.5	5.4	<0.05
Buying	24.0	28.0	0.1	>0.05	28.6	12.5	0.9	>0.05
User households only								
Dyala								
Collecting & making	0.0	13.0	3.2	>0.05	6.7	6.3	0.0	>0.05
Buying	100.0	87.0	3.2	>0.05	93.3	93.8	0.0	>0.05
Dixie								
Collecting & making	0.0	12.5	0.8	>0.05	0.0	50.0	6.5	<0.05
Buying	100.0	87.5	0.8	>0.05	100.0	50.0	6.5	<0.05

4.2.2.8.4 Sale of grass hand-brushes

No households in Dixie sell grass hand-brushes suggesting that those who buy their brushes buy them externally. In Dyala only poor and female-headed households sell these brushes: the difference is not significant though (Table 4-48). The sale is influenced by seasonal nature of resource. The brushes are sold within the community and to outsiders. The manufacture of the brushes requires a level of skill and therefore it is the women who produce them.

Table 4-48 Proportion of households (%) selling grass hand-brushes – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala	0.0	4.0	1.0	>0.05	0.0	5.9	1.9	>0.05
Dixie	0.0	0.0	-	-	0.0	0.0	-	-
User households only								
Dyala	0.0	4.4	1.0	>0.05	0.0	6.3	1.9	>0.05
Dixie	0.0	0.0	-	-	0.0	0.0	-	-

4.2.2.9 *Indigenous wood for fences and livestock enclosures*

4.2.2.9.1 **Proportion of households using indigenous wood for fences and livestock enclosures**

Overall 56 % of households use indigenous wood for the construction of fences and livestock enclosures. This includes both the use of poles and branches. A significantly greater proportion of households in Dixie make use of indigenous wood for fencing and livestock enclosures (kraals) (Table 4-49). Fencing includes fences for gardens and fields, for the homestead plot as well as for chicken huts (Table 4-52). In Dyala neither household wealth nor gender of the de jure household head significantly determines whether or not the household makes use of indigenous wood for fencing and livestock enclosures. In Dixie however, whilst gender plays no significant, role household wealth does with a significantly greater proportion of poor households making use of indigenous wood for fence/livestock enclosure construction (Table 4-50). This reflects the ability of wealthy households to buy substitute fencing materials.

Table 4-49 Proportion of all households (%) using indigenous wood for fences and livestock enclosures – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total	42.0	70.0	56.0	7.9	<0.05

Table 4-50 Proportion of all households (%) using indigenous wood for fences and livestock enclosures – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala	48.0	36.0	0.7	>0.05	36.4	52.9	1.3	>0.05
Dixie	56.0	84.0	4.7	<0.05	71.4	62.5	0.3	>0.05

4.2.2.9.2 **Average number of fencing structures per household**

With respect to differences in the average number of fencing structures per household, the only significant difference across both villages is between wealthy and poor households in Dixie. The poor households have

a significantly greater average number of structures than their wealthy counterparts. This difference however is only significant when taking the total sample into account. When those households that use indigenous wood are isolated, the difference in the average number of structures is no longer significant (Table 4-51).

Table 4-51 Average number of fence structures per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala	0.5 ± 0.1	0.5 ± 0.2	-0.6	>0.05	0.4 ± 0.1	0.7 ± 0.2	-1.2	>0.05
Dixie	0.8 ± 0.2	1.4 ± 0.2	2.3	<0.05	1.1 ± 0.1	1.1 ± 0.4	-0.1	>0.05
User households only								
Dyala	1.0 ± 0.0	1.3 ± 0.2	0.9	>0.05	1.1 ± 0.1	1.2 ± 0.2	0.1	>0.05
Dixie	1.4 ± 0.2	1.6 ± 0.2	0.9	>0.05	1.5 ± 0.1	1.8 ± 0.4	-0.1	>0.05

With respect to the structure owned, the most common in terms of proportion of households owning, is the stand fence, followed by livestock enclosures, chicken huts and garden/field fences (Table 4-52). There are inter-village differences in the proportions of households owning selected structures. For example a greater proportion of households in Dyala have livestock enclosures – this is related to the significantly greater proportion of households owning cattle, goats and pigs. A greater proportion of households in Dixie have a stand fence from indigenous wood with their Dyala counterparts either using exotic poles as substitutes or having no fence at all.

Table 4-52 Types of fence structures and proportion of all (%) households using – stratified by village

	Dyala	Dixie	Mean
Stand fence	2.0	56.0	29.0
Livestock enclosure	42.0	8.0	25.0
Garden/field fence	4.0	6.0	5.0
Chicken hut	0.0	30.0	15.0
Other:	-	Car port, market stall	-

4.2.2.9.3 Procurement of indigenous wood for fences and livestock enclosures

As with the other resources, households either collect or buy the wood used in the construction of fences and livestock enclosures (Table 4-53). In Dyala a small proportion of households buy their wood: of these only wealthy and male-headed households buy. The majority of households collect their own wood. There are no significant differences for wealth or gender of the de jure household head. In Dixie no households reported buying their wood. The collection of wood is significantly different for household wealth with a greater proportion of poor households collecting: this is only for the total sample. This is a reflection of the

significantly greater proportion of poor households making use of indigenous wood for these structures. Gender does not significantly determine the manner with which households procure their wood.

Table 4-53 Proportion of all households (%) collecting and buying indigenous wood for fences and livestock enclosures – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
All households								
Dyala								
Collecting	44.0	36.0	0.3	>0.05	52.9	33.3	1.8	>0.05
Buying	4.0	0.0	1.0	>0.05	3.0	0.0	0.5	>0.05
Dixie								
Collecting	56.0	84.0	4.7	<0.05	71.4	62.5	0.3	>0.05
Buying	0.0	0.0	-	-	0.0	0.0	-	-
User households only								
Dyala								
Collecting	91.7	100.0	0.8	>0.05	91.7	100.0	0.8	>0.05
Buying	8.3	0.0	0.8	>0.05	8.3	0.0	0.8	>0.05
Dixie								
Collecting	100.0	100.0	0.0	>0.05	100.0	100.0	0.0	>0.05
Buying	0.0	0.0	-	-	0.0	0.0	-	-

4.2.2.9.4 Sale of indigenous wood for fences and livestock enclosures

No households in either village are involved in the sale of indigenous wood for fences and livestock enclosures.

4.2.3 NTFP ranking (Participatory Rural Appraisal)

Men and women ranked NTFPs in terms of their importance to people's livelihoods. In Dyala men ranked fuelwood, building materials, medicinal plants, wild edible fruits and bushmeat in the top five. Women also ranked fuelwood, building materials and medicinal plants in the top five but differed from the men in that they ranked wild edible herbs and indigenous poles for fencing and livestock enclosures in the top five as opposed to wild edible fruits and bushmeat (Table 4-54). There were few notable differences in how men and women ranked different NTFPs with the exceptions being bushmeat and hand-brushes (grass and twig). With respect to bushmeat, men ranked this higher than women whilst women ranked the hand-brushes higher than the men did. Hunting is considered to be a man's responsibility whilst women value and utilise the hand-brushes both in and around the household.

Table 4-54 Participatory Rural Appraisal ranking of the contribution of NTFPs to households in Dyala
(M = male; F = female)

NTFP	Rank										
	1	2	3	4	5	6	7	8	9	10	11
Fuelwood	M	F									
Wild edible fruits				M		F					
Wild edible herbs				F		M					
Bushmeat, fish & insects					M					F	
Building materials – indigenous wood for building, thatch grass & sand	F	M									
Indigenous poles for fencing/livestock enclosures					F		M				
Wood for household items, utensils & furniture								M	F		
Grass & twig hand-brushes							F			M	
Medicinal plants			F/M								
Wild honey								F	M		
Mushrooms											F/M

In Dixie the women ranked fuelwood, wild edible herbs, building materials, medicinal plants and wood for household utensils as the top five most important resources. This is similar to the women in Dyala with the exception of wood for household utensils. The men in Dixie ranked wild edible herbs, medicinal plants, building materials, wild edible fruits and wood for household utensils in the top five. This differs from the men in Dyala in terms of fuelwood and bushmeat (Table 4-55). The men and women in Dixie ranked similar resources in the top five with the exceptions of fuelwood (ranked by women) and wild edible fruits (ranked by men). In Dixie fuelwood and wild honey are ranked notably differently by the men and women. The women ranked fuelwood as the most important resource whilst the men only ranked it tenth. The men ranked honey higher than the women did.

Table 4-55 Participatory Rural Appraisal ranking of the contribution of NTFPs to households in Dixie
(M = male; F = female)

NTFP	Rank										
	1	2	3	4	5	6	7	8	9	10	11
Fuelwood	F									M	
Wild edible fruits				M		F					
Wild edible herbs	M	F									
Bushmeat, fish & insects						M		F			
Building materials - indigenous wood for building, thatch grass & sand			F/M								
Indigenous poles for fencing/livestock enclosures							F		M		
Wood for household items, utensils & furniture					F/M						
Grass & twig hand-brushes									F		M
Medicinal plants		M		F							
Wild honey							M				F
Wood for carvings								M		F	

Across both villages all ranked building materials and medicinal plants in the top five. All but the men in Dixie ranked fuelwood in the top five. Both men's groups ranked wild edible fruits in the top five whilst both women's groups ranked wild edible herbs in the top five.

Respondents indicated that fuelwood is a key resource used for both cooking and heating and is primary energy source for the majority of household. Building materials such as sand, thatch and poles are important to all households for both the construction of and repairs on houses. Wild foods including edible fruit, herbs and bushmeat contribute to households both through direct-household consumption and sale. They are both an important regular supplement to household diets as well as for consumption-smoothing. Medicinal plants are important in the treatment of illness in both people and livestock, have a cultural contribution, are a cost-saving to households and are used when households cannot afford to purchase alternative medicines. Fencing materials are used for multiple reasons including fencing for grazing camps, fields, the homestead plot, home-gardens as well as a variety of livestock enclosures. Household items, tools, utensils, furniture and carvings from indigenous wood also fulfil various functions and contribute to households both through direct household consumption and the sale.

4.2.4 The purchase and sale of NTFPs

4.2.4.1 *Proportion of households buying and selling NTFPs - overview*

Whilst most households utilising NTFPs collect the resources themselves, there are households that purchase them. Across both villages 94 % of households buy at least one type of NTFP whilst 22 % of households are involved in the sale. The difference between Dyala and Dixie in terms of the proportions of households buying NTFPs is not significant, nor is it significant for the proportions of households selling NTFPs (Table 4-56). Across the total sample, resources that households reported purchasing include fuelwood, sand, wild edible herbs and fruits, medicinal plants, household items made from indigenous wood (including furniture and curios), twig and grass hand-brushes, indigenous wood fencing and housing poles, bushmeat, weaving reeds/woven products and, thatch grass. Whether a resource is bought or not depends to a degree on the resource in question but is also determined by household wealth and a households "buying power". Certain resources coveted by households are not available in the immediate area therefore households buy these resources in nearby regional centres or at pension point markets that draw traders from a broader region. Fewer NTFPs are sold including: fuelwood, sand, wild edible herbs, wood for household items/complete items, grass hand-brushes, bushmeat, weaving reeds and seed jewellery. The disparity between the number of resources bought and the number of resources sold is possibly due to either the households selling those resources not being sampled or, the resources bought are not sold in the villages themselves but are procured from external traders.

There are differences within the villages as determined by household wealth and gender of the de jure household head (Table 4-57). In Dyala the difference between wealthy and poor households buying resources is not significant however a significantly greater proportion of poor households sell resources. No wealthy households sell. There is no significant difference for either buying or selling when taking gender

of the de jure household head into consideration. This is a composite picture with differences as determined by household wealth and gender of the de jure household head discussed in the preceding sections. In Dixie 100 % of wealthy households buy at least one resource however this is not significantly different to the proportion of poor households. A significantly greater proportion of male-headed households buy resources: 100 % compared to 87.5 % of female-headed households. There are no significant differences in the proportions of households selling resources whether taking household wealth or gender of the de jure household head into account.

Table 4-56 Proportion of all households (%) buying and selling NTFPs – stratified by village

	Dyala	Dixie	Mean	X ²	Significance
Total (Buying)	90.0	98.0	94.0	2.8	>0.05
Total (Selling)	14.0	30.0	22.0	3.7	>0.05

Table 4-57 Proportion of all households (%) buying and selling NTFPs – stratified by household wealth and gender of the de jure household head

	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Dyala								
Buying	96.0	84.0	2.0	>0.05	87.8	94.1	0.5	>0.05
Selling	0.0	28.0	8.1	<0.05	9.1	23.5	1.9	>0.05
Dixie								
Buying	100.0	96.0	1.0	>0.05	100.0	87.5	5.4	<0.05
Selling	24.0	36.0	0.9	>0.05	31.0	25.0	0.1	>0.05

4.2.4.2 *Average number of resources bought and sold per household*

Whilst eight of the fourteen resources used in Dyala are purchased, on average households buy less than two resources each. In Dixie twelve of the seventeen resources are purchased by households. The average number of resources bought per household is significantly greater than in Dyala: more than three resources per household. With respect to the sale of resources, only two resources are sold by households in Dyala. These include fuelwood and grass hand-brushes. In Dixie seven resources are sold. Households in Dixie sell a significantly greater average number of resources per household than households in Dyala (Table 4-58).

Table 4-58 Total and average number of resources bought and sold per household – stratified by village (Mean ± SE)

	Dyala	Dixie	T/Z	Significance
Tot. No. resources bought per village	8	12	-	-
Av. Number resources bought/household (all)	1.6 ± 0.1	3.2 ± 0.2	-5.5	<0.05
Tot No. resources sold per village	2	7	-	-
Av. Number resources sold/household (all)	0.1 ± 0.1	0.6 ± 0.2	-2.1	<0.05

With respect to the influence of household wealth and gender of the de jure household head in the trade of NTFPs, wealthy households in both villages buy a significantly greater average number of resources per household than their poor counterparts. In Dyala the poor households sell a significantly greater average number of resources than the wealthy households whilst in Dixie the difference in the average number of resources sold by wealthy and poor households, is not significant. Gender has no significant effect on the average number of resources either bought or sold in either Dyala or Dixie. These differences remain significant when taking only “user” households into consideration (Table 4-59).

Table 4-59 Average number of resources bought and sold per household – stratified by household wealth and gender of the de jure household head (Mean ± SE)

	Wealthy	Poor	T/Z	Significance	Male-head	Female-head	T/Z	Significance
All households								
Dyala								
Av. No. resources bought	2.1 ± 0.2	1.0 ± 0.1	-3.9	<0.05	1.5 ± 0.2	1.7 ± 0.2	-0.5	>0.05
Av. No. resources sold	0.0 ± 0.0	0.3 ± 0.1	2.8	<0.05	0.1 ± 0.1	0.2 ± 0.1	-1.4	>0.05
Dixie								
Av. No. resources bought	3.9 ± 0.3	2.4 ± 0.2	<u>-4.3</u>	<0.05	3.3 ± 0.2	2.5 ± 0.7	<u>1.3</u>	>0.05
Av. No. resources sold	0.3 ± 0.1	0.9 ± 0.3	1.1	>0.05	0.7 ± 0.2	0.3 ± 0.2	0.6	>0.05
User households only								
Dyala								
Av. No. resources bought	2.2 ± 0.2	1.2 ± 0.1	-3.7	<0.05	1.7 ± 0.2	1.8 ± 0.2	-0.2	>0.05
Av. No. resources sold	0.0 ± 0.0	1.0 ± 0.0	-2.8	<0.05	1.0 ± 0.0	1.0 ± 0.0	0.0	>0.05
Dixie								
Av. No. resources bought	3.9 ± 0.3	2.5 ± 0.2	<u>-4.1</u>	<0.05	3.3 ± 0.2	2.9 ± 0.6	<u>0.7</u>	>0.05
Av. No. resources sold	1.3 ± 0.2	2.4 ± 0.6	<u>1.5</u>	>0.05	2.2 ± 0.4	1.0 ± 0.0	<u>1.0</u>	>0.05

4.2.4.3 *Proportion of households buying NTFPs – detailed NTFPs*

With respect to the trade in individual resources, in Dyala seven resources are purchased by wealthy households compared to four resources purchased by poor households. Wealthy households reported buying fuelwood, wild edible fruits, medicinal plants, wooden household items, grass hand-brushes, fencing poles and thatch grass. Poor households also buy wild edible fruits, medicinal plants and grass hand-brushes. Additionally poor households reported purchasing twig hand-brushes. Fuelwood is only purchased by wealthy households and not at all by poor households: this difference is significant. Both wealthy and poor households in Dyala buy medicinal plants although a significantly greater proportion of wealthy households buy these plants. The differences for other resources are not significant (Table 4-60).

In Dixie wealthy households buy twelve resources whilst the poor households buy seven (Table 4-60). As with Dyala no poor households buy fuelwood whilst 28 % of the wealthy households do; this difference is significant. The difference is also significant for sand, wood for household items and twig hand-brushes, all of which are purchased by significantly greater proportions of wealthy households. The differences for the

remaining resources are not significant. There are no resources that the poor purchase exclusively although only the wealthy purchase wild edible fruits, medicinal plants, poles for housing and thatch grass. Equal proportions reported buying bushmeat. Wealthy households buy fuelwood, sand, wild edible herbs, wild edible fruits, medicinal plants, household items, twig hand-brushes, grass hand-brushes, bushmeat, weaving reeds, housing poles and thatch grass. Poor households buy sand, wild edible herbs, household items, twig and grass hand-brushes, bushmeat and weaving reeds.

Table 4-60 Proportion of all households (%) purchasing NTFPs – stratified by household wealth

	Dyala				Dixie				Mean	
	Wealthy	Poor	X ²	Significance	Wealthy	Poor	X ²	Significance	Wealthy	Poor
Fuelwood	32.0	0.0	9.5	<0.05	28.0	0.0	8.1	<0.05	30.0	0.0
Sand/soil/clay/termite mounds	0.0	0.0	-	-	88.0	48.0	9.2	<0.05	44.0	24.0
Wild edible herbs	0.0	0.0	-	-	16.0	4.0	2.0	>0.05	8.0	2.0
Wild edible fruits	16.0	4.0	2.0	>0.05	8.0	0.0	2.1	>0.05	12.0	2.0
Medicinal Plants	48.0	16.0	5.9	<0.05	8.0	0.0	2.1	>0.05	28.0	8.0
Wood for household items, carvings & furniture	12.0	0.0	3.2	>0.05	68.0	36.0	5.1	<0.05	40.0	18.0
Twig hand-brushes	0.0	4.0	1.0	>0.05	100.0	76.0	6.8	<0.05	50.0	40.0
Grass hand-brushes	92.0	80.0	1.5	>0.05	24.0	28.0	0.1	>0.05	58.0	54.0
Indigenous poles for fencing	4.0	0.0	1.0	>0.05	0.0	0.0	-	-	2.0	0.0
Bushmeat	0.0	0.0	-	-	24.0	24.0	0.0	>0.05	12.0	12.0
Fish	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Insects	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Weaving reeds	0.0	0.0	-	-	8.0	20.0	1.5	>0.05	4.0	10.0
Wild honey	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Indigenous poles for housing	0.0	0.0	-	-	4.0	0.0	1.0	>0.05	2.0	0.0
Thatch grass	4.0	0.0	1.0	>0.05	12.0	0.0	3.2	>0.05	8.0	0.0
Mushrooms	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Seeds	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0

With respect to gender of the de jure household head, in both villages male-headed households were purchasing more resources than their female-headed counterparts (Table 4-61) In Dyala male-headed households were purchasing seven resources compared to the six purchased by female-headed households whilst in Dixie male-headed households were purchasing twelve compared to the eight purchased by female-headed households. In Dyala the male-headed households were purchasing poles for fencing and thatch grass exclusively whilst only the female-headed households were purchasing twig hand-brushes. Both genders were purchasing fuelwood, wild edible fruits, medicinal plants, household items and grass hand-brushes. In Dixie, male-headed households only were purchasing wild edible herbs, medicinal plants, bushmeat, thatch grass and wooden carvings. Only female-headed households were buying poles for housing. Both genders were buying fuelwood, sand, wild edible fruits, household items, twig and grass hand-brushes and weaving reeds. In Dyala a significantly greater proportion of female-headed households

buy medicinal plants whilst in Dixie a significantly greater proportion of female-headed households buy indigenous poles for housing. The differences for the remaining resources are not significant.

Taking the means for each wealth and gender category into account, the greatest proportion of all categories (i.e. wealthy, poor, male- and female-headed) reported buying grass hand-brushes, followed by twig hand-brushes and sand. This highlights how the nature of the resource determines the trade of certain resources: grass and twig hand-brushes both require particular skills and resources to make whilst sand is bought from households with available transport (Tables 4-60 & 4-61).

Table 4-61 Proportion of all households (%) purchasing NTFPs – stratified by gender of the de jure household head

	Dyala				Dixie				Mean	
	Male-head	Female-head	X ²	Significance	Male-head	Female-head	X ²	Significance	Male-head	Female-head
Fuelwood	21.2	5.9	1.9	>0.05	14.3	12.5	0.1	>0.05	17.8	9.2
Sand/soil/clay/termite mounds	0.0	0.0	-	-	69.1	62.5	0.1	>0.05	34.6	31.3
Wild edible herbs	0.0	0.0	-	-	11.9	0.0	1.1	>0.05	5.9	0.0
Wild edible fruits	12.1	5.9	0.5	>0.05	2.4	12.5	1.8	>0.05	7.3	9.2
Medicinal Plants	21.1	52.9	5.2	<0.05	4.8	0.0	0.4	>0.05	12.9	26.5
Wood for household items, carvings & furniture	6.1	5.9	0.0	>0.05	54.8	37.5	0.8	>0.05	30.5	21.7
Twig hand-brushes	0.0	5.9	1.9	>0.05	88.1	87.5	0.0	>0.05	44.1	46.7
Grass hand-brushes	84.9	88.2	0.1	>0.05	28.6	12.5	0.9	>0.05	56.8	50.4
Indigenous poles for fencing	3.0	0.0	0.5	>0.05	28.6	0.0	3.0	>0.05	15.8	0.0
Bushmeat	0.0	0.0	-	-	28.6	0.0	3.0	>0.05	14.3	0.0
Fish	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Insects	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Weaving reeds	0.0	0.0	-	-	14.3	12.5	0.0	>0.05	7.2	6.3
Wild honey	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Indigenous poles for housing	0.0	0.0	-	-	0.0	12.5	5.4	<0.05	0.0	6.3
Thatch grass	3.0	0.0	0.5	>0.05	7.1	0.0	0.6	>0.05	5.1	0.0
Mushrooms	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Seeds	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0

4.2.4.4 Proportion of households selling NTFPs – detailed NTFPs

With respect to the sale of resources, in Dyala only two resources are sold: no wealthy households sell NTFPs whilst the poor households sell fuelwood and grass hand-brushes. The difference is only significant for fuelwood (Table 4-62). In Dixie seven resources are sold: three are sold exclusively by the poor households whilst the remaining four are sold by households in both wealth categories. Those resources sold exclusively by the poor households include: fuelwood, wild edible herbs and bushmeat. The difference with respect to fuelwood is significant. Households from both wealth groups sell weaving reeds, indigenous

wood for household items, furniture and wooden carvings (or the completed items) and, seed jewellery. The wooden carvings and seed jewellery are sold to tourists whilst the woven reed products are sold within the community and to tourists (Table 4-62).

With respect to the mean proportions, the greatest proportion of wealthy households sell wooden household items, equal proportions sell sand and weaving reeds whilst only 2 % sell seeds. For poor households, 20 % sell fuelwood, followed by household items (8 %), weaving reeds and seeds (6 %), wild edible herbs and bushmeat (4 %) and, grass hand-brushes (2 %).

Table 4-62 Proportion of all households (%) selling NTFPs – stratified by household wealth

	Dyala				Dixie				Mean	
	Wealthy	Poor	χ^2	Significance	Wealthy	Poor	χ^2	Significance	Wealthy	Poor
Fuelwood	0.0	24.0	6.8	<0.05	0.0	16.0	4.4	<0.05	0.0	20.0
Sand/soil/clay/termite mounds	0.0	0.0	-	-	8.0	0.0	2.1	>0.05	4.0	0.0
Wild edible herbs	0.0	0.0	-	-	0.0	8.0	2.1	>0.05	0.0	4.0
Wild edible fruits	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Medicinal Plants	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Wood for household items, carvings & furniture	0.0	0.0	-	-	28.0	16.0	1.1	>0.05	14.0	8.0
Twig hand-brushes	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Grass hand-brushes	0.0	4.0	1.0	>0.05	0.0	0.0	-	-	0.0	2.0
Indigenous poles for fencing	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Bushmeat	0.0	0.0	-	-	0.0	8.0	2.1	>0.05	0.0	4.0
Fish	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Insects	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Weaving reeds	0.0	0.0	-	-	4.0	12.0	1.1	>0.05	4.0	6.0
Wild honey	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Indigenous poles for housing	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Thatch grass	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Mushrooms	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Seeds	0.0	0.0	-	-	4.0	12.0	1.1	>0.05	2.0	6.0

With respect to gender of the de jure household head, there are no significant differences in either village between male- and female-headed households selling particular NTFPs although, of the two resources sold in Dyala, only female-headed households sell hand-brushes and only male-headed households sell fuelwood. In Dixie male-headed households sell seven different resources compared to two resources sold by female-headed households. Those sold by male-headed households include fuelwood, sand, wild edible herbs, household items, fencing poles, bushmeat, weaving reeds and seeds. Those sold by female-headed households include weaving reeds and household items (Table 4-63).

Table 4-63 Proportion of all households (%) selling NTFPs – stratified by gender of the de jure household head

	Dyala				Dixie				Mean	
	Male-head	Female-head	X ²	Significance	Male-head	Female-head	X ²	Significance	Male-head	Female-head
Fuelwood	9.1	17.6	0.8	>0.05	9.5	0.0	0.8	>0.05	9.3	8.8
Sand/soil/clay/termite mounds	0.0	0.0	-	-	4.8	0.0	0.4	>0.05	2.4	0.0
Wild edible herbs	0.0	0.0	-	-	4.8	0.0	0.4	>0.05	2.4	0.0
Wild edible fruits	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Medicinal Plants	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Wood for household items, carvings & furniture	0.0	0.0	-	-	23.8	12.5	0.5	>0.05	11.9	6.3
Twig hand-brushes	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Grass hand-brushes	0.0	5.9	1.9	>0.05	0.0	0.0	-	-	0.0	2.9
Indigenous poles for fencing	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Bushmeat	0.0	0.0	-	-	4.8	0.0	0.4	>0.05	2.4	0.0
Fish	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Insects	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Weaving reeds	0.0	0.0	-	-	7.1	12.5	0.3	>0.05	3.6	6.3
Wild honey	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Indigenous poles for housing	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Thatch grass	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Mushrooms	0.0	0.0	-	-	0.0	0.0	-	-	0.0	0.0
Seeds	0.0	0.0	-	-	9.5	0.0	0.8	>0.05	4.8	0.0

Taking the means into account, the resource sold by the greatest proportion of male-headed households is household items, followed by fuelwood, seeds, weaving reeds and, equally, sand, wild edible herbs and bushmeat. The greatest proportion of female-headed households sells fuelwood followed by household items and weaving reeds and lastly, grass hand-brushes.

4.2.4.5 Reasons households sell NTFPs

Twenty-two percent of households across the total sample are involved in the sale of NTFPs. For some this sale is a permanent livelihood strategy whilst for others, it is done on an ad hoc basis when the household is faced with some form of financial need. Reasons for selling include: loss of income/retrenchment, demand/available market, poverty, the primary income being insufficient, to purchase food and household goods. Equal proportions of households sell to buy food/household goods and in response to demand for the resource (26 %); 21 % sell because their primary household income is insufficient; 13 % gave poverty as their reason for selling; 11 % noted the loss of income as the driving factor. Three percent listed other reasons. Of those households selling, 72.7 % have started to sell within the last five years whilst 90.9 % stated they will continue to sell unless they find employment or get too old/sick to collect (Figure 4-1).

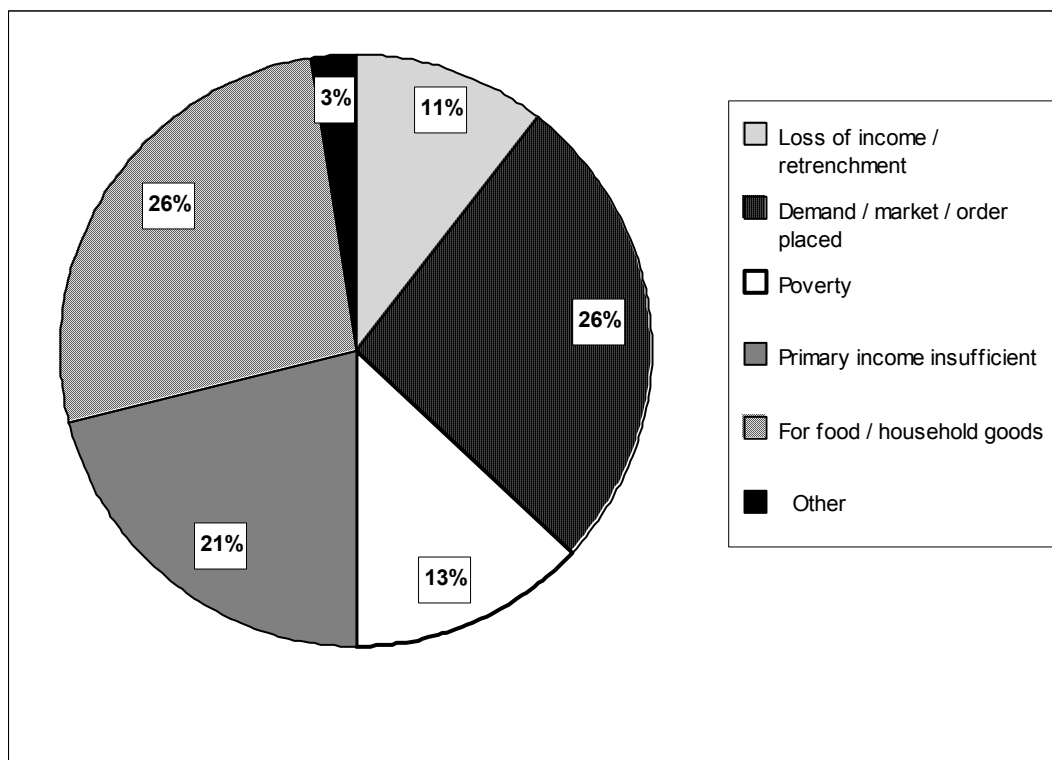


Figure 4-1 Reasons households sold NTFPs over the two year period

4.2.5 Perceptions of historical and seasonal changes in NTFP availability and use

4.2.5.1 Perceptions of historical changes in NTFP availability and use

Time trend exercises for both villages indicate a decrease in the overall use of NTFPs; however changes in the use of individual resources are variable (Appendices 7-3 & 7-4). In Dyala the use of certain NTFPs has either decreased (wild edible herbs, bushmeat, mushrooms, medicinal plants); increased (wood for household utensils and furniture, wild honey, wild edible fruits) or remained constant/undergone slight fluctuations (fuelwood, building materials, poles for fencing, grass and twig hand-brushes) (Appendix 7-3). Group discussions indicated that the decrease in the overall use of NTFPs coincides with increasing controls on the harvesting of resources and the concomitant decrease in availability in areas where there are no controls, particularly with respect to fuelwood. People expressed that were these controls not in place people would continue to utilise NTFPs extensively. Additionally, respondents explained the decrease in use to be the result of changing times with a decrease in the inter-generational transference of knowledge and skills associated with the use of resources. Increasingly NTFPs are being substituted with alternative products. Respondents perceived the use of certain resources to have remained consistent, most notably the use of fuelwood. Fuelwood continues to be the primary form of energy as poverty and poor infrastructural

development persist. From the time trend exercise, the decreasing use of NTFPs coincides with the increase in animal husbandry and arable agriculture however this connection requires further investigation (Appendix 7-3).

In Dixie the overall decreasing use of NTFPs is reflected in the decreasing use of all the resources mentioned in the time trend, with the exception of wooden curios (Appendix 7-4). The use of these has increased rapidly over the last fifteen years: this corresponds with the decreasing employment opportunities as well as the growing tourism industry in the area with households adapting to a new opportunity (market opportunities presented) (Appendix 7-4). Respondents attributed the decrease in use to various factors including amongst others: changing lifestyles; a preference for other foods; an aversion to the time and energy required in the collection of NTFPs; a loss/change in knowledge and skills (associated with NTFP use) in the younger generations; the availability of substitutes as well as the cash income to purchase these; legal restrictions to harvesting; decreased availability attributed to over-utilisation and, loss of access to land incorporated into the game reserves. Over-utilisation is attributed to outside harvesters (harvesting in particular medicinal plants and fuelwood): the community themselves feel they are small enough not to negatively impact abundance.

4.2.5.2 *Perceptions of seasonal changes in NTFP availability and use*

Historical fluctuations and changes in NTFP use (whether taking a composite view or considering each resource individually) have resulted from a myriad of factors including changes in accessibility although this applies more for Dyala than Dixie. At a shorter time-scale, changes in use are governed largely by the seasonal nature of many, although not all, of the resources. Other factors at play within the calendar year also determine use (Appendices 7-5 & 7-6).

In both villages fuelwood is used throughout the year although the demand for wood and the quantities used increase in certain months, including mid-winter when fuelwood is used for heating in addition to cooking and, over the Christmas/New Year period (and Easter) when households hold traditional ceremonies and cater for visiting relatives. The sale of fuelwood coincides with these months of increased demand as well as periods of increased household expenditure associated with paying school fees, crop shortfalls and so forth. In Dyala resources such as wild edible herbs, wild honey and medicinal plants are more available during the summer months whilst in Dixie both medicinal plants and wild honey are used throughout the year. In Dixie wild edible herbs are also seasonal and found in abundance during the summer however the practise of collecting and drying these herbs ensures their availability throughout the year. For this reason the sale of herbs experiences no fluctuation with those households involved in the sale either selling the herbs fresh during the summer or dry during the winter. In both villages wild edible fruits are found throughout the year but species are seasonal and a greater number of species are available during the summer months, as such consumption of these fruits increases with increased availability. The sale of wild edible fruit is also seasonal. In Dyala bushmeat is consumed throughout the year although only in small amounts and by a few households. The availability of bushmeat improves during the winter months when animals leave the protection of the surrounding forest and enter the valley in search of water or, to

escape fires. Hunting is therefore easier at this time. Bushmeat is not sold in Dyala. Households also noted that the consumption of bushmeat increases during drought years. In Dixie the use and sale of bushmeat undergoes no seasonal shifts with the exception of insects which are found in the summer. Fluctuations in the sale of curios are minimal although governed by the tourist market with some months being more popular for tourists than others. Mushrooms are found in Dyala after heavy rains although they are reported to be scarce. The grass for the brooms made in Dyala is only found in summer. People collect during this time both for their own use and for sale. If people make enough they can stretch the sale over a couple of months but peak sales coincide with availability and demand associated with traditional ceremonies.

4.3 Discussion

4.3.1 Proportion of households using of NTFPs

NTFPs are a heterogeneous bundle providing a range of benefits to rural households who use a variety of products and species for both direct household consumption and sale (Cavendish, 2000; Shackleton *et al.*, 2001; Dovie, 2003). This study found households from two South African villages to be using NTFPs for food, shelter, construction, fencing, medicinal purposes, energy, tools and functional items and, cultural and decorative items. Most households use these resources for direct household consumption however there are households involved in the trade of various products, either on an ad hoc or full-time basis. Across the sample the use of NTFPs is a common feature with all of the households using at least one product. This supports findings from elsewhere in Southern Africa where a high proportion of households have been found to be relying on and utilising a range of products and species to meet a variety of household needs (Cavendish, 2000; Shackleton & Shackleton, 2000; Dovie, 2001; Campbell *et al.*, 2002; Shackleton *et al.*, 2002; Twine *et al.*, 2003). The proportion of households using NTFPs can be high particularly for key resources such as fuelwood and wild foods (Cavendish, 2000; Dovie, 2003; Twine *et al.*, 2003). In both Dyala and Dixie wild edible herbs and fruit, sand and fuelwood are used by more than 80 % of households. In Dyala 92 % of households use grass hand-brushes whilst in Dixie medicinal plants, wooden utensils and twig hand-brushes are also used by more than 80 % of households. The findings of this study, in terms of most prevalently used NTFPs, support research conducted in the surrounding regions (Dovie, 2001; Twine *et al.*, 2003). These resources include fuelwood, wooden utensils, twig hand-brushes, grass hand-brushes, wild edible herbs and wild edible fruits. Dovie (2001) noted a high occurrence of NTFP use in Thorndale (Limpopo province) with wooden utensils, fuelwood, twig hand-brushes and wild edible herbs being used by more than 90 % of the sample. Twine *et al.* (2003) found more than 90 % of households in three separate villages in Limpopo to be using wooden utensils, grass hand-brushes, twig hand-brushes, fuelwood and wild edible fruits and herbs. Shackleton and Shackleton (2000) integrated findings from various studies in the Bushbuckridge region (Limpopo) and reported the use of fuelwood, wild edible herbs, wild edible fruits and grass hand-brushes by more than 80 % of households. In a study of resource use in three villages in the Kat River valley (Eastern Cape province) Shackleton *et al.* (2002) found the top five resources used in each village are fuelwood, wild edible herbs and fruit, grass hand-brushes and wood for household utensils with more than 80 % of households reporting the use of each of these. Summarising

findings of resource use across South Africa Shackleton *et al.* (2001) noted between 70 and 100 % of households using fuelwood, 72 to 100 % using wild edible fruits, 93 to 100 % using wild edible herbs, 50 to 100 % using medicinal plants and, 90 to 100 % using wooden utensils. The results of this study suggest that NTFPs make a significant contribution to the livelihoods of households in both sites with half of the eighteen listed resources being used by more than 50 % of the sampled households. This study shows spatial variability in the use of NTFPs with local conditions playing a role in determining the extent to which households rely on these products. With respect to the proportion of households utilising various NTFPs, the findings show greater differences between the two sites than within each site however, despite these differences the top five most commonly used resources are common to both sites and include fuelwood, sand, wild edible herbs, wild edible fruits and medicinal plants. This spatial variability is important to bear in mind when addressing the use of NTFPs and may have implications for land-use planning, development programmes and policy aimed at both poverty alleviation and the sustainable use of NTFPs and the ecosystems in which they are found.

Although the results show particular resources to be extensively used, the study identified a range of products that households utilise for direct household consumption and sale. Households in Dixie use significantly more NTFPs per household than those in Dyala. Seventeen and fourteen products were identified in Dixie and Dyala respectively. Other commentators have noted the use of between twelve and twenty-seven products by rural households in South Africa (Shackleton *et al.*, 1999; Dovie, 2001; Shackleton *et al.*, 2002; Twine *et al.*, 2003). In addition to the variety of products and uses, data from this study for wild edible fruit and herb species as well as medicinal plants suggest that a range of species are used to meet these various needs. Studies in South Africa have reported households to be using a variety of species – between one and three hundred in some cases with fewer species noted in the Eastern Cape than Limpopo (Shackleton *et al.*, 2000; Shackleton & Shackleton, 2004). Inter-village differences in the resources used as well as the proportions of households using them may be determined by factors such as accessibility, availability, substitutability as well as local preferences. For example in Dyala the use of weaving reeds was not reported in the household interviews: respondents in the PRA explained that the weaving reeds are found in areas upstream of the village that fall under the control of the Department of Water Affairs and Forestry (DWAF) and are therefore inaccessible without the correct permits. Additionally, only a small proportion of households in Dyala use indigenous wood for housing or fencing poles. This is not an indication of a lack of fencing or building but rather that substitute products are used: households make use of exotic poles which are widely available as a result of the surrounding exotic plantations. Other village level differences include the use of twig and grass hand-brushes. The grass brushes are used by a significantly greater proportion of households in Dyala whilst the twig brushes are preferred in Dixie. Both availability and local preference determine the use of brushes.

There is evidence of distinctions in resource use and sale as determined by household wealth. Cavendish (2000) found resource use varies with income, with wealthy households using greater quantities whilst the poor are more dependent on the contribution made, particularly by wild foods. Poor households have been found to be reliant on a greater diversity of products with wealthy households substituting products with

manufactured alternatives (Campbell *et al.*, 1997; Chopra, 1997; Dovie, 2001; Shackleton *et al.*, 2000; Shackleton & Shackleton, 2006). Additionally poor households are highly dependent on the incomes from selling NTFPs which is then used to invest in other livelihood sectors (Belcher *et al.*, 2005; Shackleton & Shackleton, 2006) although wealthy households may earn more from the trade (Cavendish, 2000). Twine *et al.* (2003) describe poor households to be more reliant on so-called “essential items” such as wild foods whilst wealthy households used a greater range of products and more “luxury items”, including wooden utensils and poles. De Merode *et al.* (2004) found wealthy households to be benefiting more from both the use and sale of NTFPs. Godoy *et al.* (1995) and Ambrose-Oji (2003) both noted middle-income groups as the primary beneficiaries whilst other commentators have found the relationship between household wealth and NTFP use to be negligible (Wickramasinghe *et al.*, 1996; Chenevix-Trench, 1997; Shackleton & Shackleton, 2006; Cocks *et al.*, in press). Although this study did not consider quantities of NTFPs used, the findings support those showing that wealth does not significantly influence the use of resources in terms of proportion of households using NTFPs and the average number of resources used per household. This finding highlights the important contribution made by NTFPs to rural households irrespective of wealth and suggests the need to include wealthy households in assessments of resource use aimed at informing development programmes and policy. According to Ambrose-Oji (2003) assessments need to consider socio-economic characteristics and ascertain which groups are “interested” in NTFP use and sale.

In addition to wealth factors, the collection and use of NTFPs has been described as strongly linked to gender (Cavendish, 2000; Dovie, 2001). The gender of the household head as well as the gender composition of the household members play a role in determining what resources are used, how they’re procured and whether they are traded or not. The relationship between gender and resource use is determined to some extent by the physical nature of the work but also by existing gender roles and responsibilities (Cavendish, 2000). For example, women, traditionally concerned with household food security, are largely responsible for the collection of wild foods (with the exception of bushmeat). Men on the other hand use NTFPs related to the construction of houses and livestock enclosures (Shackleton *et al.*, 2001). Additionally female-headed households are considered to be more vulnerable and therefore more dependent on these resources. This study however gives little indication that gender of the de jure household head, significantly influences the use of NTFPs particularly in terms of the proportions of households using and the number of resources used per household. Whilst gender of the de jure household head does not appear to influence resource use further analysis using the gender composition of the households may provide a clearer gender-based distinction. Cavendish (2000) draws attention to the need to consider the gender composition of households as well as the gender of the head, identifying the clearest categories of households to be de jure female-headed households with no married sons and male-headed households where the head is widowed or divorced. Whilst the composite picture suggests household wealth and gender of the de jure household head to have little influence on the use of NTFPs in terms of the proportion of households using these products, there are some exceptions when taking individual resources into consideration. This however only applies to two resources when considering wealth (insects and indigenous poles for fencing) and one resource for gender (medicinal plants).

4.3.2 Frequency of use and average number of items/species owned/consumed

This study also considered the frequency with which households consume particular NTFPs, the number of different species consumed as well as the number of particular products owned. Socio-economic characteristics may influence households' involvement in NTFPs as a livelihood strategy as well as the extent to which households are involved. Whilst both wealthy and poor households may use particular NTFPs, poor households are often reported to use them more frequently, an indication of higher dependency by these households (Shackleton *et al.*, 2000). Shackleton *et al.* (2000) note "a gender-based dimension to indigenous knowledge systems" with women using a wide diversity of species associated with the household whilst men have knowledge of the range of species used for livestock grazing/browsing and medicinal purposes. The findings of this study show no clear pattern as to whether wealth or gender of the de jure household head influences the frequency of use, the number of species used or the number of resources owned. Rather the frequency of use/consumption and average number of selected products owned differ between the villages depending on the resource in question. Wealth influences the use of wild edible herbs and ownership of twig hand-brushes and fencing structures. Whilst gender influences the average number of fruit species consumed, the average number of medicinal plant species used and the number of grass hand-brushes owned. In Dixie poor households consume herbs more frequently than their wealthy counterparts: Cavendish (2000) found that lower income households depend heavily on the consumption of wild foods although this is not to say that the wealthy households do not also consume these foods. With respect to indigenous wood fencing structures, poor households in Dixie have a greater average number of fencing structures constructed from indigenous wood. This is a reflection of the substitution of NTFPs with purchased goods by wealthy households. The poor cannot afford to substitute and therefore continue to rely on the freely available wild alternatives. Gender and wealth both determine the ownership of hand-brushes although the determining characteristic differs depending on whether grass- or twig hand-brushes are considered. With respect to the twig hand-brushes, in Dyala where these brushes consist of twig branches broken off a nearby bush, the poor have a greater average number per household: the wealthy households are able to substitute these with more durable manufactured brushes/brooms and therefore have fewer per household. This supports other findings where increasing wealth was positively correlated with the substitution of NTFPs for other products (Chopra, 1997; Shackleton *et al.*, 2000). Female-headed households in Dyala have a greater average number of grass hand-brushes because the skills required to make these brushes are typically associated with women. Furthermore female-headed households reported the production and sale of these brushes as a source of income. In Dixie these brushes are made from *Athrixia phyllicoides*, a preferred species not found locally (Shackleton, 2005). Households purchase these brushes from outside traders. Wealthy households have a greater average number of brushes per household because they have the capital to invest in more. The nature of the resource as well as a household's buying power, influence the use of the resource.

4.3.3 The procurement of NTFPs

Households procure their NTFPs either through self-collection or by purchasing the products in nearby regional centres, at monthly pension point markets, from outside traders selling in the village or from people within their own community. This study found 94 % of households to be purchasing at least one resource. This compares favourably with findings by Shackleton and Shackleton (2006) from villages in the Kat River valley in the Eastern Cape province where 98 % of households reported the purchase of one or more NTFPs. Although this study found a high proportion of households to be purchasing NTFPs, the primary means of procuring these products is through self-collection. However, the manner with which households procure individual resources differs between the villages, depending on both the resources in question and household characteristics. Households in Dixie buy a greater variety of NTFPs than those in Dyala again emphasising spatial variability in NTFP use and a more extensive trade in NTFPs in Dixie and the surrounding region. With respect to village and product-based differences, examples include the purchase of sand and wild edible herbs by households Dixie but not by those in Dyala. In Dyala most households buy their grass hand-brushes because certain skills are required to make the brushes. In Dixie, skill requirements, preference and resource availability are such that most households purchase their twig hand-brushes. According to Shackleton (2005) research from across South Africa has indicated the purchase of these brooms with the result that the market created is in some cases extensive. Discussions indicated for medicinal plants the manner of procurement depends on the plants needed and degree of illness. The purchase of resources is largely determined by sufficient wealth to be willing to pay for a resource that is freely available, by the preferred resource not being available locally or, by the lack of labour, skills or knowledge to collect and manufacture certain products.

Whilst the general perception is that poor households collect and wealthy households buy NTFPs, this study found high proportions of both wealthy and poor households purchasing NTFPs. In both villages more than 80 % of households from both wealth groups reported purchasing at least one NTFP however wealthy households in both villages buy more resources per household. This supports findings by Shackleton and Shackleton (2006). Shackleton and Shackleton (2006) and Cocks *et al.* (in press) found that although the relationship between household wealth and proportion of households using (and the quantity used) is negligible, wealth does determine the manner with which households procure their NTFPs as well as whether or not they sell these products. It is suggested that the greater number of resources bought by wealthy households compared to their poor counterparts indicates that poor households benefit more from the resources used (Shackleton & Shackleton, 2006). Findings from this study suggest that whilst wealthy households purchase NTFPs because they have the available capital (and are potentially labour constrained) the poor buy those NTFPs which they cannot collect, either because they are not available locally or because explicit knowledge or skills are required for the collection and use of the products. The opportunity costs involved in the collection also determine whether or not households self-collect or buy NTFPs. For example in Dixie households use sand for building which is sold by one family in the village with access to a tractor and trailer. Both wealth groups in Dixie purchase sand because the opportunity cost of self-collection is likely to be high however, despite this a greater proportion of wealthy households (with access

to capital) buy sand. Most households collect wild edible fruits and herbs and the difference is not significantly different for either wealth or gender. The opportunity cost of collecting these resources is potentially less than that of other resources (such as sand or wood). Many households collect their wild edible herbs from their homestead, garden or fields whilst fruit are collected when performing other tasks such as herding cattle or collecting fuelwood. Ambrose-Oji (2003) found that households rely more on NTFPs from forest fallow areas (rather than deep forest) because of the lower opportunity costs associated with the collection of these. In Dyala both wealthy and poor households buy grass hand-brushes which require certain skills to make whilst only wealthy households purchase fuelwood. In Dixie both wealth groups buy twig and grass hand-brushes as the preferred brushes are made from species not available locally (Dovie, 2001; Shackleton, 2005). This pattern is highlighted by the findings of Shackleton and Shackleton (2006): 96 % of both wealthy and poor households reported purchasing NTFPs, although if hand-brushes are disregarded then 76 % of wealthy households purchased resources compared to 56 % of poor households. Shackleton and Shackleton (2006) explain that although the purchase of NTFPs constitutes a cash cost to rural households, there is an opportunity cost involved in the collection of these products particularly if there are alternative opportunities. In Dixie where significantly more wealthy households have employed members and more employed members per household, the opportunity costs involved in the collection of NTFPs may be high. For this reason wealthy households choose to purchase a variety of essentially “free” resources. In both Dyala and Dixie wealthy households have the available capital to purchase NTFPs although differences in the procurement of resources with regards to household wealth are more noticeable in Dixie than in Dyala.

With respect to gender of the de jure household head, significantly more male-headed households in Dixie reported purchasing NTFPs. The relationship is not significant in Dyala and although more male-headed households in Dixie reported the purchase of at least one NTFP, the average number purchased is not significantly different to the number purchased by female-headed households. In Dixie a significantly greater proportion of male-headed households receive income from wages however a significantly greater proportion of female-headed households receive old-age pensions suggesting that both groups have the available capital to purchase NTFPs therefore the difference may be explained by those male-headed households with no adult female labour (i.e. single, divorced or widowed men) who purchase resources usually collected by women, such as fuelwood and wild edible herbs. This would require further analysis but is supported by the fact that in Dixie only the male-headed households reported purchasing wild edible herbs. Kepe (2002) found that only women collect wild edible herbs, with men relying either on marriage or kinship ties whilst Cavendish (2000) found households with no adult female labour to collect water and fuelwood, hire labour for these tasks. According to Shackleton *et al.* (2000) men may collect fuelwood and other resources traditionally harvested by women but will seldom collect wild edible herbs. These herbs, their collection and preparation are associated with women in much the same way that hunting is associated with men (Shackleton *et al.*, 2000).

As with wealth there are significant differences when taking individual resources into account although only for wild edible fruits, medicinal plants and grass hand-brushes. In Dyala significantly more female-

headed households collect wild edible fruits but buy medicinal plants whilst in Dixie gender is significant for the collection of grass for hand-brushes with significantly more female-headed households collecting this resource. For grass brushes, female-headed households collect because grass brushes are associated with the household and therefore women. Additionally the skills needed to make the brushes are passed down from one generation of women to the next. Those women making and selling brushes are often female-heads who sell to support their household. A significantly greater proportion of female-headed households in Dyala use medicinal plants and as these plants are often purchased from traditional healers, significantly more female-headed households purchase medicinal plants. There are differences for other resources however these are not significant. They do however suggest certain gender roles in NTFP collection and use. For example in Dixie only female-headed households reported purchasing housing poles indicating that women are restricted from collecting these poles by the physical strength required (Shackleton *et al.*, 2000). Female-headed households reported hiring labour to assist with rebuilding houses suggesting that construction is a male dominated role (Chapter 5) (Shackleton *et al.*, 2000). In both villages only male-headed households bought fencing poles, this is possibly related to the greater proportion of male-headed households with arable land and livestock.

With respect to gender and the collection of NTFPs, ultimately the gender composition of the household needs to be considered and not just gender of the household head. This is supported by comments from the group discussions. According to respondents in Dyala this gender composition plays a greater influencing role than labour availability, for example households with men have a greater chance of getting honey. Other examples given of gender determining collection include that women collect the grass for brushes whilst both genders collect thatch grass and women are prohibited from collecting certain medicinal plants with cultural significance. Male-headed households should be broken down into those where there is a married male-head and therefore female labour and, those where the male-head is unmarried or widowed. Dovie (2001) found the 73 % of harvesters to be women compared to only 27 % of men.

4.3.4 The sale of NTFPs

In both villages NTFPs are sold either on a regular basis constituting one of several possible livelihood strategies or on an ad hoc basis by households in need of extra money. Twenty-two percent of households across the total sample are involved in the sale of NTFPs. Shackleton *et al.* (2000) identify regions of South Africa where up to 25 % of households are involved in the trade of one or more resources with women being particularly involved in this activity. Dovie (2001) found a smaller proportion of households selling NTFPs. The difference between the two villages (as with the overall purchase of NTFPs), is not significant for the proportion of households selling but is for the number of resources sold per household, with households in Dixie selling a significantly greater average number of resources than their Dyala counterparts. Local conditions affect the trade in NTFPs. In Dyala the sale of products is largely to meet local demand with the exception of the grass hand-brushes, with some households selling in response to need whilst others sell more frequently. According to Campbell *et al.* (1997) households in deeper rural areas market products through informal networks selling either opportunistically or in response to prior

orders from community members. This applies to Dyala however in Dixie the situation is different. In Dixie, whilst most resources are sold to meet demand within the community, the sale of certain products (including wooden curios and woven products) has developed predominantly in response to the growing market offered by tourists visiting the surrounding game reserves. This commoditisation of traditional crafts for sale to tourists has been identified as an important aspect of NTFP trade in studies throughout South Africa (Pereira, 2004; Shackleton, 2005). Additionally in Dixie, high population densities in the surrounding area as well as regular pension point markets provide a wider option of selling points and a greater market for products than in Dyala. Those resources not sold in either village include wild edible fruits, medicinal plants, twig hand-brushes, fencing poles, fish, insects, honey, housing poles, thatch grass and mushrooms. There were however households that reported buying these suggesting that either the households selling were not covered in the survey or that the resources are bought elsewhere.

In terms of intra-village differences as determined by household wealth, in Dyala only poor households sell NTFPs supporting findings by Shackleton and Shackleton (2006) who noted 8 % of wealthy selling versus 36 % of poor. In Kwa-Zulu Natal Shackleton *et al.* (1999) found households least likely to sell NTFPs were those receiving a cash income either through wages or old-age pensions. According to Shackleton and Shackleton (2006) the sale from NTFPs is particularly important to poor households with no other cash incomes. The poor rely more on the income from the sale of NTFPs as input for other activities especially as the entry barriers to arable agriculture and animal husbandry can be high (Cavendish, 2000). Commentators differentiate between the sale of NTFPs in response to opportunity and need (Arnold & Townson, 1998; Shackleton *et al.*, 2001). In Dixie both poor and wealthy are involved in the sale although the poor sell more resources per household. Wealthy households are predominantly involved in the sale of curios suggesting these households have responded to opportunities in higher return products whilst the poor have diversified into the sale of various products in response to vulnerability and to provide a cash income. Ellis (1999) observed that poor households diversify into less advantageous markets. The other resource sold by wealthy households in Dixie is sand. This is sold by one family with access to a tractor and trailer. The labour and profits are shared between the family members who reside in different households. Poor households trade opportunistically in low-return products with low-skill requirements as a livelihood stabiliser and a means to cope whilst wealthy households are involved in the more lucrative trade of high-return products (Cavendish, 2000; Fisher, 2004; Shackleton & Shackleton, 2006). According to Shackleton *et al.* (2000) the incomes from NTFP sales are generally higher where there is an external market, as is the case in Dixie. This therefore makes the trade a more attractive option to wealthy households. Wealthy households in Dixie trade in NTFPs to supplement other income sources. In Zimbabwe, De Jong *et al.* (2000) found the income from wood crafts to be equally distributed between wealth groups and not controlled by local elites.

Additionally discussions indicated that the wealthy households have certain advantages in the sale of these products (i.e. curios – both wood and reed based). With respect to the woven reed products, many wealthy households are able to collect the reeds within the reserves where family members (often the breadwinner) are employed, whereas the poor households have to collect from communal areas surrounding the village

where there is higher competition for the resources. The wealthy households are also fortunate with respect to wooden curios. There are few households in Dixie that carve themselves, the majority buy the carvings from outside carvers/traders and then resell to tourists visiting Dixie. These bought products are often of a superior quality than those carved in Dixie and therefore sell better. The wealthy households trading in these carvings are at an advantage because they can afford to buy the stock as well as pay to join the “carving stokvel” that has been established. This stokvel operates on a rotational basis with each member getting an out-payment in turn, which they can then use to buy stock for their curio stall. De Merode *et al.* (2004) found the poor face barriers to NTFP use and sale particularly with respect to bushmeat and fish as they are unable to purchase the necessary nets and guns. Ambrose-Oji (2003) also noted barriers with the sale of NTFPs being considered an insecure livelihood option for poor households with few alternatives. According to Shackleton and Shackleton (2004) resource commercialisation offers both opportunities and constraints to poor households however the lack of alternative income sources suggests poor households benefit more than their wealthier counterparts. It should be noted that number of resources used as well as the trade in NTFPs is not necessarily indicative of reliance on those resources or the significance of contribution made: as Cavendish (2000) highlights, although wealthy households dominate the use of NTFPs, in terms of income share, the poor depend more on the contribution made from both use and sale. According to Shackleton and Shackleton (2004) more poor households commercialise, sell a greater variety of products and the income made constitutes a greater proportion of the total household income. This study substantiates this in terms of the variety of products sold by poor households.

With respect to gender of the de jure household head, this study found this household characteristic does not influence the overall proportion of households selling or the average number of resources sold per household in either village. Both male- and female-headed households were trading in resources and there were examples from both groups of households trading full-time whilst others only traded on occasion to supplement household income or cover unexpected expenses. Taking individual resources into account also shows no significant influence of gender of the de jure household head although there are some gender related patterns. In Dyala only female-headed households reported the sale of grass hand-brushes whilst both groups sell fuelwood. In Dixie female-headed households sell wooden utensils and weaving reeds whilst male-headed households sell fuelwood, sand, wild edible herbs, wooden utensils, bushmeat, weaving reeds and seeds. Some of these items are generally associated with women (i.e. herbs and reeds) suggesting that in these households female members sell to supplement alternative incomes. The sale of NTFPs was not significantly determined by gender of the de jure household head however as with the use of NTFPs the gender composition of the household may require further investigation. Numerous studies in South Africa have noted the high involvement of women in the trade of NTFPs particularly middle to elderly women (including household heads) with low levels of education. These women trade in various resources but particularly in woven products and grass hand-brushes (Pereira, 2004; Shackleton, 2005). Shackleton *et al.* (2001) and Fisher (2004) found differences in the resources sold as well as the type of trade, with women selling when cash is required for the household and men dominating the trade in income-generating resources. The woodcraft trade has been found to be dominated by elderly men (Shackleton, 2005). Shackleton (2005) highlights the chain of producers and traders with producers being middle to elderly

women whilst the traders are often younger. Shackleton (2005) focussed on NTFP traders in the Bushbuckridge region and found the trade to be a key income source especially for the poor and women. A high proportion of both producers and traders were from female-headed households. The income from the trade in NTFPs often contributes significantly more to the total household income of female-headed households than male-headed households (Clarke *et al.*, 1996; Cavendish, 2000; Shackleton & Shackleton, 2006).

Reasons households sell NTFPs include: to cover food and other household expenses, to meet local demand (e.g. selling fuelwood to households celebrating traditional ceremonies); to supplement the primary income in order to maintain a certain standard of living; because of poverty and, in response to the loss of other income sources. The findings suggest that as a livelihood and coping strategy the sale of NTFPs is becoming increasingly important in response to continued unemployment and vulnerability in South Africa's rural areas: more than 70 % of those households selling NTFPs had started to sell within the last five years. Shackleton (2005) found the market in certain products to be a recent development in response to increasing vulnerability. In this study, 90 % of those selling stated that they will continue to sell unless work becomes available or they are too old/ill to continue to collect the resources. This response not only reflects households' perceptions of the importance of a formal cash income but also suggests a possible short-coming of NTFPs as a rural safety-net. The collection of NTFPs is labour intensive and therefore a shortage of labour constrains both the daily and coping function of NTFPs. Only certain resources are sold with certain resources more commonly sold. For example fuelwood is sold by several households in both villages – no skills are required for this and there is a sufficiently large market. Households with the skills to make hand-brushes, woven products and such occupy a smaller, niche market. Dovie (2001) found the trade in NTFPs to be predominantly focussed on six resources. This study found two resources sold in Dyala and seven in Dixie. Pereira (2004) noted weak or absent markets as a constraint to NTFP sale.

4.3.5 NTFP ranking

Although this study shows only a limited influence of gender of the de jure household head on NTFP use, research has found gender to be an influencing factor (Cavendish, 2000). Cavendish (2000) draws attention to the need to consider both the household head as well as the gender composition of the household when assessing gender-based correlations with NTFP use. Women and also men value resources differently, determined to some extent by gender related controls on use (Kepe, 2002). In this study ranking of the contribution made by NTFPs to livelihoods was done in groups taking gender (not exclusively gender of the head) into account and not household wealth. The ranking in both villages indicates little difference in the perceived contribution made by various NTFPs to rural households with the exception of bushmeat and hand-brushes in Dyala and fuelwood and wild honey in Dixie. Men ranked bushmeat and wild honey higher. Hunting is predominantly (although not exclusively) a male-dominated activity (Cavendish, 2000). According to respondents men are responsible for the collection of honey although they may collect for women in the household who use honey for both flavour in food and for medicinal purposes. Women ranked fuelwood and hand-brushes higher. Activities associated with women are those related to the

household and homestead plot and women's household responsibilities therefore women rank fuelwood and brushes higher as their household responsibilities include cooking, heating and cleaning (Cavendish, 2000). Women in both villages ranked similar resources in the top five with the exception of wood for household utensils which was ranked by the women in Dixie whilst the women in Dyala ranked fencing poles. Wooden household utensils (particularly curios) contribute to households in Dixie through the sale of these products and can in some cases constitute the primary cash inflow. Households in Dyala do not sell these items. With respect to the ranking of fencing poles in the top five by women in Dyala, this is possibly determined by the greater proportion of households in Dyala with arable land, cattle, goats and pigs and therefore a greater need for fencing materials. The men in Dyala ranked bushmeat and fuelwood within the top five whilst those in Dixie ranked wild edible herbs and wood for household utensils. Once again this supports the contribution of curios to households in Dixie. In Dyala it highlights the male-dominated activity of hunting. Men ranked fuelwood highly not only for its importance in the household but also because it is a resource commonly sold in times of need. The high ranking by wild edible herbs by men in Dixie suggests the growing importance of this wild food group to households in response to increasing food insecurity. Shackleton and Shackleton (2000) note a shift in traditional gender roles and NTFP use in response to increasing vulnerability and the challenge of securing livelihoods. Wild edible herbs are typically a woman's "food" and whilst also consumed by men, men seldom collect these herbs. During the group discussions however men explained that the use of spices and new ways of cooking the herbs made them an acceptable substitute for vegetables. The resources ranked in the top five include fuelwood, building materials, medicinal plants, wild edible fruits, bushmeat, wild edible herbs, fencing poles and household items.

4.3.6 Perceived changes in NTFP use, accessibility and availability

According to Shackleton *et al.* (2001) there are few households that don't use NTFPs however there is regional variability to this use. The use of NTFPs is subject to availability and accessibility of the resources, institutional controls, the availability and cost of alternatives, levels of employment, population densities and so forth (Shackleton *et al.*, 2001). This study emphasises the variability in use between regions however reasons for this would have to be examined in more detail. To some extent the present day use of NTFPs may be determined by historical events which have informed the present day context. Respondents perceived both historical and seasonal changes and fluctuations in NTFP use, accessibility and availability highlighting that NTFP use is not only spatially variable but also temporally variable. With respect to historical changes, overall NTFP use has decreased in both villages although once again there are exceptions depending on the resource in question. Changes in the surrounding environment influence use and availability of NTFPs and as such the context must be considered when examining the use of NTFPs by rural households. In Dyala respondents indicated that the decreasing use of NTFPs is related to the permit system regulating harvesting in the surrounding villages (Appendices 7-1 & 7-2) as well as changing knowledge and lifestyles. Whilst the current permit system does not restrict use for direct household consumption, according to respondents historically controls on harvesting were tighter which may either have some community members confused as to the existing permit system or may have impacted on

community behaviour and knowledge systems. To support this, respondents indicated that the traditional knowledge of many NTFPs, as well as the skill required in the use of certain products, is being lost in the younger generations (Shackleton & Shackleton, 2000). This is also related to changing times and possibly the increasing inclusion into the cash economy and “western world”. The decreased reliance on NTFPs coincides with increasing access to arable land and livestock (Appendix 7-3) however this pattern, its reasons and implications require more detailed investigation. In Dixie NTFP use has also decreased with the exception of curios which have increased. This increase coincides with decreasing employment opportunities and increasing tourism in the region (Appendix 7-4). This suggests the sale of curios was initially a coping strategy employed in response to vulnerability as well as emerging opportunities. This strategy has adapted and for many, become a full-time livelihood strategy. This supports findings from Zimbabwe (De Jong *et al.*, 2000) where the woodcraft industry developed in response to economic declines and increasing tourism. Resource use in Dixie is not affected by a permit system however households were removed from land with the formation of the game reserves and now have access to a smaller area and whilst respondents indicated sufficient availability of most products there is concern of outside harvesters. Dovie (2001) found in nearby Thorndale that availability of NTFPs has decreased as a result of increased harvesting resulting from increased population pressure, outside harvesters and increasing unemployment.

Reasons for the decreasing reliance on NTFPs include: changing lifestyles, the availability of alternative products, changing knowledge and skills, changing preferences, decreasing availability and restrictions on use. This decrease has implications for the safety-net function of NTFPs: households may wish to rely on NTFPs but do not have the necessary skill, whilst restrictions on use and decreasing availability not only constrains those already relying on NTFPs, but prevents others from turning to NTFPs in response to household misfortune. Shackleton *et al.* (2000) note that although younger community members and households still utilise wild foods, they generally consume these less frequently than the old community members with some younger generations no longer consuming these products at all. This pattern is seen to be the result of preference for purchased vegetable and meat as well as a move away from the traditional ways (Shackleton *et al.*, 2000). This pattern is not restricted to wild foods but includes medicinal plants, weaving reeds, insects and fuelwood (Shackleton *et al.*, 2000).

In addition to long-term changes in NTFP use and availability, there are also short-term seasonal changes in both the use and sale of NTFPs. These seasonal changes depend on the availability of resources as well as changes in demand and available markets. Examples of seasonal fluctuations include fuelwood which is in higher demand during the winter months (Dovie, 2001). The sale of fuelwood fluctuates to meet the demand. Wild edible fruits are available throughout the year but individual species are seasonal (Dovie, 2001). In Dyala respondents indicated bushmeat is more available during the winter, the grass for hand-brushes is only found in the summer as are mushrooms and wild edible herbs. Kepe (2002) noted that resource use is seasonal for certain resources although adaptive strategies are in place such as the drying of wild edible herbs (Dovie, 2001). The drying of herbs is practiced in Dixie but not Dyala. The results from Dixie suggest that the practise of drying wild edible herbs is determined to some extent by gender with female-headed households experiencing a smaller seasonal decrease in consumption. It may also suggest

that these households are more dependent on the year round availability of these herbs for household food security and therefore dry more or search further and longer of the herbs (Shackleton & Shackleton, 2006). This practice helps with seasonal crop shortfalls and constitutes an important gap-filler. Seasonal availability and abundance affect the frequency of consumption and average number of species consumed. Shackleton *et al.* (2002) noted a significant decrease in the frequency with which households in the Eastern Cape consume wild edible herb. Seasonal variations in resource use have been noted by other commentators (Dovie, 2001; De Merode *et al.*, 2004).

Seasonal fluctuations in the availability of particular resources affect the trade in the products however the trade is also influenced by fluctuations in demand. An example of resource availability affecting the market involves the sale of marula beer (*Sclerocarya birrea subsp. caffra*). The fruit of this tree has traditionally been used in the manufacture of beer however in recent years in response to growing financial need, households has started to sell the beer. As the fruit is only available in the summer months and the beer cannot be kept, it is only sold for a brief period in January. This however comes at an important time as households are cash-strapped after the Christmas period but are required to pay school fees in January (Shackleton, 2004). In other cases the market drives the resource collection. For example in both villages there is increased use of fuelwood in December as households celebrate the holidays catering for returning migrants and visiting family members. Households have responded to this demand and sell fuelwood at this time. The seasonal tourist markets also determine the sale of certain resources (Pereira, 2004). These seasonal fluctuations have implications for the rural safety-net function of NTFPs in the sense that the seasonal nature of certain NTFPs means they offer no more than a seasonal contribution to consumption and trade but cannot contribute throughout the year. Additionally households selling NTFPs as a rural safety-net may not find a market for resources for which there is only seasonal demand. Ambrose-Oji (2003) however found the overall income from NTFPs to be seasonally constant although the resources relied on changed. With respect to the sale of NTFPs, Belcher *et al.* (2005) emphasise the benefit of using a diversity of NTFPs in that households can spread the risk and modulate the timing of income across seasons.

4.4 Conclusion

The findings of this study suggest NTFPs make an important contribution to rural livelihoods through both the use and sale of various products. Households benefit predominantly through the use of these products with all of the sampled households relying on NTFPs, and to a lesser degree through the sale. According to Belcher *et al.* (2005) the variable contribution made by NTFPs highlights the need to consider this livelihood strategy in terms of its contribution towards households' total livelihood portfolio rather than as an independent strategy. This study has contributed to the growing research in South Africa on the affect of households' socio-economic characteristics on resource use. This socio-economic dimension of NTFP use has previously been under-researched (Shackleton & Shackleton, 2006). The findings show NTFP use to be a common feature of rural livelihoods irrespective of household wealth or gender of the de jure household head, particularly with respect to the proportion of households involved as well as the average number of

resources used per household. The results however suggest poor households to be more dependent on NTFPs in that they sell a greater variety of products and buy significantly fewer products than their wealthy counterparts. Patterns in the purchase and sale of NTFPs are less clear for gender of the de jure household head. According to Shackleton and Shackleton (2006) even though overall consumption may not show differences for household wealth, poor households depend more on the use and sale of NTFPs because they typically have fewer alternative income sources. The findings suggest the commercialisation of NTFPs to be an escalating trend in response to increasing vulnerability although whilst poor households sell a variety of low return products in response to financial need, wealthy households respond to opportunity selling fewer but more lucrative products. A socio-economic focus allows for more effective targeting of interventions for both poverty alleviation and conservation. An appreciation of those households most dependent on the goods and services offered by NTFPs and therefore most affected by changes in availability and accessibility, allows for more effective targeting of interventions at a development and policy level. Finally with respect to the rural safety-net function of NTFPs, the findings suggest that as all households use NTFPs, the safety-net option is available to all however this function, how it manifests and whether it is affected by other factors is investigated in Chapter 5.

CHAPTER FIVE: HOUSEHOLD VULNERABILITY & COPING STRATEGIES

5.1 Introduction

5.1.1 Vulnerability in rural livelihoods

Despite international commitment to significantly reduce global poverty within the next decade, it remains a pervasive challenge particularly within the developing world (Sunderlin *et al.*, 2005). Poverty is not purely a function of low-income but is multidimensional, complex and affected by numerous variables. Whilst some rural households manage to move out of poverty, the general nature of poverty in many rural areas is chronic (Sen, 2003). For many living in these areas, extreme livelihood insecurity and vulnerability persists (Belcher *et al.*, 2005), exacerbated by crises such as unstable economies, the HIV/AIDS pandemic, civil unrest, biodiversity loss and climate change. Female-headed households, young households, those with an elderly head as well as those impacted by HIV/AIDS have been identified as especially vulnerable (Posel, 2001; De Waal & Whiteside, 2003).

Rural households, particularly those in the developing world, are subjected to a range of risks, shocks and trends that impact on the bio-physical, social and economic environments in which they exist and that together constitute a household's vulnerability context. Adger (1999, p249) defines vulnerability as the "exposure of individuals or collective groups to livelihood stress as a result of social and environmental change, where stress refers to unexpected changes and disruption to livelihoods." Vulnerability is dynamic and this, together with the range of scales and time frames at which impacts are felt; differing environmental, economic, political and institutional conditions; different resource endowments; inequalities and household characteristics, makes assessing a household's vulnerability context a complex task (Adger, 1999; Block & Webb, 2001; Few, 2003). Vulnerability is both spatially and temporally variable and present day vulnerability is informed not only by local conditions but also by historical events. Skoufias (2003) states that as household income is fluid and variable there are households that intermittently move in and out of poverty, indicating a distinction between those that are "structurally" poor and those that are temporarily poor as a result of misfortune. According to DFID (1999) the "vulnerability context" highlights a complex mix of influences that are responsible for hardship and that impact directly on a household's asset status and livelihood options and over which, households have limited or no control. This overall complexity has prompted Few (2003) to suggest that rather than considering vulnerability, households' capacity to cope should be determined. However, even coping mechanisms can be fluid and dependent on the broader context.

The complex nature of vulnerability together with the heterogeneous nature of rural communities implies that different individuals and groups experience differing types and degrees of vulnerability and, that within any group the severity of an impact associated with crises of any nature, may vary (Adger, 1999; Maxwell *et al.*, 1999; De Waal & Whiteside, 2003; Few, 2003). De Waal and Whiteside (2003, p3) refer to

sensitivity and resilience whereby sensitivity is “the extent to which a society or household suffers from an external shock” whilst resilience is the “extent to which the society or household can recover”. Within any given community there are some households that are more prone to crises than others and, who are also less prepared and able to cope. Household responses to adversity may vary depending on the nature of the shock, its intensity as well as on household characteristics and its asset base (Pattanayak & Sills, 2001). Factors that may influence the degree to which households are vulnerable as well as their ability to cope include wealth, social networks, the household’s existing livelihood structure and asset base and the composition of the household members in terms of both age and gender (Pattanayak & Sills, 2001; De Waal & Whiteside, 2003). Both poverty and inequality are constraints to households’ ability to cope with vulnerability (Adger, 1999). Inequitable distribution of productive resources, access to land, income sources and so forth can decrease the resilience of certain households to shocks and prolong their recovery from such events (Skoufias, 2003). DFID (1999) explains that poor households are constrained by their poor access to assets so that not only is their ability to escape from poverty restricted but so too is their ability to react positively to beneficial trends. With respect to gender, women and female-headed households are generally considered a more vulnerable sector of society: they are generally poorer and their access to both assets and alternative livelihood strategies is constrained (Posel, 2001).

5.1.2 Coping with vulnerability and risk

Rural households, across a vast spectrum of environments, are vulnerable to a diverse range of risks: either individual risks (idiosyncratic) or covariate/aggregate risks that impact on broader communities (Dekker, 2004). Numerous commentators have explored both the idiosyncratic and covariate risks to which households are vulnerable with a particular focus on how households cope and what factors determine a household’s ability to cope (Godoy *et al.*, 1998; Block & Webb, 2001; Skoufias, 2003; Dekker, 2004). There is evidence that whilst households may be able to cope with idiosyncratic risks, their ability to cope with larger, covariate risks by drawing on informal insurance options, is inadequate often resulting in a downward spiral of increasing vulnerability (Skoufias, 2003). According to Wong and Godoy (2003) the rural poor are insufficiently insured and therefore vulnerable to uncertainty and risk. In addition to this Skoufias (2003) highlights that in many developing countries public safety-nets are weak or malfunctioning forcing households to rely on informal insurance strategies that are often inadequate in assisting households to cope with the risks to which they are exposed. The impact of a crisis is determined not only by the nature of the crisis itself but also by the resources households have at their disposal. Households aim to maintain and secure a sustainable livelihood where they are able to cope with adverse times by drawing on the assets at their disposal. Coping strategies comprise of preventative, impact-minimising or post event coping actions (Few, 2003). According to De Waal and Whiteside (2003, p1234) coping strategies are “characterised by considerable resilience – defined as the ability to return to a former livelihood on the basis of a diversity of income and food sources - and accumulated skills, including the knowledge of wild foods and kinship networks”. The range of potential coping strategies households may employ is as diverse as the risks themselves: this variety of strategies forms a part of the broader livelihood system (Dekker,

2004). Various commentators have identified a variety of coping strategies households employ in response to misfortune (Table 5-1).

Table 5-1 Identified coping strategies used by rural households in response to a variety of risks

Coping Strategy	Reference
1. Kinship and community-support networks and the reciprocity of money, goods, land and labour	DFID, 1999; McSweeney, 2003; Wong & Godoy, 2003; Dekker, 2004; Heemskerk <i>et al.</i> , 2004
2. The sale of assets (including livestock)	Smith <i>et al.</i> , 2001; Wong & Godoy, 2003; Dekker, 2004
3. The use and/or sale of NTFPs	Adger, 1999; De Jong <i>et al.</i> , 2000; Kepe, 2002; Ackermann, 2003; De Waal & Whiteside, 2003; Dovie, 2003; McSweeney, 2003; Wong & Godoy, 2003; De Merode <i>et al.</i> , 2004; Shackleton, 2005
4. Out migrations and remittances	Adger, 1999; Wong & Godoy, 2003
5. Livelihood diversification	Adger, 1999; Block & Webb, 2001
6. Redistribution/reallocation of labour, the removal of children from school, the relocation of dependents to extended family and the adoption of children	McKenzie, 2003; Mock <i>et al.</i> , 2003; Wong & Godoy, 2003; Heemskerk <i>et al.</i> , 2004
7. Saving schemes, stokvels (credit groups), buying on credit and the withdrawal from stokvels to save on payments	Lukhele, 1990; Godoy <i>et al.</i> , 1998; Wong & Godoy, 2003; Heemskerk <i>et al.</i> , 2004
8. Agricultural diversification, changes in agricultural practices, changes in crop type and food storage	Godoy <i>et al.</i> , 1998; Scherr, 2000; Heemskerk <i>et al.</i> , 2004
9. Changes to household spending and food consumption (including changes to both the quantity and quality of meals as well as reductions in the number of meals consumed)	Maxwell <i>et al.</i> , 1999
10. Waged labour	Wong & Godoy, 2003; Heemskerk <i>et al.</i> , 2004
11. Selling food, goods and services (including prostitution)	De Waal & Whiteside, 2003; Heemskerk <i>et al.</i> , 2004

Household coping strategies can be differentiated into individual versus risk-sharing strategies as well risk-management (ex-ante) and risk-coping strategies (ex-post) (Skoufias, 2003; Wong & Godoy, 2003; Dekker, 2004). Risk-sharing strategies are common amongst people living close to each and can include relatives

and non-relatives. Individual strategies involve household strategies, used when households are faced with sudden increased expenditure and cash needs, that are not determined by social capital (Dekker, 2004). Risk-management strategies are individual prevention and mitigation strategies households implement prior to crises to reduce risk to household income. The diversification of livelihood strategies practised by many rural communities constitutes a risk-management strategy (Dekker, 2004). Risk-coping strategies are those employed in the wake of a shock to reduce the impacts on the household. They contribute towards consumption-smoothing and include relying on savings (cash and household assets including livestock), credit and kinship (Dekker, 2004). Skoufias (2003) highlights the need to consider the interplay between these risk-management and risk-coping strategies and how they affect household well-being. Some coping strategies are common to communities irrespective of their location, characteristics or the crises experienced whilst other strategies are used more specifically for coping with particular types of vulnerability: according to Maxwell *et al.* (1999) the strategies used vary with the context. There is mixed evidence of the effectiveness of these rural, informal, safety-nets suggesting they insure against small and medium shocks but are often inadequate in the face of larger, covariate shocks (Wong & Godoy, 2003; Heemskerk *et al.*, 2004). Together with the dynamic nature of the vulnerability context, it must be considered that the coping strategies households employ may also be dynamic in nature, altering as households adapt in response to exogenous and endogenous events, shift between different wealth levels and as alternatives become available. De Waal and Whiteside (2003) focussed on responses to the combined impact of food insecurity and HIV/AIDS and argue there is a trajectory of coping strategies that households adopt in sequence depending on the households degree of resilience and the labour available (Figure 5-1). Dekker (2004) also suggests a sequence of ex-post strategies depending on the crisis, its nature and depth.

There are various risks to which rural households are vulnerable and factors that may affect a household's decent into poverty (Sen, 2003). These risks have been identified as a common feature of rural livelihoods, inextricably linked to the chronic poverty many rural households endure (Sen, 2003). This range of risks has been identified by various commentators and includes: famine; crop failure; the loss of assets; ill health/injury; the death of a breadwinner, household members or extended family and the associated funeral costs; adverse market conditions; increased expenditure (e.g. on school fees); inflation; retrenchment, unemployment and income loss; floods, droughts and natural disasters, seasonal crop shortfalls; social ceremonies; food shortages; the establishment of micro-enterprises; divorce and old-age (Pattanayak & Sills, 2001; Sen, 2003; Wood, 2003). Households employ a range of coping strategies in response to these (Table 5-1).

Resilience	High	<ul style="list-style-type: none"> • Reducing food consumption • Reliance on family networks 	<ul style="list-style-type: none"> • Agricultural wage labour (harvesting) • Gathering wild foods • Producing crafts
	Low	<ul style="list-style-type: none"> • Sale of essential assets <ul style="list-style-type: none"> • Crime • Commercial sex work 	<ul style="list-style-type: none"> • Agricultural wage labour (planting, weeding) • Selling charcoal, firewood • Begging
		Low	High
		Labour requirement	

Figure 5-1 Course of livelihood coping strategies undertaken by households afflicted by food crises
(Source: De Waal & Whiteside, 2003)

Rural communities are not homogenous units, rather, within any given community there are numerous factors that distinguish households and determine their livelihood strategies, their vulnerability context, their access to resources and their ability to cope. This study selected household wealth and gender of the de jure household head as characteristics for comparison. According to Dekker (2004) household wealth plays a role in determining the strategy used: with a greater asset base wealthy households are better positioned to rely on individual strategies whilst poorer households depend more on risk-sharing options. In an assessment of post-famine livelihood diversification in Ethiopia, Block and Webb (2001) noted that households with a more concentrated asset base (particularly poor and female-headed households) struggled to cope with the impacts of famine and to diversify their livelihoods in response. Whilst poorer households are generally more vulnerable to shocks, the impacts of particular crises (e.g. floods) are not correlated with wealth although the extent of impact may vary. Gender has also been documented as affecting the coping strategies employed, for example Heemskerk *et al.* (2004) found that kinship, food storage, planting a diversity of crops and plots as well as rotating cash systems, were more common amongst women than men.

Wunder (2001) identifies four predominant pathways out of poverty: i.) the multi-activity path (livelihood diversification); ii.) the rural-urban migration path (involving labour movement and reallocation); iii.) the agricultural path (the standard rural development model) and, iv.) the assistance path (including aid, transfers and public investments). Fisher (2004) identifies livelihood diversification as an important risk-mitigation strategy. The diversification of livelihood activities is a common feature of rural households coping with poverty (Chapter 3). In response to vulnerability, rural households adopt a wide range of livelihood strategies to meet basic needs on a daily basis but also to cope with times of increased adversity. By spreading the risk over a household's entire asset base, households aim to minimise the effects of shocks and adverse times (Pattanayak & Sills, 2001). According to Moser (1998, p5) "there is growing recognition that the poor are strategic managers of complex asset portfolios". Block and Webb (2001) also draw attention to this perception of the rural poor as expert managers of adversity (particularly in marginal environments). However, in their assessment of the impact of HIV/AIDS and persistent food insecurity on rural households, De Waal and Whiteside (2003) conclude that households are merely struggling in the face of this "new variant famine", not coping. Whilst livelihood diversification is seen as a pre-emptive decision to minimise vulnerability, how households diversify is often determined by previous misfortunes and past choices. Households therefore may adapt their overall livelihood portfolio depending on the new conditions as well as how they coped with previous crises (Block & Webb, 2001). Kepe (2002) points out that although livelihood diversification may provide a buffer to risk it may also constitute a poverty trap. Households diversify into both off-farm and land-based livelihood strategies (Chapter 3). Included in these land-based livelihood strategies is the use and sale of NTFPs.

5.1.3 The rural safety-net function of NTFPs

Many poor, rural households both live in and depend on forests, deriving multiple benefits from the goods and services provided (Shackleton & Shackleton, 2004; Belcher *et al.*, 2005). These extend beyond the direct-use value and associated cost saving, and include indirect benefits and an important "gap-filling" and "safety-net" function (Pattanayak & Sills, 2001; McSweeney, 2004; Shackleton & Shackleton, 2004). This safety-net function has attracted increasing interest recently and Shackleton and Shackleton (2004) suggest that the direct-use values of NTFPs don't adequately reflect the safety-net function offered by these products. NTFPs as a rural safety-net offer both consumption and income smoothing options (Pattanayak & Sills, 2001). Godoy *et al.* (1998) argues that forests offer two forms of insurance: the first is through providing liquid assets (NTFPs) and the second, non-liquid assets including goods and services that contribute towards other livelihood strategies and therefore household security. Scherr (2000, p490) emphasises that "access by the landless and rural poor to basic subsistence resources – farmed and gathered food, fodder, water, fuel, building materials, medicines, raw materials for tools and housewares – is essential for livelihood security." Households rely on a diversity of wild foods to provide food security and to supplement diets, on medicinal plants for treating both people and livestock, on construction materials and on the sale of a range of products to fill income gaps and provide necessary cash (Wunder, 2001; Dovie, 2003). These resources offer both a cost-saving and a safety-net when households are cash-strapped and are sold in response to periods of low economic activity, low crop productivity and drought (Dovie,

2003). In light of this there is an increasing focus on the potential role of forests, including timber and non-timber forest products (NTFPs), in economic development and poverty reduction strategies (Angelsen & Wunder, 2003). It is argued that the safety-net function of forests must not be endangered without providing viable alternatives (McSweeney, 2005). Large-scale forest loss in many of these areas therefore not only threatens biodiversity but undermines livelihood security (Belcher *et al.*, 2005). Within the South African context, HIV/AIDS has been described as responsible for a shift in the importance of rural areas: whereas rural households have often been found to rely heavily on off-farm sectors for livelihood security, urban families affected by HIV/AIDS are now returning to their rural bases to cope (De Waal & Whiteside, 2003). This has implications for rural safety-nets including NTFPs as increasing numbers of people turn to the insurance offered (De Waal & Whiteside, 2003). Pattanayak and Sills (2001) suggest that forests may constitute either a safety-net or a poverty trap. This sentiment is shared by Wunder (2001) who expresses that whilst forests may provide a safety-net they may not necessarily provide a pathway out of poverty that matches that provided by more transformative land-use options. Fisher (2004) on the other hand describes a potential feedback loop whereby forests contribute positively towards poverty alleviation which may in turn reduce harvesting pressure. Included in De Waal and Whiteside's (2003) course of coping strategies is the use and sale of non-timber forest products. Whilst these are not the initial strategies adopted they are also not strategies of last resort. De Waal and Whiteside (2003) indicate that the initial reliance on NTFPs as a rural safety-net manifests itself through the use of NTFPs particularly wild foods and through the production of crafts. This is followed at later stages by the sale of NTFPs with a particular focus on fuelwood.

Despite the increasing awareness of the potential role played by natural resources (and NTFPs in particular) in helping households cope with periods of vulnerability the empirical evidence of this function, its prevalence and how it manifests is still sparse (Godoy *et al.*, 1998; Wunder, 2001; McSweeney, 2005). In particular i.) what proportion of rural households use NTFPs as a safety-net, ii.) who relies on NTFPs as a safety-net (do particular household characteristics determine the reliance on NTFPs as a safety-net), iii.) whether the existing use of NTFPs affects the safety-net role, iv.) the manner in which this safety-net role manifests (i.e. through increased use or sale of these products), v.) the circumstances in which people turn to these resources and the period of time they do so, (vi) the affect of different forest types, resource abundance and management on the safety-net function, vii.) the impact of different institutional contexts and, viii.) the affect of different market contexts, are all still unclear (McSweeney, 2003). Additionally how NTFPs fare against other coping strategies warrants investigation, particularly considering the range of strategies households may employ and, when advocating the role of NTFPs in poverty alleviation. A reliance on NTFPs as a rural safety-net may only transpire if there are no cheaper alternatives (Godoy *et al.*, 1998; Neumann & Hirsh, 2000). It is assumed that the used of NTFPs as a rural safety-net is an aggregate trait but the question stands as to whether all households turn to these resources equally or whether certain household characteristics influence dependence (McSweeney, 2003). In light of these gaps in the understanding and appreciation of the potential safety-net role of NTFPs, this study set out to examine the rural safety-net function within two rural villages in South Africa thereby contributing towards an understanding of this role.

The preceding two chapters have given some insight and understanding into the nature of rural livelihoods in two villages in the Eastern Cape and Limpopo provinces. The suite of livelihood strategies adopted by rural households as well as households' accumulated asset bases, have been investigated stratifying the sample according to household wealth and the gender of the de jure household head. Included in these livelihood strategies is the use and sale of NTFPs. Having examined the range of livelihood strategies of households in the two study sites, this chapter sets out to establish the households' vulnerability context, the range of coping strategies at their disposal and where the use of NTFPs as a rural safety-net fits into this broader suite of strategies. This chapter examines the rural safety-net role of NTFPs with the intention of answering the key questions established at the outset of the research regarding the prevalence and manifestation of the rural safety-net role of NTFPs within rural livelihoods in South Africa.

5.2 Results

5.2.1 Variations in vulnerability

Rural households are vulnerable to shocks, trends and seasonality (DFID, 1999). According to DFID (1999) shocks are generally unpredictable in nature and include human health, crop and livestock health, natural and economic shocks. Trends are more predictable and do not necessarily impact negatively on households. These include population, resource, and technological trends as well as trends in governance and national/international economic trends. Seasonality is taken to include the seasonality of prices, production, health and, employment opportunities and is described by DFID (1999) as one of the greatest enduring sources of hardship for the poor in developing countries. Vulnerability is dynamic both spatially and temporally. Whilst this study focussed on a two year period, there are broader and historical trends and changes in the social, economic and bio-physical environments in which households exist, that provide an appropriate context (Tables 2-7 & 2-7; Appendices 7-3 & 7-4). In particular residents felt:

- 1.) Natural shocks related to climatic changes (including droughts and floods). Drought is associated with livestock losses, decreases in grazing land and arable agricultural production. Floods are associated with the loss of life and, damage to and loss of property and infrastructure.
- 2.) Political instability and change which has affected access to land and resources as well as infrastructural development.
- 3.) Human health shocks and increasing mortality related to what respondents described as "incurable diseases" such as HIV/AIDS, tuberculosis and malaria.
- 4.) Economic shocks including increasing unemployment.

Households also experience increased levels of hardship throughout the year characterised by increases in crop diseases and pests, crop shortfalls, disease in livestock and humans, high expenditure and related shortages in available cash (Appendices 7-5 & 7-6).

5.2.2 Detailed crises

During the participatory rural appraisal respondents identified a range of anticipated and unanticipated crises to which rural households are vulnerable (Table 5-2).

Table 5-2 Identified anticipated and unanticipated crises

Crisis	Description
1. Anticipated Crises	
Annual expenses	Expenses associated with school fees and related costs, e.g. school stationery & uniforms
Social expenses	Expenses associated with social events including Christmas, Easter and traditional ceremonies
Agricultural expenses	Expenses associated with arable agriculture, e.g. hiring ploughs, buying seed and fertiliser, etc.
Seasonal crop shortfalls	Crop shortages resulting from seasonal fluctuations in planting and production
2. Unanticipated Crises	
Livestock diseases/death	Expenses involved in the treatment of livestock diseases and the impact of losing livestock
Crop loss/damage	Crop loss/damage (including total failure) resulting from pests, heavy rains, diseases, poor seed
Loss of/damage to property	Property lost or damaged as a result of fire, weather, theft, etc.
Illness/injury	Illness/injury of household members and associated costs including medical, loss of income, etc.
Death/funeral expenses	Costs associated with the funeral of household members or extended family
Loss of income	Loss of income resulting from retrenchment, injury, etc.
Increased living costs	Increasing costs associated with increasing rates of inflation

Four types of expected or anticipated vulnerability were identified (Table 5-3 & 5-4) and seven unanticipated shocks (Table 5-5 & 5-6). During the two year period all of the sampled households experienced at least of these shocks, with some households experiencing several.

5.2.2.1 Anticipated crises

These anticipated crises are experienced irrespective of household wealth or gender of the de jure household head. Gender of the de jure household head does not significantly influence vulnerability to these crises although household wealth does with each shock reported by a significantly greater proportion of wealthy households (Table 5-3 & 5-4). Over the two year period annual school fees were reported by the greatest proportion of households followed by social expenses, seasonal crop shortfalls and agricultural expenses.

Table 5-3 Proportion of all households (%) in both sites experiencing anticipated crises over a two year period – stratified by household wealth and gender of the de jure household head

	Total	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Annual expenses	72.0	84.0	60.0	7.1	<0.05	70.7	76.0	0.3	>0.05
Social expenses	67.0	82.0	52.0	10.2	<0.05	68.0	64.0	0.1	>0.05
Agricultural expenses	44.0	54.0	34.0	4.1	<0.05	49.3	28.0	3.4	>0.05
Seasonal crop shortfalls	45.0	58.0	32.0	6.8	<0.05	49.3	32.0	2.3	>0.05

Table 5-4 Description of anticipated crises

Anticipated Crisis	Details
Annual expenses	<ul style="list-style-type: none"> • 72 % of households paid fees for school going children or those at a tertiary institution • Significantly more wealthy households reported paying school fees • The difference for male- and female-headed households is not significant • This period of high expenditure is experienced at the start of the academic year (i.e. January) • Households are still recovering from the expenses associated with Christmas
Social expenses	<ul style="list-style-type: none"> • 67 % of households reported covering costs associated with these social events • The difference is significant for wealth with wealthy households in a position to cover the expenses – many poor households considered this to be an unnecessary expense • Those poor households that do celebrate often celebrate select ceremonies whilst wealthy households celebrate a variety. • Poor households rely on wealthy family or community members to host these events • The difference for gender of the de jure household head is not significant • The subsequent months are marked by cash shortages (Appendices 7-5 & 7-6)
Agricultural expenses	<ul style="list-style-type: none"> • 44 % of households reported covering agricultural expenses over the two year period • A significantly greater proportion of wealthy households paid for various agricultural expenses • The difference for gender of the de jure household head is not significant • Households have to deal with this high expenditure at the beginning of summer when the planting season begins and late summer/early autumn when fields/gardens are harvested (Appendices 7-5 & 7-6)
Seasonal crop shortfalls	<ul style="list-style-type: none"> • Agricultural productivity is reduced in the winter months (Appendices 7-5 & 7-6) • 45 % of households faced seasonal crop shortfalls over the two years • A significantly greater proportion of wealthy households reported crop shortfalls • The difference for gender of the de jure household head is not significant

5.2.2.2 *Unanticipated crises*

These unanticipated crises are experienced irrespective of household wealth or gender of the de jure household head. There are no significant differences as determined by wealth or gender of the de jure household head with the exception of livestock diseases and/or illness which was reported by a significantly greater proportion of wealthy households (Table 5-5 & 5-6). With respect to the risks experienced (i.e. excluding the trend of increasing living costs), the greatest proportion of households reported illness/injury to household members whilst loss of income was experienced by the smallest proportion of households. Seventy-eight percent of households indicated an increasing trend in the overall cost of living.

Table 5-5 Proportion of all households (%) in both sites experiencing unanticipated crises over a two year period – stratified by household wealth and gender of the de jure household head

	Total	Wealthy	Poor	χ^2	Significance	Male-head	Female-head	χ^2	Significance
Livestock diseases &/or death	38.0	58.0	18.0	16.9	<0.05	42.7	24.0	2.8	>0.05
Crop loss &/or damage	43.0	48.0	38.0	1.0	>0.05	46.7	32.0	1.7	>0.05
Total crop failure	33.0	36.0	30.0	0.4	>0.05	36.0	24.0	1.2	>0.05
Loss of &/or damage to property	50.0	52.0	48.0	0.2	>0.05	48.0	56.0	0.5	>0.05
Illness &/or injury to household members	66.0	72.0	60.0	1.6	>0.05	66.7	64.0	0.1	>0.05
Death &/or funeral expenses	39.0	48.0	30.0	3.4	>0.05	41.3	32.0	0.7	>0.05
Loss of income	24.0	16.0	32.0	3.5	>0.05	24.0	24.0	0.0	>0.05
Increasing living costs	78.0	80.0	76.0	0.2	>0.05	76.0	84.0	0.7	>0.05

Table 5-6 Description of unanticipated crises

Unanticipated Crisis	Details
Livestock disease and/or death	<ul style="list-style-type: none"> 38 % of households expressed experiencing disease in their livestock which in certain cases led to the death of the animal/s A significantly greater proportion of wealthy households experienced this shock The difference is not significant for gender of the de jure household head
Crop damage and/or loss – including total crop failure	<ul style="list-style-type: none"> For households involved in arable agriculture, periods of vulnerability are both expected (i.e. agricultural expenses and seasonal crop shortfalls) and more random Damage to and/or loss of crops was experienced by 43 % of households 33 % of households experienced total crop failure. The others were able to salvage some of their crop. Neither the difference for household wealth nor gender of the de jure household head is significant
Loss of and/or damage to property	<ul style="list-style-type: none"> 50 % of households experienced loss of and/or damage to property (assets) This included the loss of clothes, food and furniture resulting from theft, rain-damage, rats and fire. Houses had also been damaged or destroyed by strong winds, hail, heavy rain and fire. Neither the difference for household wealth nor gender of the de jure household head is significant
Illness and/or injury of household members	<ul style="list-style-type: none"> 66 % of households had members who were or had been ill or injured during the two year period All but one of these households treated their ill/injured member/s by either taking them to the doctor/clinic or by relying on medicinal plants. In the household that didn't treat, the injury was a minor and temporary one Neither the difference for household wealth nor gender of the de jure household head is significant Associated with illness/injury is the affect on household labour and/or income Certain times of the year are associated with poor health (Appendices 7-5 & 7-6)

Death and/or funeral expenses	<ul style="list-style-type: none"> • 39 % of households experienced the death of a household or extended family member • Households contribute towards the funeral expenses of both resident and non-resident family members • Neither the difference for household wealth nor gender of the de jure household head is significant • Households (both family and community) assist each other with food, money and livestock
Loss of income	<ul style="list-style-type: none"> • 24 % of households had experienced the loss of an income source during the two years • This includes death of the income earner or household member receiving a government grant; job loss resulting from illness/injury, retrenchment, suspension (usually temporary), resignation or retirement; the completion of temporary employment (whereby households altered their lifestyle during the period of employment) and; the retraction of a government grant (e.g. a child reaching the cut-off age for child-support grants) • In some cases this loss was permanent, in others only temporary until the household member had, for example, recovered from their illness/injury and returned to work; found another job or, received an old-age pension • Neither the difference for household wealth nor gender of the de jure household head is significant
Increasing living costs	<ul style="list-style-type: none"> • Group discussions indicated that an increased reliance on NTFPs often resulted from increasing living costs and not only short-term periods of vulnerability • 78 % of households felt inflation and the increasing price of food and household goods had become a problem and that they were no longer able to buy all they could in the past • Neither the difference for household wealth nor gender of the de jure household head is significant

5.2.3 General coping strategies

For each crisis there is a range of coping strategies that households employ (Figures 5-1 → 5-11). Some of these strategies are common to more than one crisis whilst others are specific to the crisis in question. Common coping strategies include relying on NTFPs; relying on kinship and community-support networks; selling livestock; reducing household spending on luxury goods and food stuffs; changing the household diet (either quantity and quality of each meal or reducing the number of meals per day); saving/budgeting for particular expenses or for emergencies in general and, relying on stokvels (Table 5-7). With respect to stokvels this implies either relying on the loan function or on the out-payments. Other coping strategies mentioned in both the interviews and the group discussions include agricultural adjustments and increased cultivation; selling assets; borrowing from loan sharks; leaving the village to look for work; providing labour within the community in return for either money or food and, removing children from school. Household responses to the increasing cost of living are not included in the proportions listed below but are detailed in Figure 5-12.

Table 5-7 General coping strategies employed by households in response to anticipated and unanticipated risk

	Total	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
NTFPs	70.0	68.0	72.0	0.2	>0.05	66.7	80.0	1.6	>0.05
Kinship	85.0	80.0	90.0	1.9	>0.05	84.0	88.0	0.2	>0.05
Selling livestock	44.0	58.0	30.0	7.9	<0.05	42.7	48.0	0.2	>0.05
Reduce spending	74.0	84.0	64.0	5.2	<0.05	73.3	76.0	0.1	>0.05
Diet	72.0	84.0	60.0	7.1	<0.05	74.7	64.0	1.1	>0.05
Saves	72.0	88.0	56.0	12.7	<0.05	76.0	60.0	2.4	>0.05
Stokvels	41.0	64.0	18.0	21.9	<0.05	42.7	36.0	0.3	>0.05

The coping strategy used by the greatest proportion of households during the two year period, in response to the identified crises, was relying on kinship (including migrants) and community-support networks (85 %). Seventy-four percent of households reduced household spending, 72 % changed the household diet & relied on savings/budgeting respectively, 70 % relied on NTFPs, 44 % sold livestock and 41 % turned to their stokvels. There are no significant differences for any of these strategies when taking gender of the de jure household head into account however all strategies except for the use of NTFPs and relying on kinship are significantly different for household wealth. A significantly greater proportion of wealthy households sold livestock, reduced household spending, changed the household diet and, turned to their savings and stokvels in response to crises experienced. For wealthy households the top three strategies (in terms of proportion of households relying on them) include relying on savings/budgeting; equally, reduced spending and changes to the diet and finally, kinship. The top three for poor households include kinship, the use and sale of NTFPs and, reduced household spending. For both male- and female-headed households the top strategy is kinship, followed by savings and diet changes in the male-headed households and, NTFP use/sale and reduced spending in the female-headed households.

5.2.4 Possible coping strategies and coping strategy ranking (Participatory Rural Appraisal)

During the PRA a variety of coping strategies, used by households in overcoming periods of vulnerability, were identified. In total eleven strategies were identified, ten of which were common to both villages (Table 5-8). Respondents ranked these in terms of effectiveness in helping households cope, mentioning opportunities and constraints to each.

Table 5-8 Participatory Rural Appraisal ranking of coping strategies

Dyala	Dixie
1. Support from family and friends	1. Support from family and friends
2. Burial societies & stokvels	2. Burial societies & stokvels
3. Using more / different NTFPs	3. Loan sharks
4. Selling NTFPs	4. Change of diet
5. Increased cultivation/agricultural adjustments	5. Leave village to look for work
6. Change of diet	6. Selling NTFPs
7. Loan sharks	7. Selling livestock
8. Leaving village to look for work	8. Using more / different NTFPs
9. Selling livestock	9. Increased cultivation/agricultural adjustments
10. Selling assets	10. Selling assets
11. Taking children out of school	

5.2.4.1 Support from family and friends

In both villages, kinship and community-support networks were ranked as the most important coping strategy. According to one respondent “your family and friends are the first people you approach when you go through a difficult time. You can rely on them to help you and know that they will understand your situation.” This support comes in various forms ranging from people assisting each other to pay school fees, to contributing towards funeral expenses and, helping with food, money and labour. These relationships are generally reciprocal in nature. Households providing labour within the community are generally paid in either cash or kind. “My household depends on the community for support. I help people in their gardens and they give me some of the harvest. My wife helps other women collect fuelwood and is paid with food.”

5.2.4.2 Stokvels and burial societies

These organisations were ranked highly and equally in both villages for their role in aiding households cope with a variety of crises. There is an assortment of these groups, each of which operates in a different manner and serves a different purpose. They are either accumulating or rotating in nature. People are members of either one or several of these. Accumulating groups allow their members to take out loans to be repaid with interest. This facility assists members to cope with both expected and unexpected expenses. In addition to this, the pooled money is shared out between members at a designated time, usually at the end of the year in anticipation of the high expenditure associated with Christmas and school fees. Other groups use the money to buy bulk groceries which are then split between the members. Rotating groups don’t allow for loans and therefore are more useful with expected expenditure such as establishing micro-enterprises. In addition to these stokvels households make contributions to burial societies. According to respondents burial societies are a wise investment as there is no guarantee that you will have money at the time. These societies also differ in nature including those that cover the bulk of funeral expenses, whilst others have the more exclusive purpose of covering the catering costs. One respondent stated: “A relative

died recently but as I'm a member of a stokvel I was not worried. I was able to approach them for help with the funeral costs.”

5.2.4.3 *The increased use of NTFPs*

This strategy was ranked notably higher in Dyala than in Dixie. Respondents in Dyala explained that although people use NTFPs throughout the year, they use them more during difficult times. This is predominantly as a cost-saving, for example, increased consumption of bushmeat when households can't afford to buy meat, the use of fuelwood instead of paraffin and the increased use of medicinal plants when there's no money to go to a doctor. Although people in Dyala ranked this contribution highly, they explained that it is only certain NTFPs that made a significant contribution, particularly fuelwood. When households are cash-strapped they either sell fuelwood or if they cannot afford paraffin they substitute it with fuelwood. In Dixie respondents explained that the seasonal nature of many NTFPs weakens their effectiveness as a rural safety-net although certain adaptive strategies have developed such as the drying of wild edible herbs to ensure a year round supply. Additionally, changing knowledge, skills and values is changing the reliance on NTFPs. In the case of medicinal plants, most people now rely on “western” medicine. According to respondents, the younger generations rely less on NTFPs during times of misfortune: the older generation grew up relying on NTFPs and using them in their daily lives therefore they know the resources and have the necessary skills.

5.2.4.4 *Selling NTFPs*

As a coping strategy, respondents ranked the sale of NTFPs similarly in both villages. Discussions indicated that in Dyala people sell fuelwood, grass hand-brushes (and the grass itself) and medicinal plants during difficult times. They sell predominantly within the village itself but will also sell elsewhere if they really need the additional income. In Dixie respondents were of the opinion that the sale of NTFPs is not a favoured coping strategy and that people do not rely on it extensively. As with the use of NTFPs factors such as loss of knowledge, excludes some households from relying on this strategy. Respondents felt people might turn to NTFPs if they were retrenched and had few other options with fuelwood being the first resource people would sell followed by curios to tourists. Some people might hunt and sell bushmeat to people who don't like to, or can't hunt.

5.2.4.5 *Increased cultivation and agricultural adjustments*

Coping through increased cultivation and by making agricultural adjustments was ranked higher in Dyala than in Dixie. This is possibly linked to the significantly greater proportion of households in Dyala with arable land. According to group discussions in Dyala people's gardens and fields make a considerable contribution to their livelihoods and during difficult times when money is short, people rely more on their arable land, cultivating more to replace the groceries they are unable to buy. Respondents explained that people invest more in their arable land if other income sources are lost (e.g. through the death of a breadwinner). With respect to agricultural adjustments, during dry periods people change to cultivating

crops that require less water. They also store surplus crops although respondents explained that the storage of food is difficult: people struggle to produce enough to meet household needs let alone store for the future. Cultivation is limited by the difficulty in procuring seed. Seed is expensive and with high unemployment, few can afford the cost. People store seed to plant in the future however this is restricted by households' need to first produce sufficient yields to meet household consumption needs and allow for storing of produce. Should the crop fail, households are left facing the expense of purchasing seed. In Dixie group discussions indicated that arable agriculture is too reliant on the rains for increased cultivation to be considered a reliable coping strategy. People do make certain agricultural adjustments in response to crises that affect arable land, including planting hardier crops. People also store maize harvested during the summer to ensure availability into the winter months.

5.2.4.6 *Change of diet*

This adjustment to household expenditure was ranked similarly in both villages and involves either reducing the quantity and quality of food at each meal or reducing the number of meals consumed per day. Some respondents explained that as a result the diet is supplemented with wild foods although this is not always the case. This economic adjustment is practised in response to a range of crises when household income or savings are directed elsewhere. Changes to the household diet can be either an ex-ante or ex-post strategy.

5.2.4.7 *Loan sharks*

Borrowing from loan sharks was ranked higher in Dixie than in Dyala. Group discussions indicated that increasingly people tend to borrow money when expenses arise whereas in the past people relied more on the sale of cattle. Some people borrow from friends/neighbours in the community, others from their stokvels and some from loan sharks (money lenders) based either in the community itself or in the nearby regional centres. There are also money lenders that come to the monthly pension points. Respondents expressed that the advantage of the loan sharks is that the money is immediate. The disadvantage is the very high interest rates therefore people usually turn to loan sharks for more serious and pressing needs. Respondents in Dyala stated that it is only when there is no where else to turn that people will consider approaching loan sharks. The interest on repayment is very high and people struggle to pay back what they have borrowed often resulting in a vicious cycle of increasing debt.

5.2.4.8 *Out migrations - leaving the village to look for work*

Although ranked higher in Dixie this is not a favoured strategy and therefore was not ranked highly in either village. In Dyala respondents explained that this is not an easy option and is only used when other coping strategies have failed. It often requires leaving your dependents behind without food and care. This option also requires an initial investment of money for transport and for the person to survive on whilst seeking employment. During difficult times when households are already cash-strapped, finding this money is difficult and often involves borrowing from family or loan sharks. In addition to this, there is no

guarantee of finding employment. Money is also needed to return to the village, whether the person has found work or not. During the PRA people expressed that this is a strategy relied on upon the death of a breadwinner.

Starting micro-enterprises and relying on self-employment was also discussed. According to respondents this is not an easy coping strategy. Capital is needed to start any venture and in order to get this capital people either need to borrow from family or approach loan sharks.

5.2.4.9 *Selling livestock and assets*

In both villages selling livestock is preferred to selling assets although neither strategy was ranked highly. The ranking is similar for the two villages. In Dyala discussions indicated that many households do not own livestock and therefore can not sell it whilst those who do own livestock, often own only a few animals and therefore are not eager to sell them. The disadvantage with selling assets is that households may not be able to replace them ultimately making them vulnerable to future shocks. In Dixie it was explained that the sale of livestock depends on the situation. For example if the breadwinner of the household is ill and unable to work to provide for his family or, if the household wants the children to receive a tertiary education, then they will sell livestock. People only knew of one person in the community who had sold assets; this was in order to buy alcohol.

5.2.4.10 *Taking children out of school*

This strategy was not mentioned in Dixie and ranked lowest in Dyala. People take their children out of school to either help in the household or to seek employment. This is considered the last alternative as it impacts on the child's (and the household's) future. Even if households do not have the money for school fees there are other options such as negotiating with the principal over the payment and borrowing money. It is only when these options have been exhausted that the household will considered removing children from school.

5.2.5 Coping with individual crises

5.2.5.1 Anticipated crises

5.2.5.1.1 Annual expenses

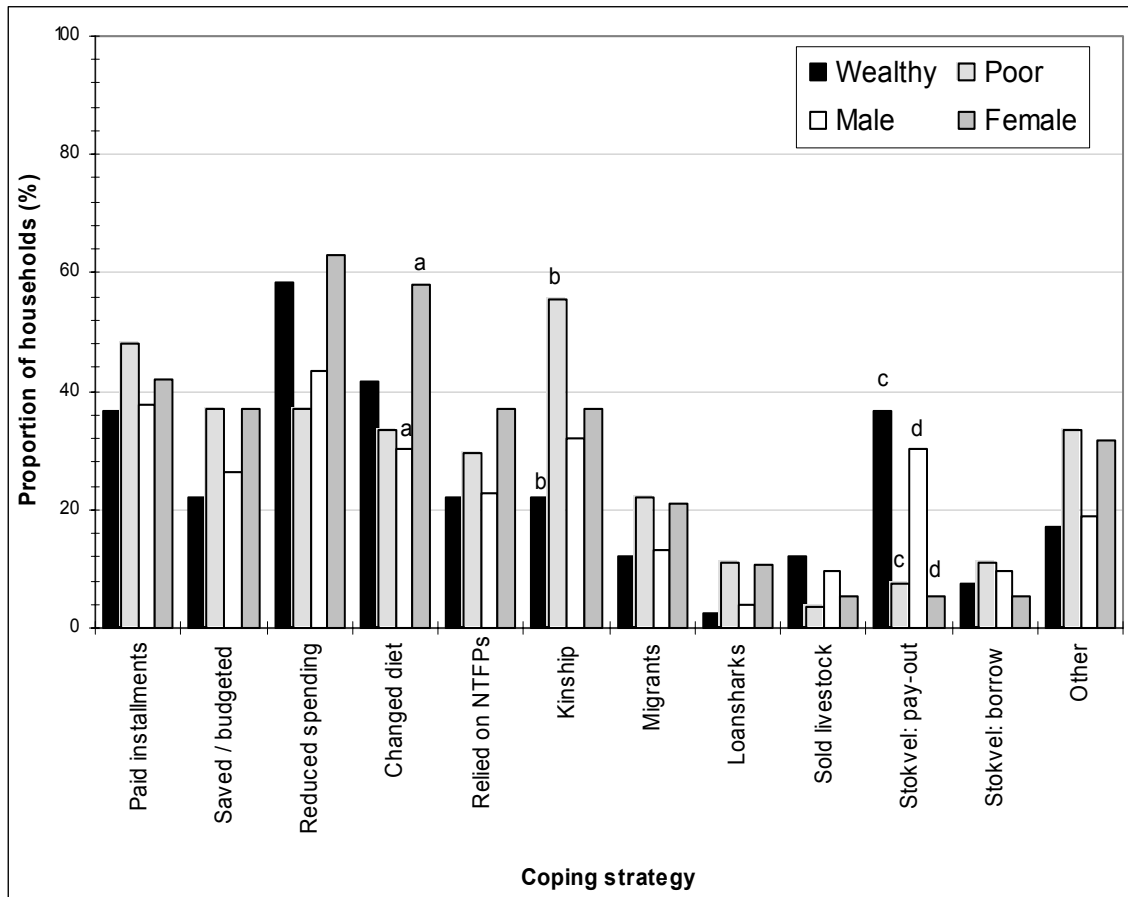


Figure 5-2 Coping with annual expenses (like letters mark significance)

Households cope with the annual expense of school fees by employing a variety of coping strategies (Figure 5-2). Households do not necessarily turn to one of these exclusively but may utilize a combination of strategies to cope. These include paying the fees in installments; saving money in advance; cutting spending on household goods and “luxury” foodstuffs; changing the household diet; relying on NTFPs; relying on kinship, community-support networks and contributions from migrants; borrowing money from loan sharks; selling livestock and, borrowing from stokvels or relying on the December pay-outs from these organizations (Figure 5-2). Respondents in Dixie explained that paying school fees in January is a problem for many households especially as December is an expensive month. Other coping strategies mentioned included removing children from school if the household is unable to pay the fees, finding part-time jobs within the community (e.g. helping other households with their harvesting) and paying before the

December/January period of high expenditure. One household tried to sell household assets but was unable to find a market whilst in Dixie donations from tourists assisted the poorer households in covering the cost.

The identified strategies were utilized irrespective of household wealth or gender of the de jure household head. A significantly greater proportion of poor households relied on kinship and community-support networks than their wealthy counterparts. Wealthy households rely on the end of year payout from their stokvels: this proportion is significantly greater than the proportion of poor households. The top three strategies used by wealthy households involve making internal financial adjustments and relying on financial capital and, include reducing household spending, changing the diet and, equally, paying in installments and relying on the payout from stokvels. For the poor households the primary strategy involved turning to an external support base namely kinship and community-support networks, followed by paying the fees in installments and saving in advance.

With respect to gender, a significantly greater proportion of female-headed households made household economic adjustments by changing the household diet, whilst a significantly greater proportion of male-headed households relied on payouts from their stokvels. With respect to the top three most commonly used strategies, for both male- and female-headed households, reducing household spending was the most common strategy, followed by paying in installments and kinship for the male-headed households and, changing the diet and paying in installments for the female-headed households.

The use of NTFPs as a coping strategy was not significantly determined by either household wealth or gender of the de jure household head. It involved both the increased use and sale of various products. This safety-net role did not fall within the top three most prevalent strategies for either wealth or gender of the de jure household head but was within the top five for all but male-headed households. The increased use predominantly involved fuelwood and wild foods (as substitutes for paraffin and purchased foodstuffs) whilst a variety of products were sold including bushmeat, curios and wood products, grass hand-brushes and fuelwood.

5.2.5.1.2 Social expenses

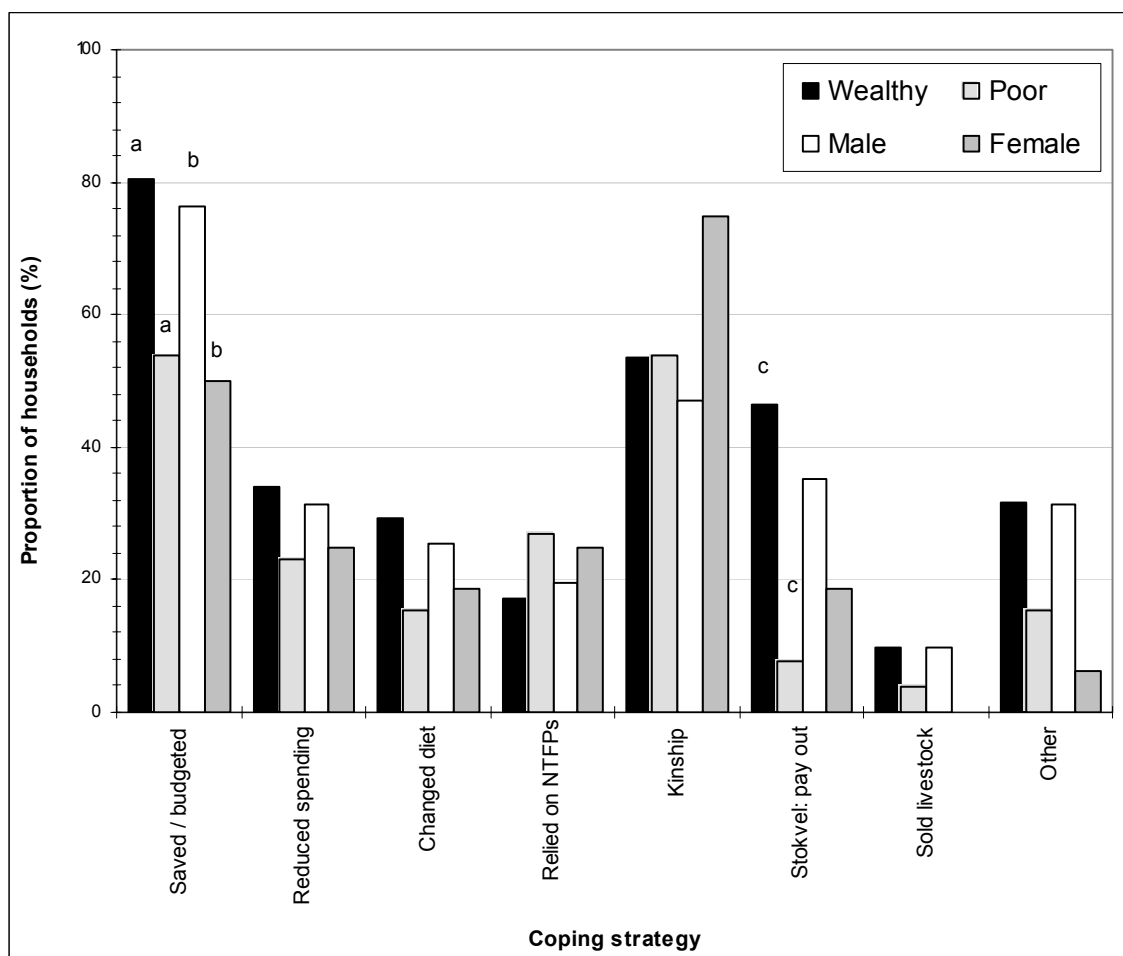


Figure 5-3 Coping with social expenses (like letters mark significance)

As with coping with annual expenses, the mix of strategies employed here ranged from internal economic adjustments to drawing on external support and strategies (Figure 5-3). Internal household adjustments included saving in advance or relying on savings, cutting household spending and, changing the household's diet. Households sold livestock to raise the necessary capital, relied on stokvels to provide money or groceries (this is particularly with respect to costs associated with Christmas) and, relied on kinship, community-support networks and migrant family members to provide money, food, gifts and clothes. NTFPs also contributed towards assisting households meet the challenge of covering these expenses. Other strategies employed included stockpiling groceries in advance, buying goods and paying in installments, relying on Christmas bonuses and taking out loans from the breadwinner's place of work.

With the exception of the sale of livestock, which no female-headed households relied on, all strategies were utilized by wealthy, poor, male- and female-headed households. A significantly greater proportion of wealthy and male-headed households saved in advance or relied on savings to cover this expense than their

poor and female-headed counterparts. Additionally, a significantly greater proportion of wealthy households used their stokvel payouts to contribute towards paying for these social events. Equal proportions of wealthy and poor households identified kinship as a strategy but the nature of how this manifests differed. Wealthy households relied on family and friends to help contribute although they assumed the bulk of the expense. In contrast to this, poor households made smaller contributions and generally celebrated at the household of a wealthy family member. In terms of the top three most utilized strategies, for wealthy households these included budgeting/saving for the expense, relying on kinship and stokvel payouts. Poor households shared the top two strategies with their wealthy counterparts with NTFPs being the third most prevalent strategy. For male-headed households the three most prevalent strategies included saving, kinship and stokvel payouts whilst for female-headed households they were kinship first, reduced spending and NTFPs second and, changed diet and stokvel payouts third.

The rural safety-net function of NTFPs manifested in various ways. For some households the use of certain NTFPs increased either prior to or after the social event as households reduced spending on food and paraffin, supplemented their diets with wild foods and relied more heavily on fuelwood. For others the increased use of NTFPs was associated with the ceremony in question with certain NTFPs being of ceremonial importance. The remaining households sold NTFPs to raise money to celebrate. There was no significant difference in the proportions of households relying on NTFPs as determined by either household wealth or gender of the de jure household head.

5.2.5.1.3 Agricultural expenses

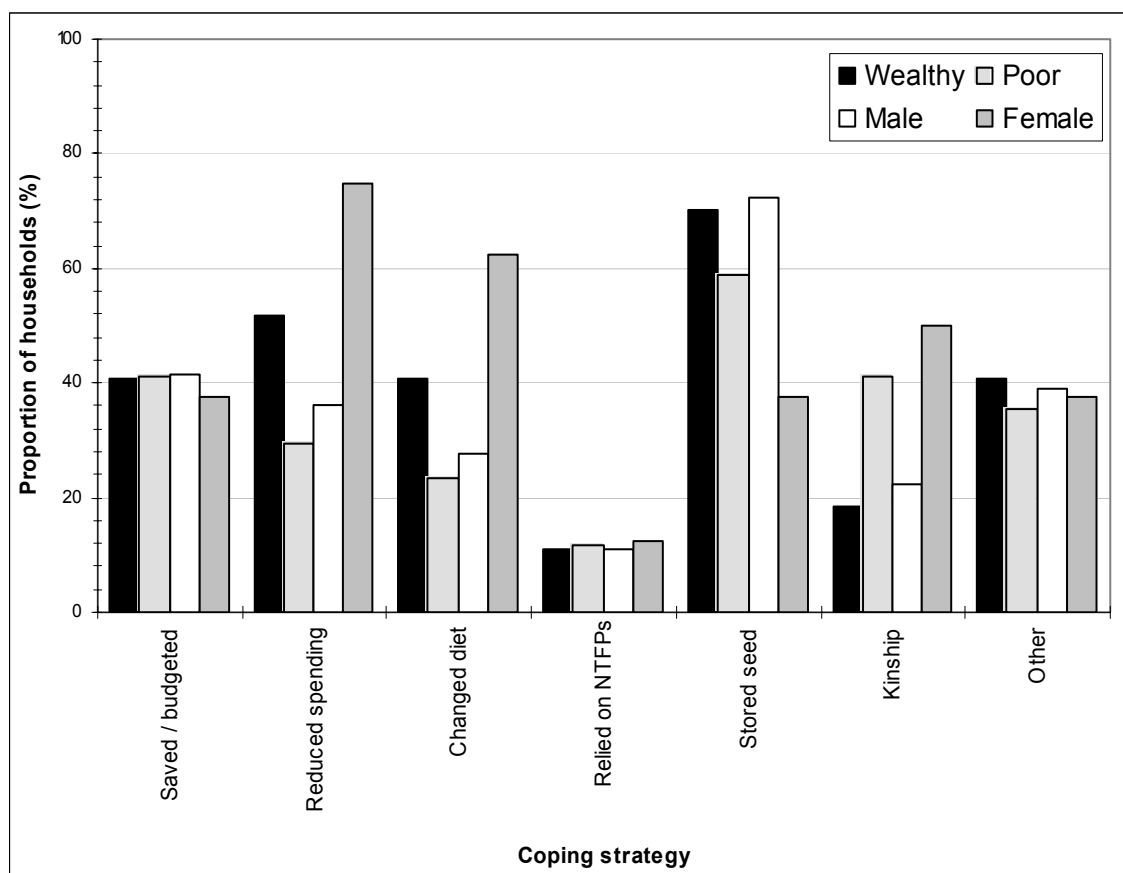


Figure 5-4 Coping with agricultural expenses (like letters mark significance)

Households faced with expenses related to arable agriculture, drew on a range of strategies to deal with these costs (Figure 5-4). Some households anticipate this expense and therefore save/budget in advance. This saving is often associated with reduced household spending on so called “luxury” items. Alternatively following periods of high cash outlay, households reduce their spending on these items until they have recovered. These “luxury” items include certain foodstuffs such as meat, canned goods, sauces/spices or household/personal goods (e.g. paraffin, soap, cosmetics). Households both reduced spending and changed diets in response to agricultural expenses. Households relied on seed collected and stored from preceding harvests rather than purchasing new seed and, on kinship and community-support networks. This assistance comes in a variety of forms including cash, seeds, the loan of ploughs/tractors, labour as well as food and household goods. Other strategies mentioned by households to deal with the costs associated with planting/harvesting arable land included, using draught power (as opposed to tractors), repaying labourers in kind (e.g. with a share of the harvest), selling some of harvest to cover costs, selling livestock, borrowing money from stokvels, only planting when money is available and relying more on home-gardens (which are easier and less expensive to cultivate) than fields.

With respect to household wealth and gender of the de jure household head, there were no strategies significantly favoured by wealthy, poor, male- or female-headed households. For all but the female-headed households the most prevalent strategy was storing seed to save on the cost of buying. For the wealthy households this was followed by reduced spending and changes to the household diet. The poor households saved in advance, relied on kinship and reduced spending whilst the male-headed households saved in advance and reduced household spending. For the female-headed households reduced spending was the primary strategy followed by changes in the diet and a reliance on kinship and community-support networks. With respect to the role played by NTFPs as a safety-net during this time, this was the least prevalent strategy for all groups. The insurance role of NTFPs manifested both through the use and sale of these products. The use included the increased use of fuelwood (as spending on paraffin was reduced) and wild foods (including wild edible herbs, wild edible fruit and bushmeat). Fuelwood was sold. Group discussions indicated reasons households with arable land don't cultivate include the expense involved, a lack of extension services and livestock destroying fields. According to respondents in Dyala, households that cultivate are those that receive government grants as they can afford the seed.

5.2.5.1.4 Seasonal crop shortfalls

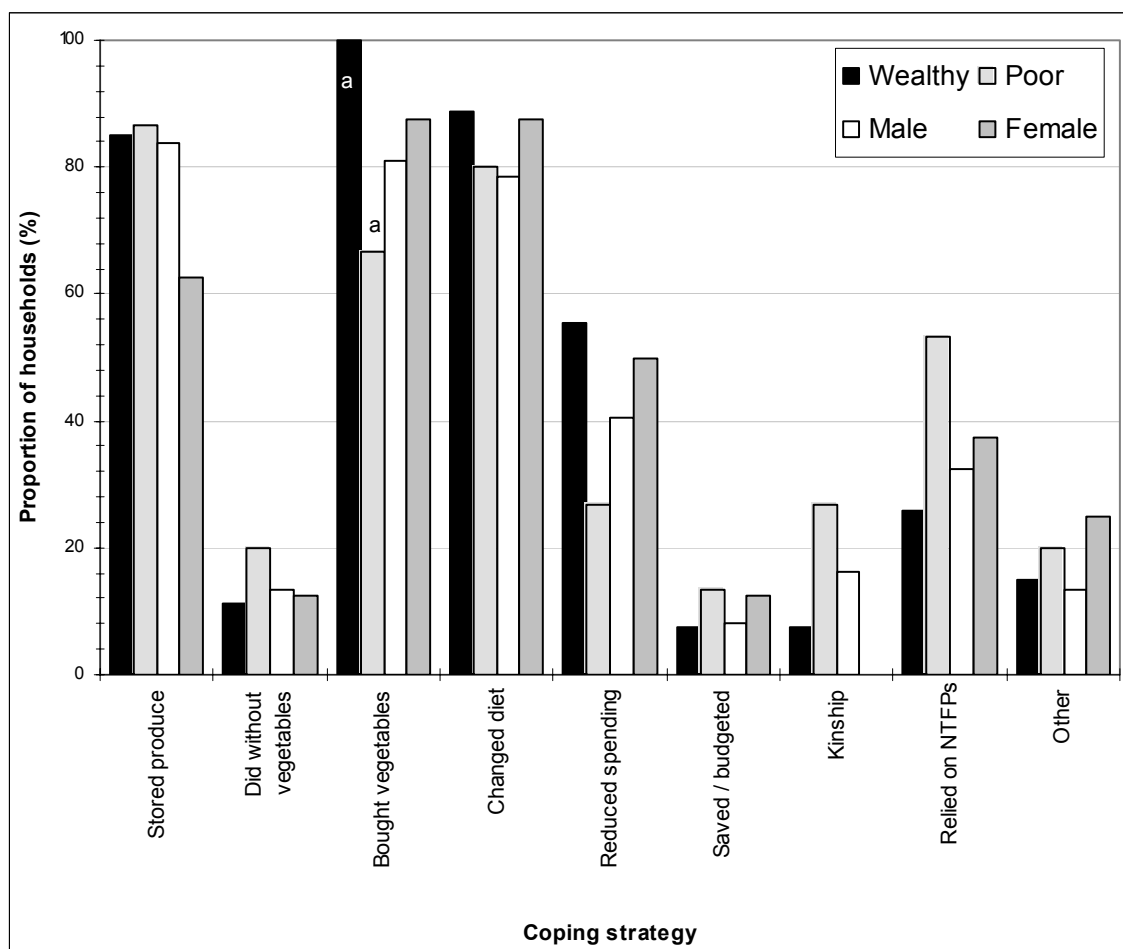


Figure 5-5 Coping with seasonal crop shortfalls (like letters mark significance)

The greatest impact associated with seasonal crop shortfalls is on the household’s diet particularly as few households sell produce from their gardens and fields. Households coped with these crop shortfalls in a variety of ways including storing produce from the summer months (particularly maize); saving or budgeting for these months allowing the household to supplement what they usually harvest from their fields/gardens in the summer with bought vegetables and, relying on kinship and community-support networks. Putting money aside to buy vegetables requires households to cut spending on other goods and/or change the household diet. Households unable to purchase vegetables did without vegetables in their diet during this time. Other strategies mentioned included households making agricultural adjustments such as only planting gardens and planting crops that require less water; buying vegetables on credit from people who come to the village to sell; and selling livestock. Some households stated that they only bought vegetables if money became available whilst others fell behind on their burial society payments to have money available to buy food (Figure 5-5).

The only strategy significantly determined by household wealth was the ability to purchase vegetables to replace those harvested during the summer months. No strategies were significantly different for gender of the de jure household head. With respect to the three most prevalent strategies, these were the same for all households although whilst for poor and male-headed households relying on stored produce dominated, for wealthy and female-headed households this was the purchase of vegetables. Irrespective of household wealth or gender, the contribution made by NTFPs was within the top five most prevalent strategies. Kinship played a lesser role in helping households deal with seasonal crop shortfalls with no female-headed households reporting relying on this strategy. A possible explanation for this is that seasonal crop shortfalls affect all households with arable land simultaneously, leaving everyone to cope with their own losses and less able to assist each other. Those that do manage to cultivate during this time, don't cultivate enough to share with friends and family.

With respect to the safety-net role played by NTFPs during this time, this manifested in the sale of fuelwood to allow for purchasing vegetables; in the increased use of fuelwood (in response to reduced spending on paraffin) and, in supplementing the diet with wild edible herbs. Few households in Dyala supplemented with herbs explaining that the herbs are seasonal and therefore very scarce during the winter months. They're also scarce in Dixie but here households dry the herbs in the summer, storing them for winter. Some respondents expressed that NTFPs are less abundant during the winter months and therefore not the ideal coping strategy.

5.2.5.2 Unanticipated crises

5.2.5.2.1 Livestock diseases and/or death

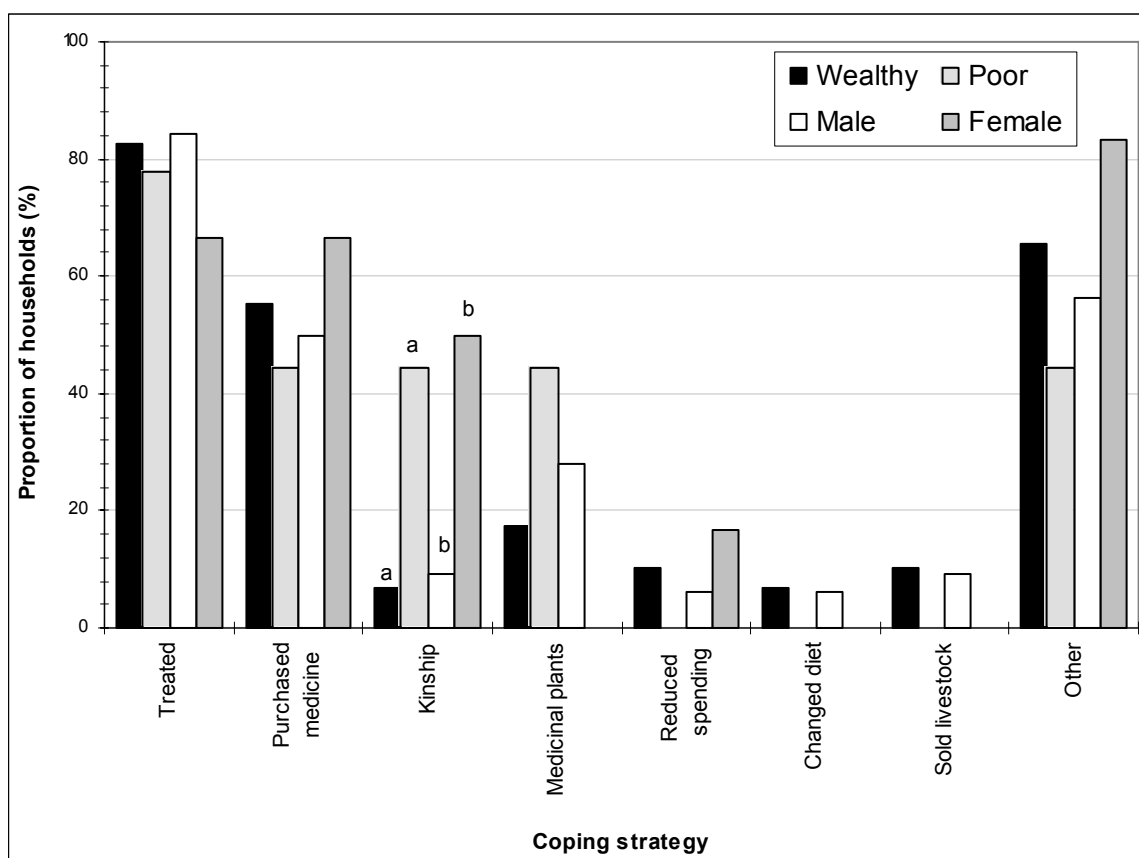


Figure 5-6 Coping with livestock diseases and death (like letters mark significance)

Households that had experienced disease and/or death in their livestock dealt with this shock in various ways (Figure 5-6). Not all households treated their diseased livestock but those that did either used medicine purchased from a vet or they relied on medicinal plants. In cases where households didn't treat, the livestock either recovered or was lost before the household had a chance to react. Strategies employed by households in response to livestock diseases included relying on kinship and community-support networks, reducing household spending, changing the household diet and selling livestock. Less utilized strategies involved borrowing from loan sharks, relying on savings to buy medicine and borrowing from stokvels. In cases where livestock died, households waited for their remaining stock to breed up again, accepted the loss, purchased new stock (using many of the strategies mentioned above) or, in the case of small stock acquired animals as gifts from family and friends.

Wealthy, poor, male- and female-headed households reported treating their livestock for disease, with all four groups also reporting purchasing medicine from a vet/store however, whilst wealthy, poor and male-headed households reported utilizing medicinal plants in the treatment of their livestock, no female-headed

households reported this. Additionally, no female-headed and poor households reported selling livestock to finance the purchase of medicine nor did either of these groups change the household diet in response to increased household expenditure. This is possibly a reflection of the type of livestock owned and the associated cost of treatments. With respect to coping with this particular crisis the poor and female-headed households employed fewer strategies, however not because these strategies are unavailable to them. With respect to the three most prevalent strategies, for wealthy households these included purchasing medicine, using medicinal plants and, equally reducing spending and selling livestock. For poor households, equal proportions of households purchased medicine, relied on kinship and used medicinal plants. Kinship was used by a significantly greater proportion of poor and female-headed households. For female-headed households, the greatest proportion of households purchased medicine, then relied on kinship and reduced spending whilst, for their male-headed counterparts purchasing medicine was followed by the use of medicinal plants and, equally kinship and selling livestock. The rural safety-net function of NTFPs manifested through the use of medicinal plants.

Households stated that disease/death of livestock was a serious problem for reasons including being unable to afford replacing lost livestock, their livestock plays an important insurance role (“my livestock is my bank”), their livestock allows them to pay their children’s school fees and cope with other crises, they rely on livestock products such as milk and meat and, they sell livestock to supplement the household income.

5.2.5.2.2 Crop loss and/or damage

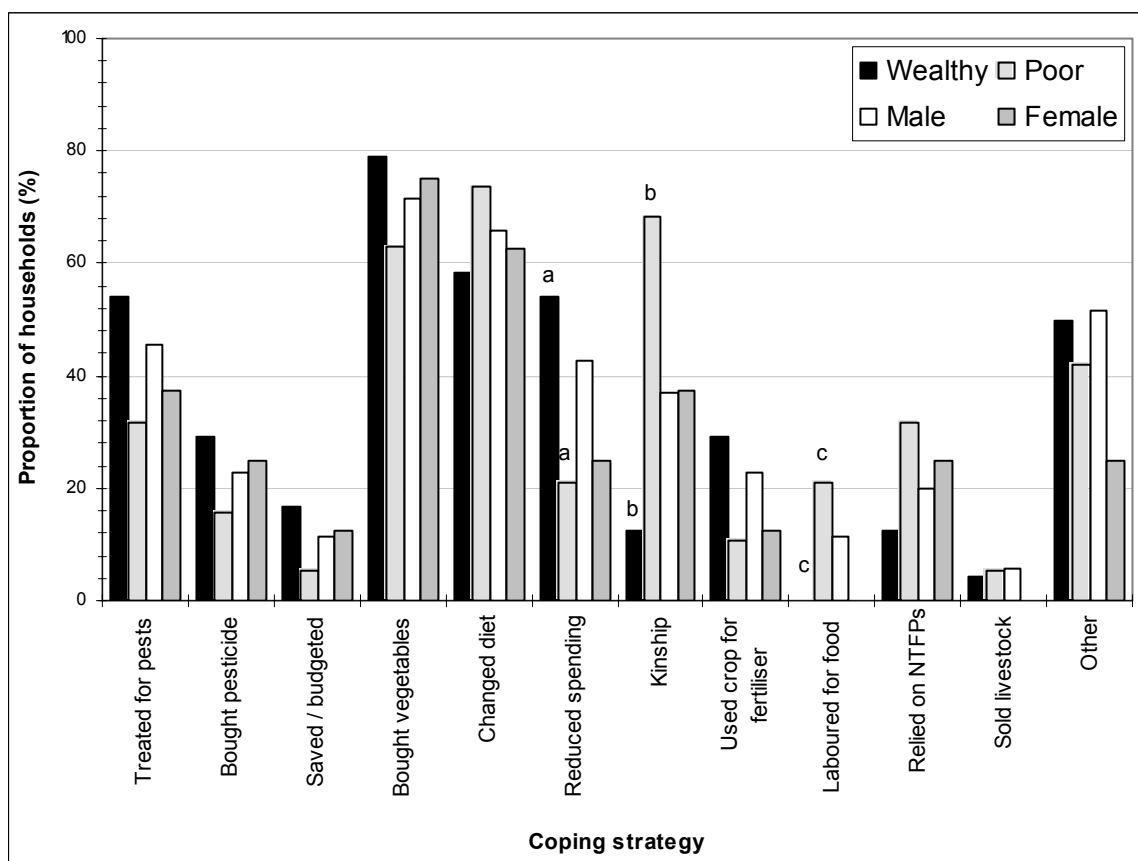


Figure 5-7 Coping with crop loss and/or damage (like letters mark significance)

Once again households adopted a variety of strategies to cope with this shock (Figure 5-7). Respondents indicated that the unexpected loss of produce was a serious problem with households relying on the crop for food, to store for winter crop shortfalls, to use as seed and to sell. In response to crop loss households bought vegetables to make up for the lost harvest, changed their diet and reduced household spending. Kinship and community-support networks came into play with households relying on family, friends and other members of the community to give them vegetables whilst some households provided labour in the community in exchange for money and/or food. Households also sold livestock. Some households were able to salvage some of their crop whilst others gave the damaged crop to their livestock for food or used it as fertilizer, planting again in the hope of more success. Households treated their crops for pests and diseases, either purchasing pesticides or relying on a variety of techniques such as scattering ashes from the fire or, water mixed with washing powder, over the crops. Households also budgeted for the expense of pesticides and other treatments – there are certain times of the year when crop pests are more prevalent (Appendices 7-5 & 7-6).

With respect to the household characteristics of wealth and gender of the de jure household head, most strategies were utilized by households from all groups although only poor and male-headed households reported working in the community in exchange for food and, only male-headed households reported selling livestock to meet the costs associated with crop loss. With respect to those strategies with significant differences between either wealth groups or the genders, a significantly greater proportion of wealthy households reported reducing household spending on luxury goods whilst significantly more poor households relied on kinship and provided labour for food. No strategies were significantly different as determined by the gender of the de jure household head. As far as the top three most prevalent strategies are concerned, for wealthy and male-headed households these included buying vegetables, changing the household diet and treating for pests. For poor and female-headed households treating for pests was replaced by a reliance on kinship and community-support networks.

Households also turned to NTFPs during this time with the use of NTFPs manifesting in the same way as with seasonal crop shortfalls: households reduced spending on paraffin to allow for the purchase of vegetables and pesticides and therefore relied more heavily on fuelwood. Fuelwood was sold and the consumption of wild foods increased however responses indicated this depended on the time of the year and the availability of these foods. Unlike seasonal crop shortfalls which households can anticipate and therefore dry wild edible herbs in preparation, crop loss/damage is more difficult to anticipate. Households from both wealth groups and irrespective of gender of the de jure household head reported relying on NTFPs: there were no significant differences. This use was not a prevalent strategy nor was it the least utilized. With respect to the role played by NTFPs in helping households cope with drought, the time trends indicate no increased use of NTFPs during drought years (Appendix 7-4). Discussions indicated that during these years it was often too dry for wild edible herbs and fruits.

5.2.5.2.3 Damage to and/or loss of property

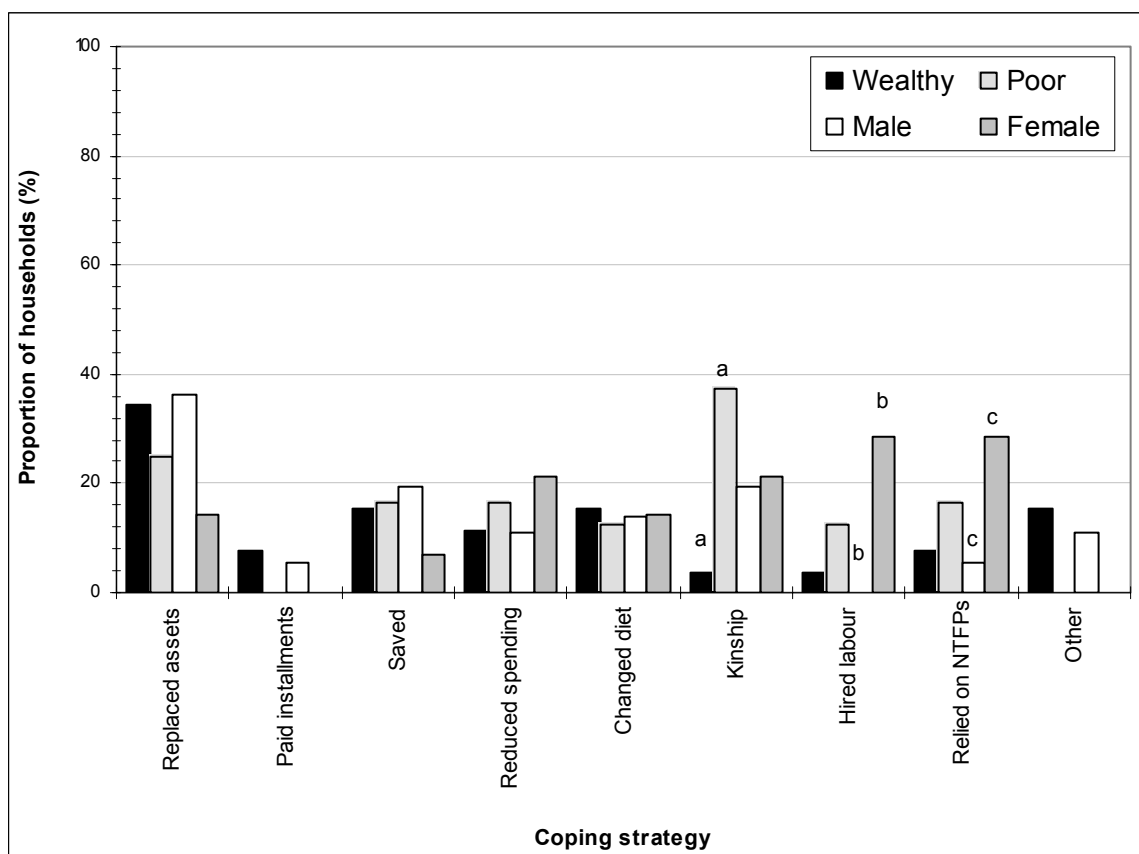


Figure 5-8 Coping with damage to and/or loss of property and assets (like letters mark significance)

As with the other crises households responded to the loss of and/or damage to assets in various ways (Figure 5-8). Households saved money to replace the assets, paid to replace the assets in installments rather than making a once off payment or, paid someone to help repair/rebuild. These payments were associated with cutting household spending and changing the diet. Once again kinship and community-support networks came into play providing affected households with money, food, new assets and labour. Other strategies included borrowing from loan sharks and stokvels. The NTFPs used in response to this crisis were predominantly building materials used to repair/rebuild damaged houses (e.g. thatching grass, building poles, sand) as well as fuelwood. As with other crises fuelwood use was increased as households were required to reduce their spending on paraffin.

With respect to differences as determined by household wealth and gender of the de jure household head, significantly more poor households and female-headed households relied on kinship than their wealthy and male-headed counterparts. Significantly more female-headed households relied on NTFPs. With respect to the most prevalent strategies, these were less clear than for some of the other crises. Replacing assets, saving, changing the diet and reducing household spending were prevalent for all groups however in

addition to these strategies, kinship and a reliance on NTFPs were in the top three for poor and female-headed households.

5.2.5.2.4 Illness and injury

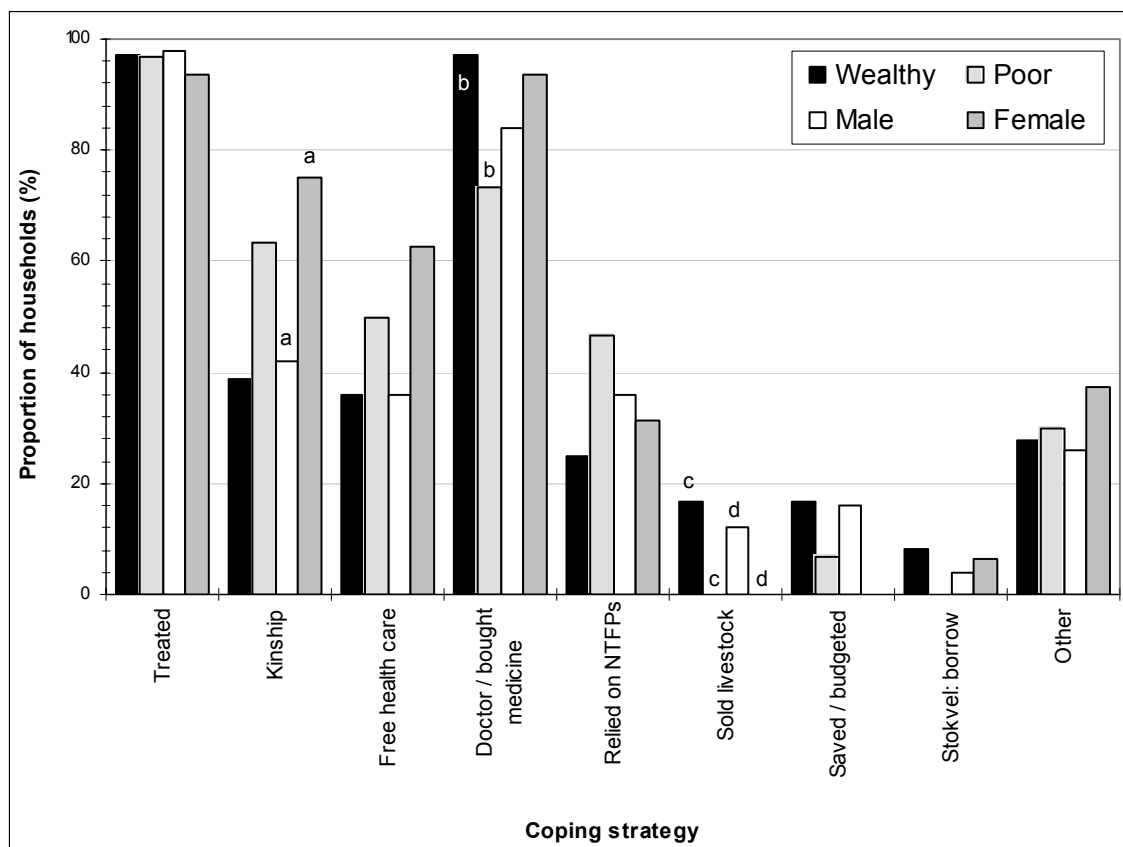


Figure 5-9 Coping with illness/injury (like letters mark significance)

For dealing with illness and/or injury of household members, households relied on treatment from a doctor, hospital or pharmacy; on free health care from the clinic and on medicinal plants (all but three households bought their medicinal plants). There are various costs to the household when coping with illness/injury, above and beyond the cost of the treatment itself. In certain cases the household member's illness/injury affected their ability to contribute labour or income towards the household. For some this loss of income was temporary until the member had recovered, for others however the injury/income resulted in a permanent loss of income (Figure 5-9). Households coped with both the expense of treatment and any resultant loss of income in various ways. Responses to loss of income are detailed in the relevant section (Figure 5-11). Responses to the illness/injury itself and the associated costs included relying on kinship and community-support networks; selling livestock; relying on money saved for such emergencies; borrowing from stokvels and, relying on medicinal plants and other NTFPs. Less common strategies involved borrowing from loan sharks; working in the community for food/money; paying in installments; reducing

household spending and, changing the diet and, relying on the employer or medical aid to cover medical costs. Employed household members who were temporarily ill or injured often received paid leave therefore the household felt little impact to their livelihood other than the medical costs which were often covered by the employer. NTFPs other than medicinal plants, that households relied on in response to crises associated with illness or injury, included wild edible herbs to supplement the diet; fuelwood, used instead of other more costly energy forms; reed mats, bushmeat, thatch grass and fuelwood, all sold to raise money to cover medical and household expenses. During the PRA in Dyala, respondents indicated that the use of medicinal plants is determined not only by the illness itself but also by its severity. In certain cases people felt they would use medicinal plants but in others, they would prefer to use “western” medicines.

Seeking treatment from a doctor and purchasing “western” medicines was a strategy relied on by a significantly greater proportion of wealthy households. Additionally only wealthy households sold livestock and borrowed from their stokvels: the difference for livestock is significant. No female-headed households sold livestock or turned to savings to cover costs but a significantly greater proportion did rely on kinship and community-support networks. The three most prevalent strategies for both wealth groups and irrespective of gender included treatment from a doctor/pharmacy, relying on kinship and seeking free health care. For all groups relying on NTFPs (including the use of medicinal plants) fell within the top five most used strategies. Reliance on kinship included the redistribution of labour within the household with other household members assuming the household responsibilities of the ill/injured member.

5.2.5.2.5 Death and funeral expenses

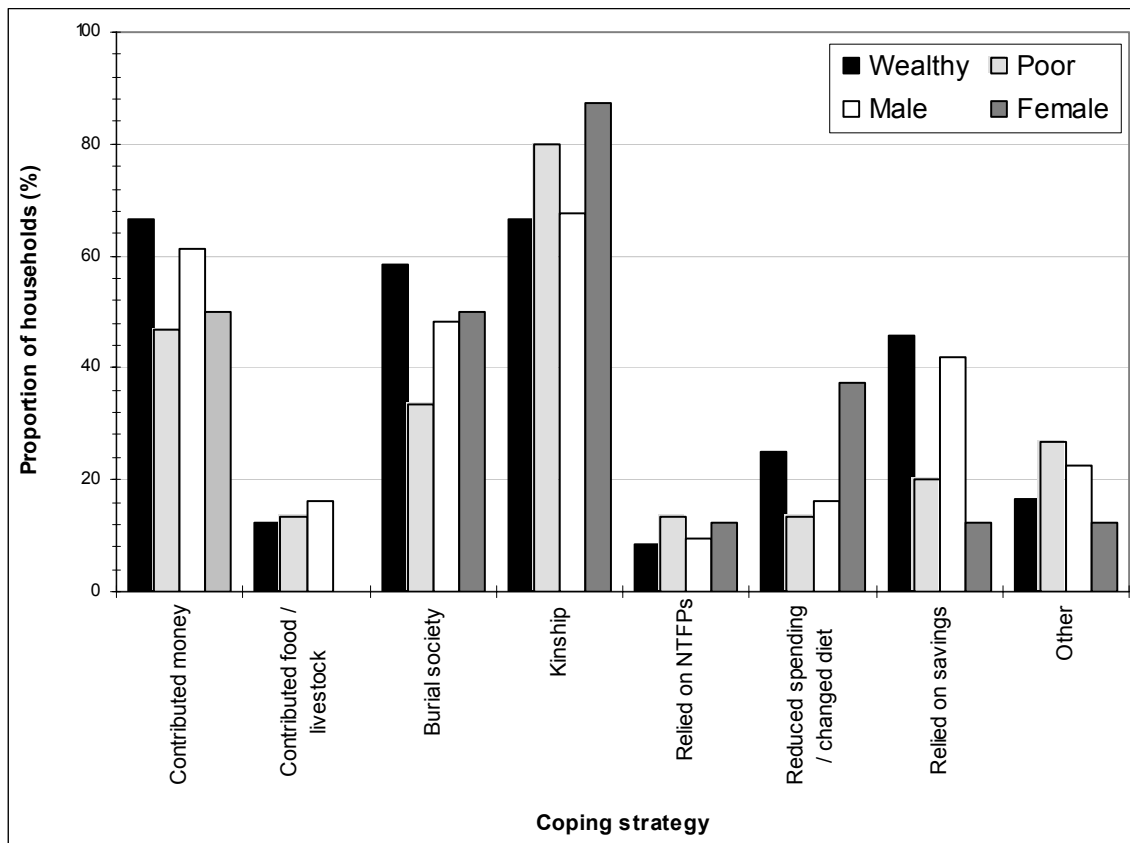


Figure 5-10 Coping with death and funeral expenses (like letters mark significance)

Households that had experienced a death/s of the breadwinner, a household member or an extended family member coped with this loss as well as the costs associated with the funeral and burial, in a number of ways (Figure 5-10). Households contributed money, food or livestock and, to cover the expenses, relied on strategies that included burial societies (either their own or the deceased); kinship and community-support networks; drawing from savings and, cutting household spending and changing the diet. Other strategies included borrowing money from employers, working in the community for money or food and borrowing from loan sharks and stokvels. One household adopted the children of a deceased family member. Cases where the loss of a family member resulted in the loss of an income source have been included in the section on loss of income (Figure 5-11).

No strategies were favoured by significantly greater proportions of households as determined by either household wealth or gender of the de jure household head. Relying on kinship and burial societies were key strategies whilst contributing money (together with other family members) was also favoured.

The use of NTFPs was not a prevalent strategy and as with previously discussed crises this use manifested predominantly through the increased use of fuelwood and wild foods as substitutes and supplements in response to high expenditure.

5.2.5.2.6 Income loss

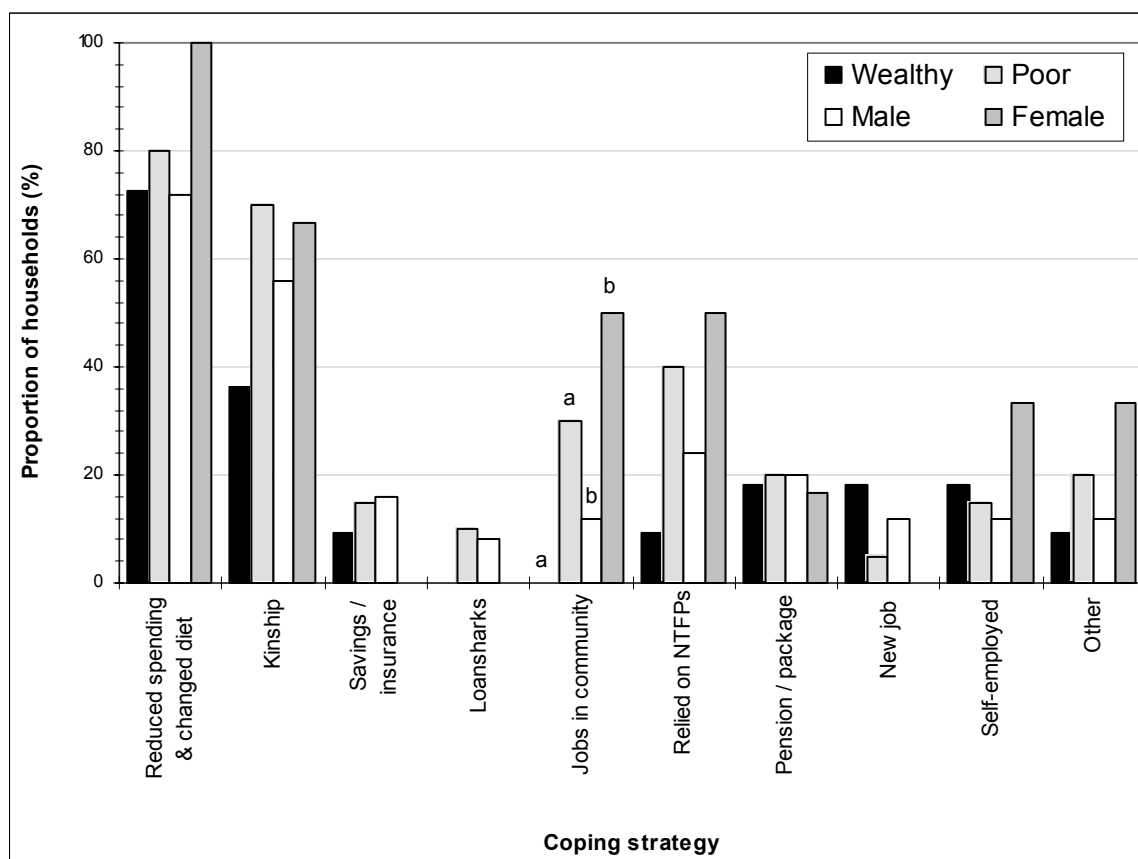


Figure 5-11 Coping with income loss (like letters mark significance)

Households coped with this loss of income by finding jobs in the community in exchange for money/food; relying on kinship and community-support networks; reducing/simplifying household spending and changing the diet; relying on savings and insurance and, borrowing from loan sharks. Households also relied and/or still do rely on NTFPs (Figure 5-11). This reliance involves/d wild foods becoming more important to household diets, the sale of fuelwood to cover household expenses and the production and sale of reed mats and curios. For households making and selling NTFP-based products this has, in some cases become a more of a permanent livelihood strategy. In response to income loss some households started micro-enterprises (and are now self-employed) whilst others managed to find a new job. For those that found new work, many of the strategies acted merely as ‘gap-fillers’ during the period of unemployment whilst for households where the loss is permanent and the member hasn’t received any kind of retrenchment package/pension, reductions in spending and other economic adjustments have become a

permanent state of affairs. During the PRA households mentioned other strategies used to cope with the loss of a key income source including: when one women's husband lost his job the wife took in a foster child so the household was able to claim a government foster grant. Another women's husband was declared mentally unfit and therefore the household was able to claim early pension.

With respect to differences in responses as determined by household wealth and gender of the de jure household head, no wealthy households turned to loan sharks nor did they provide labour in the community in return for money/food (this difference is significant). A significantly greater proportion of female-headed households worked for others in the community in return for money/food. Whilst households from all four categories relied on NTFPs, this use fell within the top three most prevalent strategies for all but wealthy households. Other prevalent strategies included economic adjustments to household spending (and diet) and kinship. For wealthy households, equal proportions received a package/pension, found new employment or started a micro-enterprise. For poor households the third most prevalent strategy was a reliance on NTFPs. For male- and female-headed households the top three strategies in terms of proportions of households relying on them were shared and included reductions to household spending, a reliance on kinship and the use of NTFPs.

5.2.5.2.7 Increasing cost of living

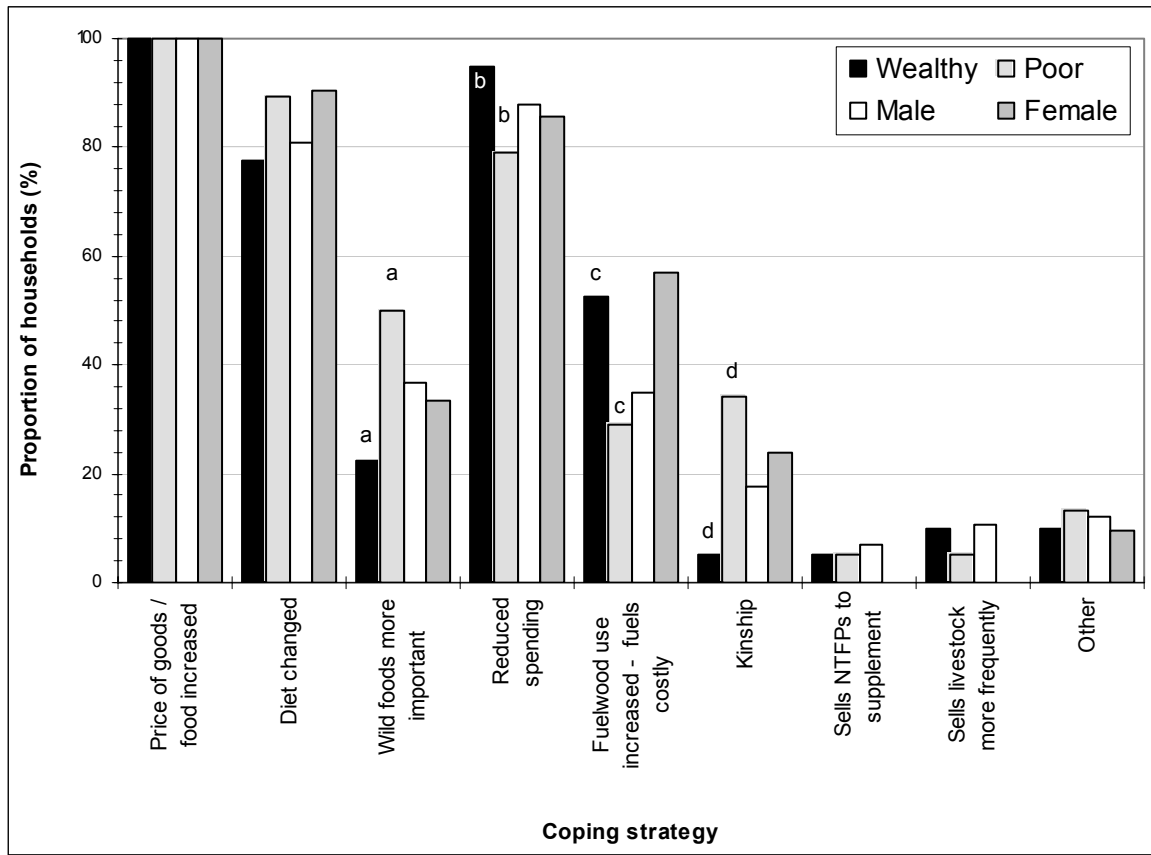


Figure 5-12 Coping with the increasing cost of living (like letters mark significance)

Households have had to make adjustments to their lifestyles in response to the increasing cost of living: changing the household diet, relying more on wild foods to supplement the diet, reducing household spending and increasing the use of and reliance on fuelwood as the price of paraffin and other fuels increases (Figure 5-12). Households rely more on kinship although some stated that these kinship ties are becoming weaker as households struggle to meet their own needs let alone someone else’s. Some households sell livestock more frequently than in the past whilst others have started to sell NTFPs to supplement existing incomes in order to maintain a certain standard of living. Discussions revealed that in the past households had enough money to cover their expenses and still had money left over for saving, spending on luxuries and supporting other family members – inflation has made saving difficult.

With respect to household wealth, significantly greater proportions of poor households stated that wild foods had become more important in their diets and, that they had become more dependent on kinship and community-support networks. Significantly greater proportions of wealthy households have had to reduce spending over the years on “luxury” goods. This includes spending on paraffin and therefore as a result a significantly greater proportion of wealthy households stated that their reliance on fuelwood had increased.

Equal proportions of wealthy and poor households have started to sell NTFPs to supplement existing livelihood strategies although the NTFPs sold may differ with wealthy households involved to a greater extent in the sale of high return products such as curios whilst poor households sell low-return, low-skill products. Gender of the de jure household head did not significantly determine responses although no female-headed households reported selling NTFPs to supplement existing incomes or increasing their sale of livestock. The sale of NTFPs in response to the increased cost of living is not dealt with in the following sections as this has developed into a household livelihood strategy although it originated as a rural safety-net. The more regular trade of NTFPs is dealt with in Chapter 4.

5.2.6 The use of NTFPs as a rural safety-net

Of the one hundred households sampled there were none that had not experienced at least one of the identified crises discussed in the preceding sections. Of these households 70 % reported the rural safety-net function of NTFPs (Table 5-7). This excludes those households that reported relying on NTFPs in response to the increasing cost of living. If these households are included then 82 % of households rely or have relied on NTFPs as a rural safety-net. For each of the above selected crises there were households that reported the use of NTFPs as a rural safety-net. Households relied on these products irrespective of household wealth or gender of the de jure household head. Despite neither wealth nor gender affecting the overall reliance of NTFPs as a rural safety-net, these household characteristics do play a role in influencing how this safety-net role manifests and which products contribute towards livelihood security (Table 5-9).

Resources used by households in response to household shocks included wild edible herbs (both fresh and dried), medicinal plants, wild edible fruits, bushmeat, fuelwood and building materials. The primary resource sold was fuelwood whilst a few households sold reed mats, bushmeat and grass hand-brushes. Of the households that reported relying on NTFPs in response to selected crises, 40 % used medicinal plants, 30 % used fresh wild edible herbs, 25.7 % used fuelwood as a replacement for paraffin, 17.1 % used dried wild edible herbs, 11.4 % relied on wild edible fruits, 10 % sold fuelwood, 8.6 % used construction materials (e.g. thatch, sand and housing poles) and sold various NTFPs and, 7.1 % used bushmeat. With respect to wild foods, there were no significant differences in the proportions of households relying on wild edible herbs and fruits for either household wealth or gender of the de jure household head. However, no wealthy or female-headed households reported using bushmeat whilst 13.9 % and 10.0 % of poor and male-headed households respectively, reported this use. The difference is significant for wealth. For construction materials there was no significant difference as determined by household wealth but a significantly greater proportion of female-headed households reported relying on building materials to repair damage to houses. A significantly greater proportion of wealthy households reported relying on fuelwood than their poor counterparts whilst gender had no influence. The reason for this reliance on fuelwood by wealthy households is as a cost-saving substitute for paraffin when households are required to make adjustments to household spending. As few poor households rely on paraffin, this adjustment is not available to them as a strategy, poor households' reliance on fuelwood manifests to a greater extent in the sale of this resource. No wealthy households reported selling fuelwood or other resources in response to shocks, whilst 19.4 %

and 16.7 % of poor households sold fuelwood and other NTFPs respectively. This difference is significant in both cases but is not significant for gender of the de jure household head (Table 5-9).

Table 5-9 NTFPs used as a rural safety-net, how the use manifests and proportion of households using (of households reporting the safety-net function) – stratified by household wealth and gender of the de jure household head

	Total	Wealthy	Poor	X ²	Significance	Male-head	Female-head	X ²	Significance
Wild edible herbs (fresh)	30.0	29.4	30.6	0.0	>0.05	32.0	25.0	0.3	>0.05
Wild edible herbs (dried)	17.1	14.7	19.4	0.3	>0.05	16.0	20.0	0.2	>0.05
Medicinal Plants	40.0	38.2	41.7	0.1	>0.05	46.0	25.0	2.6	>0.05
Wild edible fruits	11.4	8.8	13.9	0.4	>0.05	10.0	15.0	0.4	>0.05
Bushmeat	7.1	0.0	13.9	5.1	<0.05	10.0	0.0	2.2	>0.05
Fuelwood	25.7	41.8	11.0	8.3	<0.05	26.0	25.0	0.0	>0.05
Sells fuelwood	10.0	0.0	19.4	7.4	<0.05	10.0	10.0	0.0	>0.05
Building materials	8.6	2.9	13.9	2.7	>0.05	4.0	20.0	4.7	<0.05
Sells other NTFPs	8.6	0.0	16.7	6.2	<0.05	6.0	15.0	1.5	>0.05

Those households that relied on NTFPs to provide some form of natural insurance against crises and their associated costs were compared to those households that reported no reliance on these products (either through increased use or sale) in order to determine whether there are certain household characteristics that determine the selection of NTFPs as a coping strategy. Household characteristics considered included household wealth, gender of the de jure household head, whether the household receives a government grant and which type, whether the household has employed members and the nature of this employment (i.e. formally-, informally- or self-employed), livestock ownership (cattle, donkeys, goats, sheep, pigs and chickens), asset ownership (paraffin stove, gas stove, fridge, radio, hi-fi, television and car), whether the household has arable land, has one or more saving schemes, relies on kinship and community support-networks and, sells NTFPs (Chapter 4: all households use NTFPs).

When looking for significant relationships between these variables and the use of NTFPs as a rural safety-net only one of the selected variables showed a significant difference: 61.4 % of those households that relied on NTFPs as a rural safety-net also rely on community-support networks: a significantly greater proportion than the 33.3 % of households that don't ($X^2 = 6.7$; $p < 0.05$). Important to note though is that for this result, reliance on family within the community and reliance on neighbours/friends was disaggregated: the difference is significant for households relying on neighbours/friends; if these are combined with those that rely on family, the difference is no longer significant. It is hypothesised that those households with family in the same village or with family who are able to assist with crises are more secure than those who rely on support from friends and neighbours. Those with no family support are therefore more reliant on NTFPs as “free” insurance.

In addition to considering whether households had relied on NTFPs in response to the above selected crises, households were questioned as to whether there had been other times during the two year period preceding the research when they had relied on NTFPs as a rural safety-net (Table 5-10). Respondents were asked to detail times when their household had either:

1. Used more NTFPs than normal
2. Used NTFPs not normally used
3. Sold more NTFPs than normal
4. Sold NTFPs not normally sold

Table 5-10 Proportion of all households (%) for both sites that have used NTFPs as a rural safety-net in the last two years and how this use manifested – stratified by household wealth and gender of the de jure household head

	Total	Wealthy	Poor	χ^2	Significance	Male-head	Female-head	χ^2	Significance
Increased NTFP use	36.0	34.0	38.0	0.2	>0.05	42.7	16.0	5.8	<0.05
Use of different NTFPs	10.0	6.0	14.0	1.8	>0.05	8.0	16.0	1.3	>0.05
Increased sale of NTFPs	8.0	2.0	14.0	4.9	<0.05	8.0	8.0	0.0	>0.05
Sale of different NTFPs	8.0	6.0	10.0	0.5	>0.05	10.7	0.0	2.9	>0.05

Of these, the greatest proportion of households reported increasing their use of NTFPs (36 %), 10 % reported using different NTFPs, whilst both increasing the sale of NTFPs and selling different NTFPs was reported 8 % of households. With respect to differences based on household wealth and gender of the de jure household head, only the increased sale of NTFPs showed a significant difference for wealth whilst increased use was significantly different for gender of the de jure household head (Table 5-10). Fourteen percent of poor households compared to only 2 % of wealthy households reported increasing their sale of NTFPs in response to household shocks. This supports findings that fewer wealthy households are involved in the sale of NTFPs as a regular strategy (Chapter 4), and explains why the sale of different NTFPs does not show significant differences for wealth. A significantly greater proportion of male-headed households increased their use of NTFPs. General NTFP use showed no significant differences for gender of the de jure household head with respect to the proportion of households using with the exception of medicinal plants (Chapter 4).

In Chapter 4 households involved in the sale of NTFPs were queried as to their reasons for selling. These included selling in response to retrenchment or loss of income; selling in response to demand and an available market; selling as a result of increasing hardship and poverty; selling because the household's primary source of income was no longer sufficient to meet household needs and, selling to be able to purchase food and household goods. These responses highlight the rural safety-net role of NTFPs and in

particular, draw attention to the sale of NTFPs as a key manifestation of the safety-net role. Additionally they highlight the transformation of the sale of NTFPs as a rural safety-net into the regular sale of these resources to supplement other livelihood strategies.

5.2.7 Perceptions of NTFPs as a rural safety-net: strengths and limitations

During discussions people expounded on the advantages of using NTFPs as a rural safety-net (Box 5-1). These included that these resources are generally free and easily available and therefore helpful when households have no money. Selling these resources requires no start-up capital although certain resources require the necessary skills and knowledge. People stated it was beneficial that there was a vast range of products households could choose to use or sell. Relying on NTFPs as opposed to other resources also allowed for households to remain financially independent and debt free. Other coping strategies have certain disadvantages which make NTFPs a favourable choice; for example borrowing money means paying it back often with high rates of interest; selling assets or livestock leaves the household in a position of trying to recoup those assets and often in a vulnerable position as those assets are no longer available when other crises emerge whilst changing the household diet or removing children from school can impact negatively on the household's human capital.

Box 5-1 Opportunities offered by NTFPs as a rural safety-net

- “The bush (NTFPs) helps a lot because you can get many things to sell and don't need start-up capital. I rely heavily on (NTFPs). The bush is good for helping in difficult times. It's important because if you want fuelwood you can collect and sell - it's simple. It's the same with wild fruits - you can sell or exchange them for something you need. Looking for a job requires money”.
- “The bush is very important for my household. I can get poles to sell and can get money for things that I want and need. I don't need money first. When there is a problem at home we use the bush more and sell. Access is free which helps when you need money at home”.
- “When I hunt I spend the whole day in the bush so wild fruits are very important (especially Jackalberry) to keep my stomach full. The bush is very important for my households both for use and sale. I don't have an ID book so I can't find work. No start-up capital is required and I sell either when there's an order or I try to find a market.”

Despite these aspects counting favourably towards the use and strength of NTFPs as a rural safety-net, several households also noted disadvantages/weaknesses to this rural safety-net function. These discussions with households were qualitative in nature and therefore Figures 5-12 & 5-13 represent the responses not necessarily the proportion of households from the total sample. Similar proportions felt that NTFPs were an important daily-net but not as useful as a safety-net and, that NTFPs were neither important as a daily-net nor a safety-net. Sixteen percent of responses indicated that households felt NTFPs fulfil an important natural insurance role (Figure 5-13).

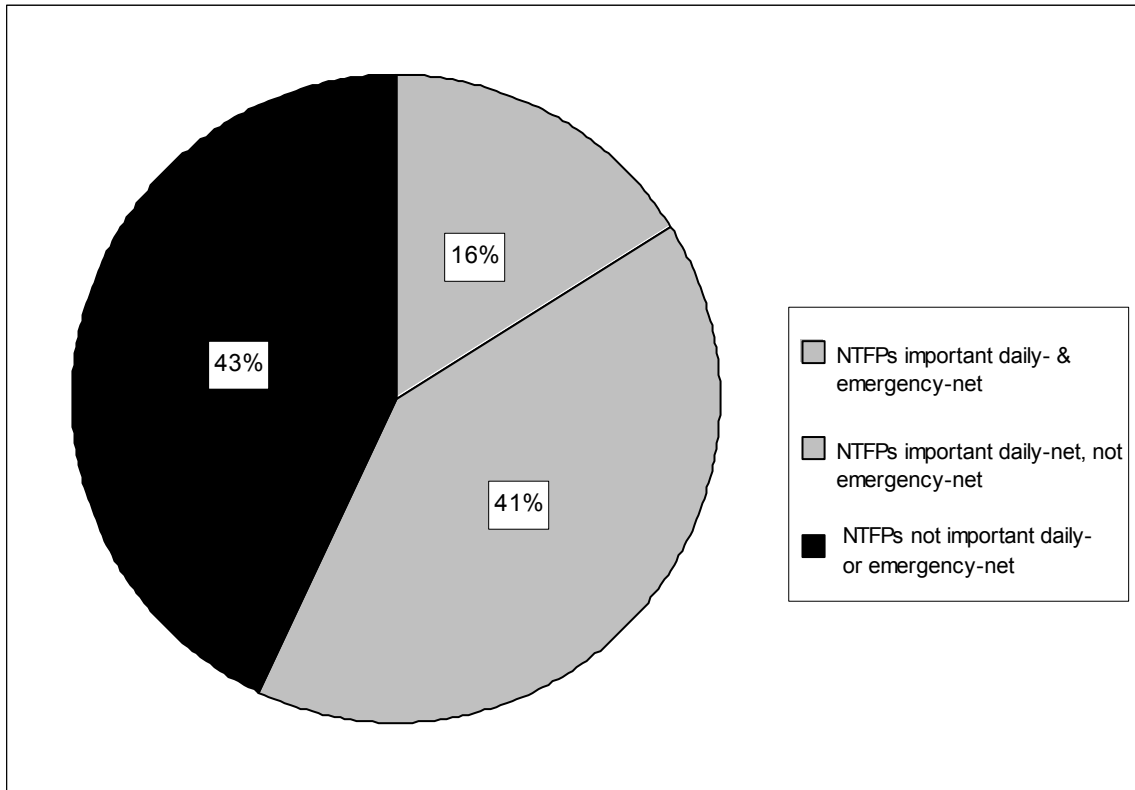


Figure 5-13 Perceptions of the rural safety-net function of NTFPs

Households expressed reasons as to why NTFPs do not adequately insure households during times of misfortune (Figure 5-14). These include:

1. Restrictions, permits, tenure and location (Box 5-2)
2. Age, health and strength (Box 5-3)
3. Distance, time and lack of transport (Box 5-3 & 5-4)
4. Weak or absent markets when money is needed (Box 5-4)
5. Loss of/changing knowledge and skills (Box 5-5)
6. Resource scarcity, seasonality and over-use (Box 5-6)

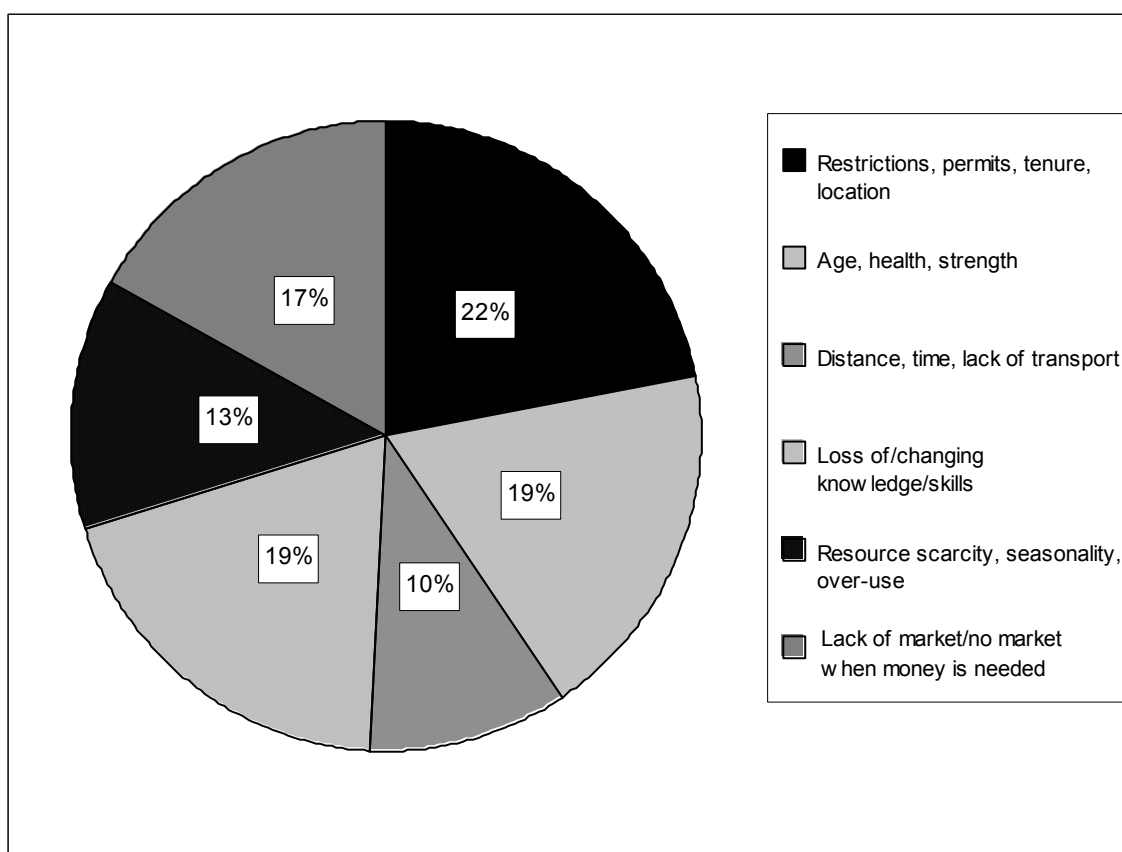


Figure 5-14 Perceptions of the weaknesses of NTFPs as a rural safety-net

Box 5-2 Insecure tenure and rights of access as limitations to the use of NTFPs as rural safety-nets

- “Before the permits, people used to go to the forest more and the forest was important in difficult times. Now you need a permit. You need to walk a long distance to get it then explain why you need it and pay for it.”
- “(NTFPs) are very important especially the sale of fuelwood. Other (NTFPs) are difficult to rely on because of the permits and the distance you need to travel to collect them (e.g. grass hand-brushes). I don't have money for permits. If these things were closer and in the community forest we would use them more. Imifino (wild edible herbs) and prickly pear (wild edible fruit) are very important when available.”
- “We can't go the bush and hunt because now they arrest you. You can't sell fuelwood either. If we need money straight away we ask my father or sell a cow because you get the money straight away. If you collect, there's no guarantee you'll find a market.”
- “The bush is very important because of fuelwood and indigenous poles for building my house. I don't sell anything though because I'm worried about being arrested and I have never really thought of selling things from the bush. Family support is the most important. I'm also old which makes collecting (NTFPs) hard work and difficult. There is also the problem that many things that you find in the bush in the summer you can't find in the winter.”

Box 5-3 Age and health as limitations to the use of NTFPs as rural safety-nets

- “I’m old & have no energy to collect from the forest. I can’t even collect wood and water never mind anything else. My grandsons help with water but won’t collect things such as ikrwachu (grass for hand-brushes) because they have no knowledge of such things. When I was younger people relied much more on the forest. If I was younger I’d make and sell grass brushes.”
 - “I have high blood pressure so I can’t collect. I know how to make grass brushes but it’s too difficult to collect – it is far to walk. When I was younger and healthier I used more from the forest but I also worked for DWAF so access was easy.”
 - “The bush is very important for fuelwood and food but I’m not strong enough to collect enough to sell. (NTFPs) are important because you don’t need to ask to use them and they can help whereas if you’re always asking the community for help they might get tired of it.”
 - “I don’t want to sell things from the bush - it’s difficult for me to collect with my disability – but the bush is very important (on a daily basis) for food and fuelwood. My field is very important because I plough many things like peanuts, mealie meal and morogo (wild edible herbs) which I can store for winter so I don’t need to ask people in the community for food.”
- I’m too old to collect. Even for what I use I have to pay someone to collect for me. My pension is the most important thing because every month the money is guaranteed whereas you could go to the bush to collect and there’s no guarantee you’ll find what you need. Pension allows for bread and tea and a full stomach.”

Box 5-4 Weak or absent markets as limitations to the use of NTFPs as rural safety-nets

- “Most resources you can rely on in terms of selling (e.g. grass brushes) you need a permit to collect, the skills to make and a market. There are few buyers. Even if people did buy it would be so few that it wouldn’t cover the initial costs of the permit. If you had transport you could sell in Fort Beaufort but you would need money for transport. Trying to sell would be very risky business. Not many people are employed in the village so it makes things difficult because there’s not much money to buy things.”
- “The bush is very important because we sell seed jewelry and didn’t need a permit or money to start the business. I would first choose to sell a cow though if I desperately needed money because the cow is easier to get and I’d find a market immediately. The bush requires more work and there’s no guarantee you’ll manage to sell.”
- “The bush is not good during difficult times because if you collect for example fuelwood, people don’t always buy at the exact time that you need money so it’s better to borrow from somewhere and pay them back. You could sell wood for this or rely on your relatives”.
- “The bush is very important to us because of fuelwood and morogo (wild edible herbs) but you can’t rely on selling (NTFPs) because there’s not always a market. Younger people sell more because they’re hungry whereas older people get pensions. The youth are also stronger and there’s a problem with unemployment”.

Box 5-5 Loss and/or change of knowledge and skills as limitations to the use of NTFPs as rural safety-nets

- “I don’t know why people don’t rely more on the forest. Maybe people are lazy. Long ago when I was younger and had the energy I used to sell grass brushes in the village. Long ago people used the forest a lot – like for medicinal plants because we didn’t know about doctors. Now our children send us to doctors because they've been educated. Medicinal plants were helpful but now they don't work because people use (western) medicine.”
- “I never thought of selling (NTFPs) because in my life I have never seen forest products sold so I have no idea of selling them”.
- “I never thought that to survive the household could rely on forest products”.
- “We don't use many things from the bush on a daily basis so we don't rely on them during difficult times. We would rather rely on money. I don't know how to make reed mats. Livestock is important because when there is no money you can sell livestock immediately for cash.”

Box 5-6 Resource scarcity, seasonality and over-use as limitations to the use of NTFPs as rural safety-nets

- “Many things are scarce. I don’t hunt wild animals because they're mostly found in the DWAF forest and the few in the community forest are difficult to hunt - you need good dogs and even then it's a question of luck. I only really rely on fuelwood particularly in winter when it's cold. When I was younger people relied on (NTFPs) more for survival. People still use them but they’re not as dependent on them. I haven't been in the forest for a long time. I don’t have time to go because I spend my time trying to organise things so I can put food on the table.”
- “The pension and community help much more than (NTFPs) when there are problems. The community will always help when you ask. The bush is more useful in the summer - many things you might rely on you can't find in the winter.”
- “Money is the most important thing to have when there's a problem. The bush is important but many things you can't find when you need them. Even if you did find them there's no guarantee you'd find a market.”
- “The wages are enough for dealing with problems. The problem with using the bush is the chance of over-utilisation.”

5.2.8 Livelihood diversity as an adaptive strategy

Rural households invest in a diversity of activities and assets that together contribute towards their livelihood security. By spreading the risk to which households are vulnerable across the household’s entire asset base, households reduce their overall vulnerability although increase the range of potential risks. Livelihood strategies in both Dyala and Dixie include a mix of off-farm and land-based strategies (Chapter 3). The overall diversity of strategies is not significantly different for wealth or gender of the de jure household head however there are differences within each strategy as determined by these household characteristics.

Households were questioned as to which strategy they consider to be the most important in terms of the contribution made to household livelihood security (Figure 5-15). For wealthy households two key strategies were identified namely employment and the contribution from old-age pensions; notably smaller proportions of households listed self-employment, kinship, child-support and disability grants. No wealthy households considered land-based strategies (including arable agriculture, animal husbandry or the use and sale of NTFPs) as their key livelihood strategy. With respect to poor households, kinship and child-support grants were considered important contributors whilst the range of strategies listed also included employment, self-employment, a reliance on loan sharks, the use and sale of NTFPs, animal husbandry, arable agriculture, old-age pensions and disability grants. Poor households considered both land-based and off-farm strategies as key contributors to sustainable livelihoods. Both employment and old-age pensions were listed by a smaller proportion of poor households whilst a greater proportion noted kinship and child-support grants. Male- and female-headed households also identified a range of strategies although whilst employment was considered key by male-headed households, a greater proportion of female-headed households identified old-age pensions and kinship as their vital livelihood strategies. No male-headed households considered loan sharks or animal husbandry to be a key strategy whilst no female-headed households considered arable agriculture, self-employment or the use and sale of NTFPs to be primary contributors. This does not imply that households from these categories are not involved in these activities, only that they do not consider the contribution as the primary contribution to their livelihoods. Male-headed households identified a broader range of key strategies than their female-headed counterparts.

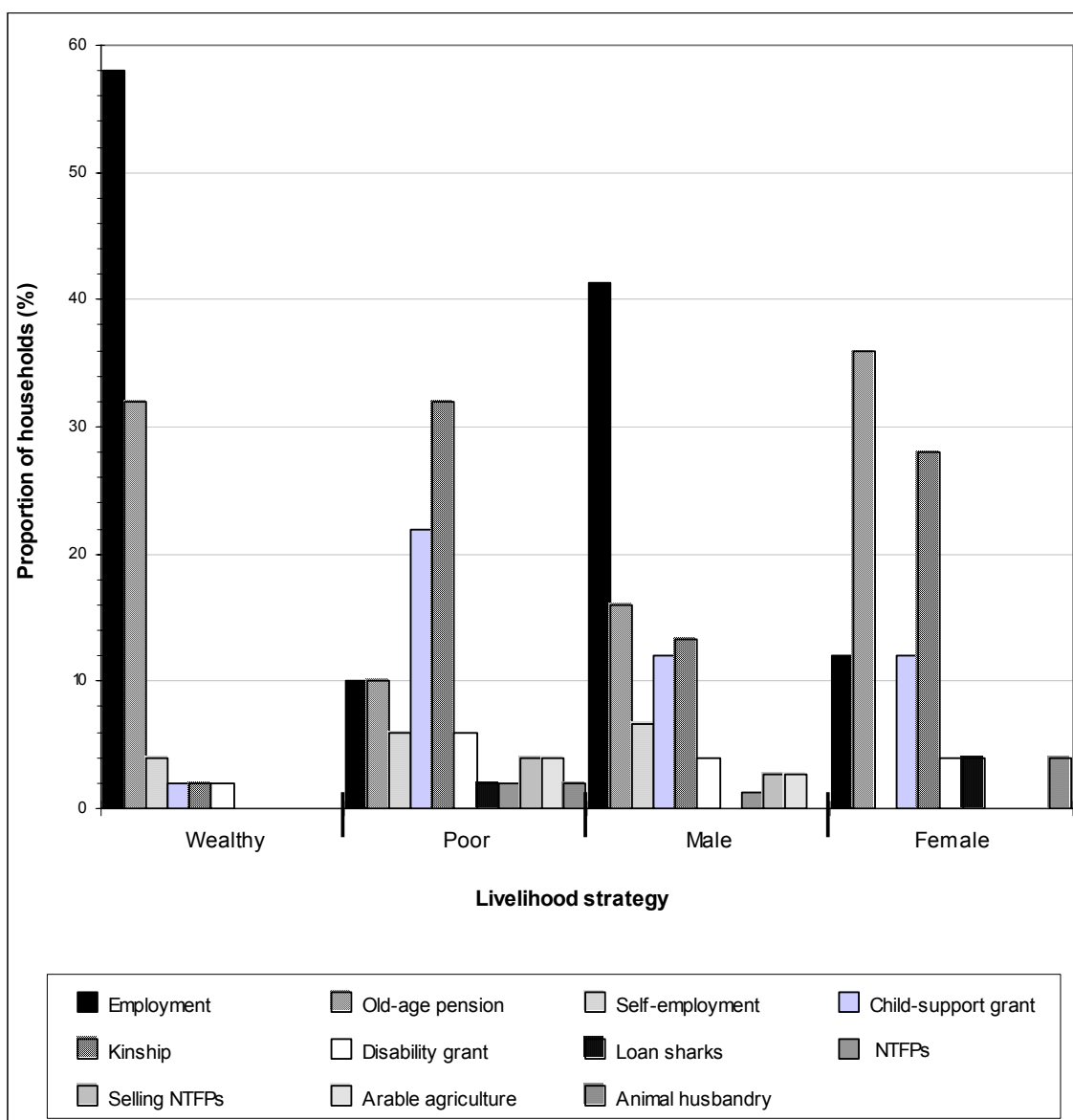


Figure 5-15 Strategies households perceive as key contributors to sustainable livelihoods

After identifying what households considered to be their primary livelihood strategy, respondents were asked to consider how they would cope should this strategy no longer be available to them (Figure 5-16). Irrespective of household wealth or gender of the de jure household head the most prevalent response was that households did not know how they would cope with the loss of their primary livelihood strategy. Some households however did identify means of coping with this loss. All four categories of households listed kinship although a greater proportion of poor and female-headed households did so. No wealthy households stated they would seek employment whilst poor households stated they would. Similar proportions of male- and female-headed households stated they would seek employment. A possible reason for wealthy households not listing this as a strategy is that as employment is already a primary livelihood strategy for these households, they understood coping with the loss of this strategy to mean falling back on alternative

strategies not 're-seeking' employment. A greater proportion of wealthy households did however suggest that they would rely on micro-enterprises as a coping strategy. Micro-enterprises were also considered as a possible coping strategy by a greater proportion of male-headed households. No poor or female-headed households stated they would sell assets in order to cope with the loss of the key livelihood strategy. Households from all four categories listed arable agriculture as a means to cope in response to the loss of the primary strategy. No poor households listed animal husbandry although both male- and female-headed households noted they could rely on their livestock as a fall-back option. For the poor households, lack of livestock or a limited number of animals per household (with a focus on small-stock) possibly restricts animal husbandry as an effective coping and substitute livelihood strategy. Wealthy, poor, male- and female-headed households listed the sale of NTFPs as a means of coping with the loss of key livelihood strategies. Male-headed households listed the greatest range of possible coping strategies.

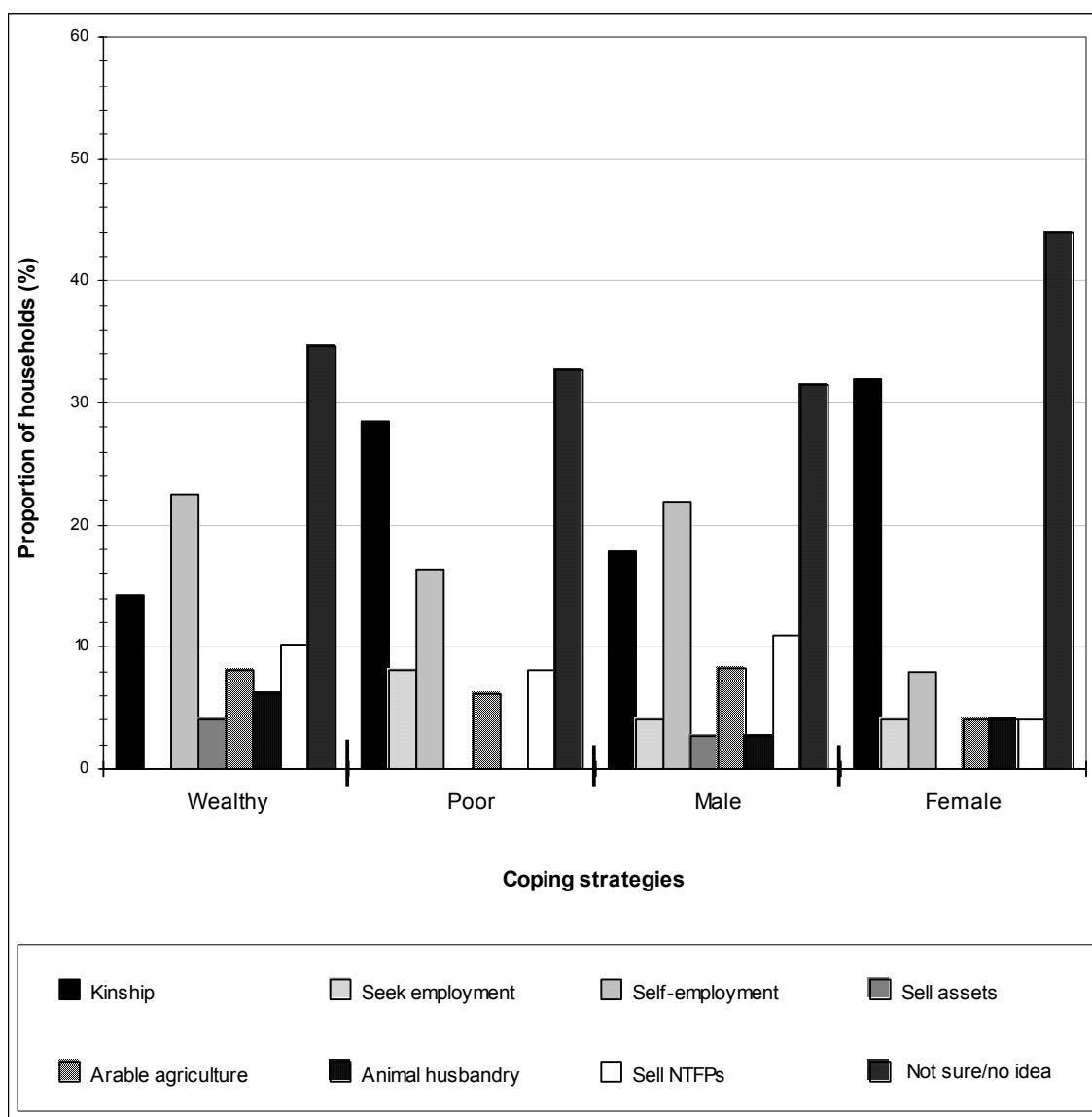


Figure 5-16 Strategies households would employ in response to the loss of their key livelihood strategy

5.3 Discussion

5.3.1 Vulnerability and risks

Rural households are vulnerable to a range of shocks, trends and seasonal fluctuations in the social, political, economic and bio-physical environments in which they exist (DFID, 1999; Wood, 2003). Vulnerability however is not only determined by the immediate context but is the result of historical events and changes at the local, regional and international level. Households in this study associated increased vulnerability with unanticipated shocks, with more anticipated periods of hardship experienced on an annual basis as well as with trends such as inflation and the increasing cost of living (DFID, 1999). In addition to this both communities highlighted historical events that have impacted on their livelihoods. For

example both communities have experienced historical changes in their access to land. In Dyala the community gained improved access to land with the formation of the Ciskei homeland and the concomitant removal of white farmers from the region however their access to the surrounding state-owned forests is now controlled by the Department of Water Affairs and Forestry. People require a permit to harvest NTFPs and may only harvest under the expressed conditions (Appendices 7-1 & 7-2). People in Dixie were removed from their land and relocated to their present position to allow for the formation of the surrounding game reserves. They have lodged a formal claim for land lost (Box 2-3). In both cases households have been subjected to restrictions on access to NTFPs and natural capital. Whilst not all of the historical impacts have been negative, they have all played a role in shaping the present-day context of both communities.

With respect to the two year period examined in this study, households in both villages identified a range of “risks” to which they are vulnerable. These risks include both anticipated periods of increased vulnerability as well as shock events (DFID, 1999). Most of the identified risks involve idiosyncratic risks impacting on individual households however aggregate risks such as seasonal crop shortfalls were also identified. The anticipated crises include the expenses associated with paying annual school fees, holding social ceremonies, agricultural expenses and seasonal crop shortfalls. The unanticipated crises include livestock disease and/or death, crop damage and/or loss, loss of or damage to property and assets, illness or injury of household members, death and funeral expenses, the loss of income and the increased cost of living. Other commentators have identified a similar range of crises suggesting that these are a common feature of rural livelihoods (Pattanayak & Sills, 2001; Sen, 2003; Wood, 2003). The risks to which rural households are vulnerable have been described as being inextricably linked to the chronic poverty experienced in many developing countries (Sen, 2003). Whilst each individual household may be able to cope with and recover from the transient poverty associated with the experience of these risks, they are often unable to escape from chronic poverty (Sen, 2003). Of the identified crises in this study all of sampled households had experienced at least one, with some households reporting the occurrence of several. This emphasises the vulnerable position of all rural households and suggests that the frequency with which households experience risk as well as the impact of risk and households’ ability to cope need to be taken into consideration when assessing vulnerability contexts, not just the experience of risk. Each household’s vulnerability context is a result of a unique combination of crises, livelihood strategies, the household asset base, possible coping strategies, the household’s lifecycle stage as well as socio-economic class (Pattanayak & Sills, 2001). With respect to the rural safety-net function of NTFPs, McSweeney (2003) found the nature and intensity of the crisis as well as household characteristics such as wealth (land wealth in particular) and human capital conditioned the degree to which households turned to NTFPs as a rural safety-net.

Of the anticipated risks that households identified, the most common is the expense associated with the annual payment of school fees, followed by the cost of social ceremonies, seasonal crop shortfalls and agricultural expenses. For each of these crises, a significantly greater proportion of wealthy households were affected. Gender of the de jure household head did not influence vulnerability to these although

female-headed households are commonly reported as more vulnerable than their male-headed counterparts (Posel, 2001). The experience of risk however does not give an adequate indication of the impact on livelihood sustainability and it is possible that female-headed households are less able to cope with the range of crises experienced. This aspect requires further investigation. With respect to household wealth, although the common adage is that the poorer households in a community are more vulnerable to risk than their wealthy counterparts (Shackleton & Shackleton, 2004a) this study suggests that by way of their social position and asset-base, wealthy households are more prone to particular crises and expenses. For example, wealthy households have the available capital to celebrate social ceremonies whilst many poor stated that they don't celebrate (or only celebrate select ceremonies) because of the expense involved. They rely on invitations to ceremonies hosted by wealthy households – suggesting wealthy households are subjected to a degree of social responsibility and pressure. According to Niehof (2004) social capital can be both a constraint and a bonus.

The payment of annual school fees (following shortly after the costly Christmas period) is an identified period of increased hardship for poor households in South Africa (Pereira, 2004; Shackleton, 2004). The higher proportion of wealthy households identified in this study to be experiencing these costs is possibly a reflection of the initial wealth ranking and the households' lifecycle stage. In Dixie those households ranked as wealthy consisted predominantly of established households with adults of working age and children of school-going age. The poor households consisted predominantly of younger households with children under the age of six or of single men (either young and unmarried or pensioners) with no school-going children. In Dyala the wealthy households were those receiving one or more old-age pensions. Throughout South Africa, these households are often characterised by high dependency ratios and are often burdened with the responsibility of caring for and educating grandchildren. The relationship between household development cycle and vulnerability requires further investigation. With respect to seasonal crop shortfalls and agricultural expenses, 45 % and 44 % of all households reported seasonal crop shortfalls and agricultural expenses respectively. Forty-six of all households had planted in the two year period suggesting these risks are common to households cultivating arable land. According to Pattanayak and Sills (2001) arable agriculture is subject to multiple risks making NTFPs a more risk averse livelihood and coping strategy. Respondents explained agricultural expenses to include the costs associated with hiring ploughs, with paying people to assist with planting/harvesting and with buying seed, fertiliser and pesticides. Dovie (2001) however noted low input costs as most inputs are garnered from the community or from livestock. With respect to wealth related differences, the difference in the proportions of wealthy and poor households cultivating was not different suggesting that both groups should be prone to seasonal crop shortfalls and agricultural expenses. This is not the case however with greater proportions of wealthy households reporting the experience of both. Poor households may avoid the costs associated with cultivating by ploughing by hoe or relying on friends/family to assist rather than hiring a tractor or, by storing seed from previous harvests, rather than buying new seed each season. Expenses may also differ depending on whether the household is cultivating large fields or smaller more manageable home-gardens. In Dyala no poor households were cultivating fields even though they have access to fields. To contrast 91.7 % of poor garden-owning households had cultivated. In Dixie the pattern was different however with

all wealthy garden-owners planting whilst only 77.8 % cultivated fields. These wealthy households may choose to plant gardens as many households are constrained in terms of labour with one or both adults formally employed (Chapter 3). With respect to seasonal crop-shortfalls, poor households may make agricultural adjustments planting less favoured but hardier crops during the dry winter months. Wealthy households may choose not to cultivate (or cultivate less) during the winter but rather rely on their available capital to purchase vegetables during this time. These aspects require further investigation. The greater proportion of wealthy households prone to each of these anticipated crises suggests that the impact of the crises and households' ability to cope are more relevant than the experience of the crises itself.

Of the unanticipated crises the increasing cost of living was identified by the greatest proportion of households. Although this constitutes a trend not a stochastic risk, households are still unable to anticipate and plan for sudden increases in the cost of paraffin, food and so forth although they may ultimately adapt their livelihoods accordingly. Of the unanticipated risks identified, illness and/or injury was reported by the greatest proportion of households and loss of income by the least. Crop damage and/or loss and total crop failure were reported by 43 % and 33 % of households respectively (46 % of households had planted) emphasising the risks involved in arable agriculture. With respect to animal husbandry 38 % of households experienced disease or death in their livestock. With respect to the unanticipated crises, there are no significant differences for wealth or gender of the de jure household head with the exception of livestock diseases and death. This was reported by a significantly greater proportion of wealthy households. As with the anticipated crises, this too is a reflection of the household asset base – in Dyala a greater proportion of wealthy households have livestock, whilst in Dixie although the difference is not significant for the overall ownership of livestock, wealthy households have more cattle. The greater proportion of wealthy households with livestock implies a greater proportion of wealthy households are at risk of experiencing livestock disease or death. Group discussions indicated years where households experienced increased disease in their cattle and goats (including tick-borne diseases and foot-and-mouth) as well as livestock losses associated with both drought and floods (Tables 2-7 & 2-8). Dovie *et al.* (2006) noted considerable cattle losses in Thorndale (nearby Dixie) as a result of drought. It is hypothesised that cattle may be less risk averse than small stock thereby supporting the greater proportion of wealthy households reporting livestock disease/death. The other unanticipated crises experienced are less “asset driven” and show no significant differences for either wealth or gender of the de jure household head. The differences for households experiencing crop loss, damage or complete failure were not significantly different for either of these household characteristics. Respondents indicated pests, diseases, heavy rains and poor seed as reasons for crop loss/damage. These factors are non-discriminate and therefore any household cultivating can be affected suggesting that it how the household responds and copes with the crisis rather than the experience of the crisis itself that influences vulnerability. It may also depend on the extent to which households rely on particular livelihood strategies and what measures they have in place to cope should that strategy fail them. The loss of/damage to property resulting from rain/fire/rats and so forth is indiscriminate as is illness, death and inflation. A household's ability to cope with these is likely to be a more important distinction between wealthy and poor. Additionally as Dekker (2004) explains, the severity of these crises depends on what assets and livestock are lost, the length of illness and the amount of the associated expense. Loss of

income was also not significantly different between the two wealth groups. Here wealthy households are more prone by way of a greater proportion of households having employed members as well as more employed members per household however, jobs for wealthy households are predominantly full-time and reasonably secure (allowing them to have accumulated and maintained their wealth initially) whilst by contrast poor households are informally, temporarily or seasonally employed (Chapter 3). Loss of income was also taken to be the loss of a government grant. The findings of this study suggest livelihood diversification is a catch twenty-two: by being more diverse, households open themselves up to a greater range of potential shocks and however it is unlikely that all strategies are affected at the same time giving households various fall-back options. Livelihood diversification is considered by some to constitute more of a poverty trap than a potential recourse to improved livelihood security (Ellis, 1999)

The findings show that households can experience multiple crises in a reasonably short period of time suggesting the need for either a select few effective means of coping or a diversity of strategies to ensure resilience. Households may have limited recovery time between crises. It is hypothesised that in the face of this potentially limited recovery time and with each crisis potentially associated with various “side-effects” requiring multiple responses, a diversity of strategies ensures robustness. For example losses of livestock and assets, crop failure and the loss of income affect food production and income generation whilst medical and funeral expenses are associated with a sudden need for cash (Dekker, 2004). Responses may differ depending on the shock suggesting that households require a range of insurance options (Dekker, 2004). There is the additional problem when anticipated an unanticipated overlap, for example one household in this study had saved money for a traditional ceremony but in the month of the ceremony, there was the unexpected expense of a school tour. In order to send their child on the tour, the household had to borrow money from a loan shark because other savings were directed towards the costs of the ceremony. Mock *et al.* (2003) considered the impact and responses to illness and injury and found the treatment costs as well as the disability days (of both the infirm and the caretaker) to be key factors. Additionally the extent of the illness, of the treatment costs, of the associated labour reallocation, the amount of money borrowed and the assets sold were found to determine the economic affect of illness/injury (Mock *et al.*, 2003). Numerous commentators have drawn attention to a range of coping strategies households employ in their attempts to secure their livelihoods (Sauerborn *et al.*, 1996; Godoy *et al.*, 1998; Maxwell *et al.*, 1999; McKenzie, 2003; Wong & Godoy, 2003). This study supports these findings suggesting a range of coping strategies and a diversity of strategies in response to individual crises. According to Wong and Godoy (2003) there is mixed evidence of the effectiveness of these informal insurance mechanisms particularly with respect to larger, covariate shocks. This is supported by findings by Sauerborn *et al.* (1996) and Mock *et al.* (2003) that show that despite the range of strategies households employed in response to crises (e.g. illness), a significant proportion still experienced the negative impact of decreased food production. With an escalating focus on wide-scale poverty reduction, there is an increasing focus on how rural households manage and secure their livelihoods both on a day-to-day basis as well as in the face of risk. An appreciation of households own means for coping with risk is required in order to effectively target assistance.

5.3.2 Coping with risk and prevalently used coping strategies

According to DFID (1999) a household's response to crises may vary depending on the nature of the shock, its intensity and household attributes and assets. The results of this study indicate that for a range of shocks there is a range of possible responses that households employ in their attempts to cope. Examples of these include a reliance on kinship, increased NTFP extraction and sale, the sale of livestock and household assets, buying on credit, relying on stokvels, borrowing from loan sharks, providing waged labour in exchange for money or food, making agricultural adjustments or saving on agricultural expenses by using draught power and storing seed, changing household food consumption and so forth. These responses include both individual and risk-sharing strategies as well as risk-management and risk-coping strategies (Dekker, 2004). Whilst some of these strategies are more crisis-specific (e.g. the storage of seed to reduce agricultural expenses) others are employed in response to a range of crises. The various coping strategies identified in this study have been noted by other commentators (Smith *et al.*, 2001; De Waal & Whiteside, 2003; McSweeney, 2003; Skoufias, 2003; Wong & Godoy, 2003; Heemskerk *et al.*, 2004) (Table 5-1) suggesting they are a common feature of informal insurance. They are used either in combination constituting a portfolio of coping strategies or in isolation, depending on the context and the crisis in question. McSweeney (2005) noted coping strategy substitutability with one form of insurance being replaced with another in response to constraints offered by the initial strategy. Despite this range of coping strategies rural households invest in to secure their livelihoods, Godoy *et al.* (1998) conclude that these households remain poorly insured against unanticipated crises.

Whilst this study identified a range of strategies, certain responses are more common than others irrespective of the shock in question. Those used more prevalently both in terms of proportion of households and the range of crises for which they were employed, include the use and sale of NTFPs, kinship and community-support networks, the sale of livestock, economic adjustments to household spending (i.e. reduced spending on luxury goods and changes to the household diet), turning to savings or budgeting for an planned expense and, relying on stokvels and burial societies. With respect to stokvels this includes both the lending and pay-out functions. Within the two year period, the most common strategy (in terms of proportion of households) used in response to crises was a reliance on kinship, followed by reduced household spending, and equally changes to the household diet and a reliance on savings. The use of NTFPs as a rural safety-net was the fifth most prevalently reported strategy followed by the sale of livestock and a reliance on stokvels. The results suggest that household wealth has a greater influence on the coping strategies used than gender of the *de jure* household head. Niehof (2004) suggests that men and women have different perceptions of risk as determined by existing gender roles. For these common strategies the differences in the proportions of male and female-headed households relying on the strategies, are not significant. They are however significant for wealth with the exception of kinship and the rural safety-net function of NTFPs. Of the range of strategies and assets available for coping, two that are not determined by the households' wealth status include kinship and the use or NTFPs. These strategies are therefore the most accessible for poor households whose existing asset base and coping options are constrained, although, wealthy households may also turn to these strategies in response to misfortune.

Skoufias (2003) highlights that if households rely on NTFPs for minor crises they can save their other options, ensuring future welfare: this possibly explains the high proportion of wealthy households relying on the rural safety-net function of NTFPs despite having alternative strategies. The other commonly reported strategies including the sale of livestock and a reliance on stokvels offer barriers to poor households who cannot afford to invest in high value livestock or in as great a diversity of stokvels (Chapter 3). According to Pattanayak and Sills (2001) NTFPs as a rural safety-net are particularly important to those with limited alternatives.

5.3.2.1 *Kinship and community-support networks*

According to Dekker (2004) kinship and community-support networks are culturally an important form of informal insurance. Taking a composite picture of the variety of crises identified in this study, kinship was the most commonly reported means of coping with over 80 % of households relying on social ties in response to misfortune. Kinship and a reliance on community support-networks is usually the most commonly reported strategy used by households to cope with a variety of crises (Wong & Godoy, 2003; Dekker, 2004; Heemskerk *et al.*, 2004). Social capital, networks and relationships of trust and reciprocity, between family and community members, make an important contribution to household security and, maintaining these ties is often a crucial livelihood strategy that can be drawn on both regularly and during times of need (DFID, 1999). McSweeney (2003) found kinship and soliciting loans from family and friends to be the primary form of insurance for households in Eastern Honduras in the wake of Hurricane Mitch. These reciprocal relationships can vary from assisting neighbours with labour, borrowing/loaning household items/food or assisting financially. For example Dekker (2004) noted a reliance on kinship to cope with death with households relying on these ties to help with food, to provide livestock for the funerals and to assist with money either as a gift or a loan. In this study kinship was reported as a coping strategy for all the identified crises although household wealth and gender of the de jure household head were influential factors in certain cases. Taking each crisis into account, kinship was significant for wealth for annual expenses, livestock disease, crop loss, loss of assets and inflation. For each of these a significantly greater proportion of poor households reported the reliance on kinship and community support-networks to cope. DFID (1999) describes kinship as an important resource of last resort particularly for the poor and vulnerable, compensating for a lack of alternative insurance options. Kinship was significant for gender for livestock losses and illness with female-headed households relying to a greater extent on assistance from family and community members. Heemskerk *et al.* (2004) found kinship to more common amongst women than men, a finding this study supports for select crises but not overall. The composite picture shows no significant difference for either household wealth or gender of the de jure household head.

Kinship is an external, risk-sharing strategy not determined by the household's asset base and therefore, as a coping strategy it is available to both wealth and gender groups. Findings by Dekker (2004) however illustrate the role of households' existing social capital in determining kinship as a coping option with the effectiveness of the strategy being influenced by the composition of the support network. Kinship ties are

not restricted to family members but can include friends and neighbours within the same community as well as migrant family members (Dekker, 2004). Respondents in this study reported approaching migrant members for assistance with crises such as the expense associated with the payment of school fees and social ceremonies. Relying on migrants does not however allow for immediate access to assistance as does relying on members of the same community. Dekker (2004) found relatives and non-relatives were approached and relied on in response to different risks with relatives assisting with medical and funeral expenses and non-relatives assisting with food shortages. In an analysis of which household characteristics influenced the use of NTFPs as a rural safety-net, this study found a significantly greater proportion of households relying on NTFPs as a coping strategy to also rely on support from non-relatives suggesting that these households do not have family members they can rely on during adversity. The assistance offered by non-relatives is likely to be less and less secure than that offered by relatives suggesting that those relying on non-relatives are more vulnerable than the other households. Discussions suggested certain limitations to the rural safety-net function of NTFPs which reinforced reliance on alternative strategies. Households without alternative options and with no relatives to rely on, may be forced to rely on NTFPs for a range of crises even though for particular crises NTFPs may not offer the best insurance. Findings by Dekker (2004) show that the greater the diversity of coping strategies the less the reliance on kinship.

Kinship was ranked the top strategy in both villages with households expressing this as a guaranteed form of assistance. Despite this Dekker (2004) points out that for covariate shocks, kinship is weakened as a strategy because all households are trying to cope with their own situation and are unable to assist each other. Mock *et al.* (2003) suggests a social stigma associated with asking for assistance: one respondent in this study stated that NTFPs were an important safety-net because he could not keep asking his family and community to assist him. In contrast however another respondent expressed that he would prefer to rely on his family than on NTFPs because people associated the reliance on NTFPs as an indication of desperation. Bryceson and Fonseca (2006) found kinship to have a decreasing role in security with wide-scale increasing vulnerability. Shortcomings of kinship were also noted by Godoy *et al.* (1998) whereby households in Bolivia faced with village level crop losses were restricted from borrowing seed from neighbours as a result of all households being affected. The results from this study suggest this may also be the case: for seasonal crop shortfalls no female-headed households relied on kinship whilst less than 30 % of the other groups did so. This is compared to crises such as illness or injury where more than 40 % of households in each group reported relying on kinship, with more than 60 % and 80 % of poor and female-headed households reporting this strategy respectively. Ninety percent of poor households reported relying on kinship and it constituted the most prevalent strategy for this group whilst for wealthy households it was the third most prevalent. Kinship was the most prevalent strategy for both male- and female-headed households. Poor households rely on this strategy as a result of fewer alternatives additionally, although households have to invest in maintaining social ties, kinship is not influenced by a households existing asset base as are coping options such as the sale of livestock. Poor households don't have as diverse a selection of individual strategies (or options within each strategy) to which to turn, as do the wealthy households (Chapter 3).

Other commentators have identified similar examples of households relying on kinship, for example Dekker (2004) noted a reliance on kinship in response to agricultural expenses with people assisting one another with ploughing fields. Godoy *et al.* (1998) noted households borrowing seeds from neighbours when past crop shortfalls resulted in inadequate seed stocks and households consuming their seed stores as a result of crop losses. Dekker (2004) also noted households relying on kinship to help cover medical expenses associated with illness/injury.

5.3.2.2 *Reductions to household spending – internal economic adjustments*

A reduction to household spending was the second most prevalently reported strategy and was reported for all the identified crises. Households also reported reduced spending in response to increasing living costs. This strategy is used as both an ex-ante and ex-post strategy. For example households reduced spending in the months prior to Christmas to save money for celebrations (ex-ante) whilst households that lost assets as a result of fire or rain damage, reduced spending in order to save money to replace these (ex-post). Households reduced spending on items such as spices, cosmetics, paraffin, and luxury or purchased food groups. As a result this reduced spending is often associated with the increased use of NTFP substitutes – either fuelwood for energy or wild foods, highlighting one of the predominant manifestations of the rural safety-net function of NTFPs. As a strategy reductions to household spending was reported by a significantly greater proportion of wealthy households suggesting these households spend money on items they can do without or can substitute with NTFPs. With respect to the individual crises, the difference was significant for crop loss and for the increasing cost of living. For both these crises, wealthy households reduced their spending on luxury items to allow for the purchase of more essential goods. Poor households are already constrained in their spending with a focus on essential items. This makes cost-cutting difficult. For example poor households cannot reduce spending on paraffin and substitute it with fuelwood as they do not rely on paraffin initially. The difference for gender is not significant. Skoufias (2003) refers to extreme cases of reductions on spending when households can no longer afford to feed or educate their children. This has implications for the future of the household, perpetuating poverty and undermining the household's human capital. Group discussions indicated the removal of children from school as a means to cope but emphasised that it is a strategy of last resort.

5.3.2.3 *Changes to household food consumption*

The third most prevalently reported strategy together with a reliance on savings or budgeting in advance, involved changes to household food consumption. This change assumed various forms including reducing/excluding “luxury” food groups such as meat from the diet, reducing the quantity eaten at each meal or in more extreme cases, reducing the number of meals consumed per day. Skoufias (2003) and Heemskerk *et al.* (2004) highlight the negative affect these adjustments can have on households (particularly when households' ability to feed their children is affected), affecting households' human capital and often transmitting poverty to the next generation. This does however depend on the extent of reductions and period for which households do this. Maxwell *et al.* (1999) considered changes to household

food consumption as an indicator of food insecurity with more extensive coping indicating greater food insecurity. Changes to household consumption were identified as manifesting in various ways, including alterations to the diet (i.e. consuming less expensive/less preferred food), short-term increases in available food through food seeking strategies, decreases in the number of people the household has to feed (e.g. short-term relocation of dependents to extended family) and managing the food insufficiency through rationing (Maxwell *et al.*, 1999). Food seeking strategies may include increased extraction of wild foods. Rationing may include limiting the portions served at mealtimes, limiting the intake of adults to ensure children have food, reducing the number of meals per day and in more extreme cases skipping whole days without eating (Maxwell *et al.*, 1999).

This study found households changing food consumption in response to the costs associated with school fees, and social and agricultural expenses. It was a prevalent strategy in response to seasonal crop shortfalls and crop damage/loss highlighting the reliance of rural households on arable production for direct household consumption. Fewer households changed their food consumption in response to livestock diseases, loss of/damage to assets, medical expenses and funeral expenses possibly because these are more short-term stochastic shocks which don't allow households to prepare in advance by changing food consumption and don't impact on food production as do seasonal crop shortfalls and crop loss. Reduced household spending and changes in food consumption were prevalent in response to income loss as well as the increasing cost of living. With respect to household wealth and gender of the de jure household head, the overall difference is significant for wealth but not gender however for the individual crises a greater proportion of female-headed households changed food consumption to cope with the expense of annual school fees. In terms of coping with food insecurity Maxwell *et al.* (1999) found differences between male- and female-headed households with female-headed households relying on short-term strategies to increase food availability such as borrowing food, buying food on credit and relying on kinship rather than altering household food consumption. Maxwell *et al.* (1999) consider changes to food consumption as an indicator of food insecurity. As such, at glance the findings from this study would suggest wealthy households to be more food insecure however as Maxwell *et al.* (1999) explain there are variations in food consumption changes that need to be taken into account. Whilst both wealth groups reported changes to food consumption as a strategy, the impacts of such a move are likely to be less severe on wealthy households. Wealthy households who purchase and consume more "luxury" foodstuffs can change food consumption by cutting out these products. Poor households on the other hand do not purchase luxuries they can exclude. As such changes in food consumption are likely to include reductions in the purchase and consumption of staple foodstuffs as well the quantity served at each meal or the number of meals consumed per day. This is likely to be to the detriment of household members' nutrition, children's development and so forth (Skoufias, 2003). According to Maxwell *et al.* (1999) for households where a high proportion of the budget is allocated to the provision of food, even small shocks can lower household consumption. Group discussions indicated the substitution of purchased food with wild alternatives in response to food consumption changes.

5.3.2.4 *Saving and budgeting*

This strategy was reported by an equal proportion of households as reported changes to the household diet. As a strategy this was used in response to the complete range of crises although was most noticeable for anticipated expenses of annual school fees and social expenses which households budgeted for in advance. According to some respondents several years notice is often given for traditional ceremonies allowing households sufficient time to save for the expense. There are different aspects to this strategy which are related to the other strategies used. In the anticipation of increased expenditure households budgeted and saved through actions such as reductions to household spending or changes to household food consumption. In response to crises households relied on savings either specifically designated for coping with unforeseen expenses or set aside for other purposes. Mock *et al.* (2003) explains that relying on existing savings in response to crises can constitute a lost opportunity if the money was intended for investments elsewhere. Either way though, as a strategy saving and budgeting is more feasible for wealthy households. This is emphasised by one poor respondent who explained that their household's primary source of income was a child-support grant however at R 180 per month this allowed for the purchase of 50 kg of mealie meal and R 40 change that was then used for other household expenses making saving an impossibility. Wealthy households are defined by regular inflows of cash either through formal wages or old-age pensions (Chapter 2 & 3). This allows households to put money aside for expenses. Additionally as described above wealthy households are able to reduce household spending in order to save without these reductions impacting negatively on the household's well-being. Wealthy households are also able to invest money in saving schemes which they can then turn to in response to financial need. Poor households are constrained from budgeting as little money is left over after the essential items have been purchased. If they do budget they need to do so for longer periods on time.

5.3.2.5 *The sale of livestock*

Livestock has been described as an important form of savings and insurance for rural households (Dercon, 1998; Dekker, 2004). Households in this study substantiated this by referring, on numerous occasions, to their livestock as their "bank". The findings of this study suggest that livestock is sold in response to both anticipated periods of hardship and unexpected crises. Additionally respondents felt they sell livestock more frequently now in response to the increasing cost of living. According to Shackleton *et al.* (2001) although livestock owners may not rely on the full range of benefits associated with livestock, the option to do so offers increased security. For each of the individual crises, the sale of livestock was not the most prevalently reported strategy, generally reported by less than 20 % of households with wealthy and male-headed households reporting this strategy for a greater diversity of crises. The composite picture however places the sale of livestock within the more common strategies reported with 44 % of households reporting the sale of livestock as a means of coping. As a strategy, a greater proportion of wealthy households reported the sale although of the common strategies identified by wealthy households, it was the least reported. For both male- and female-headed households it was the sixth most prevalent strategy. The sale of livestock as a coping strategy is obviously determined by the households existing asset base (i.e. livestock

ownership). In Dyala a greater proportion of wealthy and male-headed households own livestock and therefore have the option to sell. A significantly greater proportion of wealthy households own cattle, goats and pigs and also have greater average number of these per household. In Dixie significantly more wealthy households own cattle and more cattle per household (Chapter 3). Cattle are considered a high value asset although goats may be easier to liquidate (Dercon, 1998). Households with livestock have the option to sell and having more livestock per household means households can sell with the security that they have remaining livestock to rely on both as a livelihood and a coping strategy. Niehof (2004) refers to the sale of assets (including livestock) as the de-diversification of assets which threatens to weaken the overall insurance options of the household resulting in a downward spiral of increasing vulnerability. This is likely to apply particularly to households with fewer livestock numbers and limited breeding stock.

Fisher (2004) found households in Malawi were restricted from owning cattle as a result of land shortages therefore they invested in goats as a form of savings. Those households with goats were found to be less reliant on NTFPs and where they were involved in NTFP-based activities, this tended to be restricted to high-return products. These households sold goats in response to a range of crises. Dovie (2001) also noted that households with livestock sold them in response to crises and were therefore less dependent on NTFPs. This study considered a range of factors when analysing which household characteristics show a positive correlation to the use of NTFPs as a rural safety-net. Included in these was the ownership of cattle. The results indicate no significant relationship between livestock ownership and the use of NTFPs as a rural safety-net; contrary to findings by Fisher (2004) and Dovie (2001). The sale of livestock has been identified in response to various crises: Dekker (2004) identified households selling livestock in response to death of family members, to crop loss and to illness. Dovie *et al.* (2006) noted the increased sale of livestock during drought years to buy food however households also experienced considerable livestock losses suggesting a degree of risk involved in relying on livestock as a primary strategy – either livelihood or coping. Sauerborn *et al.* (1996) noted the sale of livestock and other assets as strategy once household savings had been exhausted. Respondents in this study did identify weaknesses to the sale of livestock as a coping strategy including, difficulty in finding a market at the required time. This may explain the more prevalent use of this strategy for expected expenditure such as school fees and social expenses whereby households can arrange the sale of livestock in advance. Additionally these expenses coincide with a time of the year when there is an increased demand for livestock for slaughter for ceremonial purposes, therefore creating a market for households with livestock to sell. Respondents also explained that the money made from the sale of livestock was often more than sufficient for the crisis in question, allowing households to invest the remainder elsewhere.

The sale of household assets was not identified as a common strategy and was not ranked highly in either village. Mock *et al.* (2003) identified the sale of assets as threat to future household security especially for poor households who don't have sufficient insurance alternatives and ultimately rely on strategies that may constitute a poverty trap such as the sale of productive assets. These households are often unable to recoup these assets. Mock *et al.* (2003) investigated the affects of illness on rural and urban households and found both groups to sell assets although the nature of the assets differed with urban households selling higher

value assets. It is argued in this study that wealthy households with a greater variety of assets as well as higher value assets such as cattle are more secure in using the sale of assets as a coping strategy. Poor households may be forced to sell productive assets. Smith *et al.*, (2001) found investments in micro-enterprises to be the first to be “asset-stripped” when households faced crises, with households then relying on land-based strategies. Skoufias (2003) identifies the sale of assets as an ultimate poverty trap when households are forced to sell productive assets. Households with limited access to credit are especially vulnerable as it is hard for them to replenish those assets (Skoufias, 2003).

5.3.2.6 *Stokvels and burial societies*

Households in both villages were found to have invested in a variety of saving schemes including burial societies, stokvels, bank accounts and insurance schemes. Lukhele (1990) documented widespread membership in burial societies and stokvels throughout South Africa. These saving schemes have an important insurance value and contribute to overall livelihood security assisting households to cover funeral expenses, to educate their children, to establish micro-enterprises, to cover various household expenses including the purchase of food and household items (Lukhele, 1990). Different schemes fulfil different functions with burial societies helping households cover the often considerable costs associated with funerals whilst stokvels contribute through both the payouts and the credit function offered. The payout function differs depending on whether the group operates as a rotating or accumulating group however generally households benefit from this function for anticipated expenses. This is highlighted in the findings with households relying on the December stokvel payout to assist with the costs associated with Christmas and the payment of school fees. For other crises households relied to a greater extent on the loan function offered. Accumulating groups allow members to take out loans which are then repaid with interest (Lukhele, 1990). Bouman (1995) explains that stokvel loans are given out primarily for emergencies and then for consumption and production purposes. This function assists with a diversity of crises: households in this study borrowed money to pay school fees, to cover agricultural expenses, to assist with livestock diseases, to cope with repairing/replacing damaged assets and to cover medical expenses. No households reported relying on stokvels in response to seasonal crop shortfalls, crop loss or loss of income. Skoufias (2003) highlights that the informal insurance offered by these groups may be insufficient for wide-scale shocks that affect all members of an insurance group. This may explain why borrowing from stokvels was not reported for seasonal crop shortfalls and crop losses. In terms of loss of income, it is hypothesised that households may choose not to borrow from stokvels because of the interest rates on repayment. Although these are usually considerably lower than those rates for formal credit providing institutions, for a household facing an uncertain future as a result of income loss, loaning from stokvels may result in an inevitable downward spiral of increasing debt. According to Heemskerk *et al.* (2004) the insurance option offered by credit systems is weakened when households can't make the expected payments. This is problematic in the sense that the reason households are unable to make payments is because of increased vulnerability, a time when they are likely to be most dependent on these groups. Withdrawing from these societies because the household can't pay the membership fees ultimately weakens the household's portfolio of coping strategies (Heemskerk *et al.*, 2004). Respondents in this study indicated that non-

payment not only resulted in the loss of membership but also the loss of any savings invested up to that point. A significantly greater proportion of wealthy households reported membership of these groups and the number of saving schemes owned per household is one of the factors distinguishing wealthy households from poor (Chapters 2 & 3). Of the prevalent strategies identified in this study only 18 % of poor households reported relying on stokvels. It is also the least prevalent strategy for both gender groups. For wealthy households it was reported by a smaller proportion than those relying on NTFPs but by more households than those selling livestock. In the groups ranking exercises it was ranked second highest in both Dyala and Dixie. No positive relationship was found between households without saving schemes and those relying on NTFPs as a rural safety-net.

5.3.3 The rural safety-net function of NTFPs

5.3.3.1 *The prevalence of use*

Chapter 4 suggests the use of NTFPs to be a common feature of rural livelihoods with 100 % of households in both villages reporting the use of at least one NTFP. With respect to the proportion of households using NTFPs as well as the average number of NTFPs used per household, the findings show no significant influence of either household wealth or gender of the de jure household head. With respect to wealth this supports findings by Shackleton and Shackleton (2006). As such it can be argued that as all households rely on NTFPs as a part of their livelihood portfolio, the safety-net option is available to all. The findings of this chapter indicate that whilst not all households turn the rural safety-net option offered by NTFPs in response to misfortune, it is a prevalent safety-net with 70 % of households reporting the use of NTFPs as a rural safety-net. If the substitution of purchased products (including food and paraffin) with NTFPs in response to increasing living costs is included, then the rural safety-net function was reported by 82 % of the sample. The rural safety-net function of NTFPs is an important component of NTFP use as a whole (Pattanayak & Sills, 2001). This high proportion of households relying on NTFPs as a rural safety-net combined with the 100 % and 22 % of households that use and sell these products respectively on a regular basis (Chapter 4) suggests that the benefits rural households derive from NTFPs are considerable. Additionally it suggests that the direct-use value attributed to NTFPs may be an insufficient indication of the contribution made by these products to rural livelihoods. Shackleton and Shackleton (2004) suggest that the rural safety-net option offered by NTFPs may be of higher value than the direct-use value of these products. Furthermore, as with the more regular use of NTFPs, the results indicate that households rely on this safety-net function irrespective of household wealth or gender of the de jure household head. Pattanayak and Sills (2001) concluded that the importance of NTFPs as a rural safety-net is not restricted to the poorest members of a community but it is more important to those with fewer or no alternatives. Wealthy households make use of NTFPs both regularly and as a rural safety-net as it allows them to make investments in alternative livelihood strategies which in turn contribute to increased livelihood security and ability to cope (Pattanayak & Sills, 2001). According to Shackleton and Shackleton (2004) the regular use of NTFPs is an important cost-saving for rural households allowing for the acquisition of assets and the establishment of a more secure livelihood. This cost saving is described as more important to the poor than the wealthy.

This study found kinship and a reliance on community-support networks to be the most prevalent coping strategy substantiating findings by McSweeney (2003). There are mixed results in the literature on the safety-net option offered by forests and NTFPs with a focus on tropical forests. McSweeney (2003) considered the safety-net role offered by the sale of NTFPs in Eastern Honduras in response to hardship associated with Hurricane Mitch. Kinship and soliciting loans from family and friends were found to be the primary means of coping (McSweeney, 2003). Godoy *et al.* (1998) considered misfortune in Bolivia and noted a heavy reliance on forests for coping however this manifested more through forest clearing to allow for cultivation than through the use of NTFPs. Godoy *et al.* (1998) found forest clearing and advances on salaries to be more important than a variety of other strategies employed including reciprocity, savings, borrowing or credit and the sale of livestock. These findings support the rural safety-net role of forests and NTFPs but show the manner of coping to be variable for different types of crises (Godoy *et al.*, 1998). Pattanayak and Sills (2001) found NTFP collection to be positively correlated with both agricultural shocks and expected agricultural expenses although it was not the only strategy identified. Households in this study reported relying on NTFPs in response to each of the identified crises: both anticipated periods of hardship, unanticipated crises/expenses as well as more long-term trends such as inflation. For each of the identified crises households reported the increased use of NTFPs, the substitution of purchased products with NTFPs or sale of NTFPs as a coping strategy. For each crisis the use of NTFPs as a rural safety-net was not the most prevalently reported means of coping nor was it least prevalent means. The composite picture shows little influence of either household wealth or gender of the de jure household head on the reliance on NTFPs as a rural safety-net however how the use manifests differs depending on these household characteristics. This is seen with respect to the use of NTFPs in response to increasing living costs where significantly more poor households reported an increasing reliance on wild foods whilst significantly more wealthy households reported an increasing reliance on fuelwood as a substitute for paraffin. Shackleton and Shackleton (2004a) noted the use of NTFPs in response to inflation, with the safety-net use adapting into a full-time strategy as the price of living continued to increase.

With respect to household wealth, the findings suggest that both wealthy and poor households make extensive use of NTFPs as a rural safety-net but that this coping option is more important to poor households than wealthy households. For wealthy households a reliance on NTFPs as a rural safety-net was the fifth most prevalently reported strategy following savings, reduced spending, and equally changes to the household diet and kinship. For poor households NTFPs was the second most prevalent strategy following kinship. As coping strategies kinship and NTFPs are two not influenced by the household's wealth or asset base although other aspects such as the household's social capital or the availability of NTFPs may control their use. As such the rural safety-net option offered by NTFPs is available to both wealthy and poor households whilst other strategies present barriers to the poor households as a result of their economic position. For example this study found a greater proportion of wealthy households to have invested in saving schemes as well as a greater variety of schemes per household. The reliance on stokvels and burial societies was identified as a prevalent coping strategy with a greater proportion of wealthy households reporting reliance on these schemes in response to a variety of crises. Poor households with fewer alternative strategies at their disposal are therefore more dependent on both kinship and NTFPs (Pattanayak

& Sills, 2001). Coping strategies can involve both internal and external strategies. Examples of internal strategies include economic adjustments to household spending, changes to household food consumption and the sale of assets (including livestock). External strategies include strategies such as kinship and the use of NTFPs. Of the most prevalent strategies, those that are classified as internal strategies are significantly influenced by household wealth whilst the external strategies are not. Pattanayak and Sills (2001) state that NTFPs are an important rural safety-net as alternative insurance mechanisms seldom reach the poor.

None of the prevalent strategies showed the influence of gender of the de jure household head however the findings indicate female-headed households to be more dependent on this insurance than their male-headed counterparts. For female-headed households NTFPs were the second most prevalently reported strategy whilst for the male-headed households it was fifth. For both groups the greatest proportion of households reported kinship. With respect to the use of NTFPs as a coping strategy, whilst the overall reliance on this strategy is not influenced by either household wealth or gender of the de jure household head, these characteristics (household wealth in particular) do influence the manner in which the rural safety-net function manifests and the products households rely on in response to risk.

5.3.3.2 *The manifestation of the rural safety-net function and the products used*

The use of NTFPs as a rural safety-net was found to manifest in two predominant forms, either through direct household provisioning or through the sale of various products. These two categories were broken down further into the increased use of NTFPs already used, the use of NTFPs not usually used, the increased sale of NTFPs (in cases where the household is already trading in these products) and the sale of NTFPs not usually sold. The dual manifestation allows for both consumption- and income-smoothing. According to Shackleton and Shackleton (2004a) the changed or increased use of NTFPs is typically a coping strategy whilst the commercialisation of NTFPs is also an important manifestation of the rural safety-net function particularly for poor households. The households in this study were questioned on their use of NTFPs as a rural safety-net in response to the identified crises but were also asked to detail other times within the two year period when they had either used or sold NTFPs in response to either anticipated or unanticipated periods of hardship. The results from this section show that wealthy, poor, male- and female-headed households increased their use of NTFPs in response to crises with the difference for gender being significant. A greater proportion of male-headed households increased their use of products already used in the household portfolio. All four groups relied on NTFPs not usually used with this manifestation being less than the standard increased use. Both the increased sale and the sale of products not normally used showed no relationship with gender of the de jure household head. For wealth a significantly greater proportion of poor households increased their sale of NTFPs, emphasising the importance of the sale of NTFPs as both a livelihood and coping strategy for poor households. The sale of products not normally sold was noted for both groups and was not significant. Overall the results show the use of NTFPs to be a more prevalent manifestation of the rural safety-net function than the sale.

5.3.3.2.1 The use of NTFPs as a manifestation of the rural safety-net function

The use of NTFPs as a rural safety-net was predominantly restricted to the use of wild foods as a dietary supplement and substitute when crises impacted the household food security and ability to purchase food; the use of medicinal plants as a cheaper alternative to “western medicines”, and the use of fuelwood as a substitute for more costly forms of energy (i.e. gas and paraffin). Other commentators have noted the use of NTFPs as a rural safety-net with a particular focus on the contribution of wild foods. Pattanayak and Sills (2001) noted the reliance on NTFPs for food, for medicine and to sell. Wild foods have been identified as both a nutritional supplement and a gap-filler particularly during times of low agricultural productivity (Dei, 1989; Dovie, 2003; McSweeney, 2003; De Merode *et al.*, 2004). De Merode *et al.* (2004) highlight that the unsustainable use of particular wild foods (with a focus on bushmeat) is not only of concern for conservation but also that the depletion of these foods may exacerbate food insecurity, vulnerability and poverty. Ackermann (2003) noted the increasing use of wild yams in Madagascar in response to decreasing agricultural production (including seasonal crop shortfalls and crop failure) with the importance of these resources being determined by the severity of the food shortage. As with Dixie where households dry and store wild edible herbs for the use in those months characterised by seasonal crop shortfalls, Ackermann (2003) noted the storing of yams to allow. De Jong *et al.* (2000) noted the increased reliance on medicinal plants in Zimbabwe in response to declining health services.

Of all households that reported using NTFPs as a rural safety-net, the most common group was wild edible foods (consisting of fresh wild edible herbs, wild edible herbs (dried), wild edible fruits and bushmeat), then medicinal plants, followed by, fuelwood as a substitute for paraffin then building materials (including thatch, building poles and sand. With respect to the influence of wealth and gender of the *de jure* household head, neither of these characteristics influences the reliance on wild edible foods with the exception of bushmeat. No wealthy households reported relying on bushmeat. Numerous respondents reported hunting to be an illegal activity and that they choose not to hunt out of fear of arrest. The fact that no wealthy households reported hunting on a regular basis or relied on bushmeat in response to crises suggests two possibilities: i.) that wealthy households do not have the requisite knowledge and skills to turn to hunting (i.e. bushmeat) as a coping strategy or ii.) that wealthy households are not prepared to enter into illegal activities in order to cope. Poor households with fewer alternatives may discount the risks involved. The use of medicinal plants was noted by both wealth groups and by both male- and female-headed households with no significant differences. A greater proportion of wealthy households relied on fuelwood, predominantly as a substitute for paraffin: for poor households fuelwood is already their primary source of energy therefore their reliance on fuelwood manifested through the sale of this product. McSweeney (2005) suggests that forests and NTFPs can help households cope and recover from misfortune and that access to NTFPs expands the insurance options of rural households. According to Fisher (2004) a reliance on NTFPs helps the poor to survive poverty, not escape it.

5.3.3.2.2 The sale of NTFPs as a manifestation of the rural safety-net function

With respect to the sale of NTFPs as manifestation, fewer households sold NTFPs in response to crises with the mostly commonly sold product being fuelwood whilst other households sold reed mats, carvings, thatch grass, bushmeat and so forth. McSweeney (2003) noted the sale of NTFPs however this was generally not the initial strategy relied on but sold rather at a later date to repay initial loans. This study found, of those relying on NTFPs as a safety-net, 10 % of households sold fuelwood and 8.6 % sold other NTFPs. McSweeney (2003) noted approximately 9 % of households relying on the sale of NTFPs for both income-smoothing and to meet sudden cash needs. McSweeney (2003) found different products were sold to meet different needs, depending on the value of production and the extent of need. This study however identified the sale of fuelwood in response to a range of crises with fewer households selling alternative products. Fuelwood was identified as a key product to sell as it is both available and is used throughout the year. Additionally the wood can be collected and stored to be sold when the household requires money. Other commentators have noted the importance of wood products for these reasons (Pattanayak & Sills, 2001; McSweeney, 2005). Shackleton (2005) focussed on NTFP traders and found that the processing and sale of NTFPs had been taken up by many rural households in response to increasing economic hardship. This study support this finding with 70 % of those selling NTFPs having entered into the trade within the last five years (Chapter 4). According to Shackleton (2005) the income from the trade in various products contributes to raising household incomes but does not offer a pathway out of poverty. Examples of where NTFPs are sold as a means to alleviate stress during seasonal food or cash shortfalls include selling forest products in western Niger and Sierra Leone (Arnold & Ruiz Perez, 1998) whilst Shackleton and Shackleton (2004a) noted the sale of NTFPs to raise money for school fees. Dovie (2003) noted the sale of baobab bark in Zimbabwe with the sales peaking during seasonal crop shortfalls, drought and in response to job losses. This sale was considered an important safety-net (Dovie, 2003). The sale of NTFPs is neither a prevalent or primary insurance strategy and its use in response to misfortune depends on the crisis in question and on available household labour (McSweeney, 2003).

With respect to the influence of household wealth and gender of the de jure household head on the sale of NTFPs, both male- and female-headed households sold NTFPs in response to crises with there being no significant difference between the two however, no wealthy households sold NTFPs in response to need. Wealthy households do however sell NTFPs on a more regular basis as a supplementary income. This suggests that poor households are more dependent on the rural safety-net function of NTFPs than their wealthy counterparts. Shackleton (2005) approached traders in NTFPs in the Bushbuckridge region and found the trade was predominantly in response to increasing hardship having, in most cases, initiated as a coping strategy but developed into a full-time activity. The sale was found to be more prevalent amongst female-headed and poor households. McSweeney (2005) found those households involved in the sale of NTFPs post-Hurricane Mitch despite the restriction in place, to have more female labourers, more experience of commercial extraction, to have claimed less land and failed to recover lost assets. There are mixed reports on the sale of NTFPs as a rural safety-net. According to Dovie (2001) this manifestation of the rural safety-net function is increasing identified as a response to crises such as low crop productivity.

De Merode *et al.* (2004) found the safety-net function of NTFPs to manifest less through increased consumption (although consumption did increase in agriculturally dry months) than through sale. The products used were also found to differ with wild plants being used for consumption-smoothing and bushmeat for income-smoothing. Wealthy and poor households were found to be involved in the sale of different resources with the wealthy selling fish and bushmeat whilst the poor sold wild edible plants. The lack of fishing nets and guns in poor households restricted them from selling more lucrative fish and bushmeat (De Merode *et al.*, 2004) suggesting that NTFPs may offer better opportunities for wealthy household as a pathway out of poverty but is important for the poor for more immediate security .

5.3.4 Opportunities and constraints offered by NTFPs as a rural safety-net

Discussions with respondents indicated that individual coping strategies are associated with both opportunities and constraints. For example respondents stated that whilst borrowing from loan sharks is useful in the sense that it provides immediate access to the necessary cash, the high interest on repayments can result in inescapable debt. Arable agricultural was identified as making an important contribution to food security during adverse times but was constrained by high input costs and the availability of rain. Mock *et al.* (2003) suggest that coping strategies have associated costs including high rates of debt, increased vulnerability as a result of the de-diversification of household assets, and the negative effect on human capital when children are removed from school either to save on costs or in response to household labour shortages and so forth. With respect to NTFPs as a rural safety-net, respondents also identified opportunities and constraints. These opportunities and constraints associated with the various coping strategies support the need for a diverse portfolio of coping options with some strategies being more effective in certain situations than others. This is supported by the literature; both Skoufias (2003) and Dekker (2004) found risk-sharing strategies (including kinship and stokvels) to be weak strategies in the face of covariate risks. It is hypothesised that poor households with restricted individual coping options are therefore particularly vulnerable to covariate risk when these risk-sharing strategies (especially kinship) fail. Whilst this study has found both wealthy and poor households to rely on NTFPs in response to crises, the degree of reliance may differ between individual and covariate risks. This aspect requires further investigation.

5.3.4.1 Opportunities

The opportunities offered by NTFPs as a rural safety-net were identified to include the vast range of products offered for both direct household consumption and sale, the financial independence offered by relying on NTFPs as opposed to other strategies such as loan sharks which may result in increasing debt, and the essentially “free” nature of the resources and the possibility of entering NTFP-based activities without requiring start-up capital. For this study, as a rural safety-net NTFPs are theoretically available to all households and do not leave the household more vulnerable after applying these strategies. Furthermore relying on NTFPs as a rural safety-net is not associated with the constraints associated with strategies such as the sale of assets which, threaten to leave the household more vulnerable for future crises. NTFPs are

perceived to be attractive to the rural poor because in many cases, whilst collecting NTFPs is labour-intensive it requires little capital investment or skills (Angelsen & Wunder, 2003). This perception of NTFPs as a “free” resource extends to their perceived strength as a rural safety-net however there are factors that potentially govern the use of NTFPs as well as the opportunity costs involved in their collection. Whilst NTFPs can be easily obtainable, factors such as land tenure, resource availability and accessibility, institutional dynamics, available alternatives and, population dynamics (age, wealth and gender) affect consumption (Kepe, 2002; Shackleton & Shackleton, 2004b). When considering the factors that potentially govern regular NTFP use, the perception that the strength of NTFPs as a rural safety-net lies in their easy accessibility may be flawed.

5.3.4.2 Constraints

According to Heemskerk *et al.* (2004) informal safety-nets breakdown when they are most needed and also fail to protect adequately those who most need them, namely the elderly, poorest and physically disabled members of the community. Whilst the opportunities offered by NTFPs suggest that as a rural safety-net these products are especially favourable for the poor, there may be limitations for the elderly and physically disabled suggesting the need for alternative strategies. According to Skoufias (2003) many informal insurance strategies are not completely effective. Additionally they are associated with negative side-effects including lower child nutrition, lower savings and investments (Skoufias, 2003). Bryceson and Fonseca (2006) found households in Malawi coping by providing labour for other households in exchange for money or food, particularly during agricultural seasons when households need extra labour. This however means that labour is then directed away from the persons own household and land, compromising livelihood security and sustainability (Bryceson & Fonseca, 2006). The constraints to the rural safety-net role of NTFPs identified in this study include insecure tenure and rights of access; weak or absent markets; the loss and/or change of knowledge and skills; resource scarcity, seasonality and over-use, and the opportunity costs associated with collection (including the distance travelled, the lack of transport, the time required and the age, strength and health of household members).

5.3.4.2.1 Insecure tenure and rights of access

Respondents suggested difficulties in accessing NTFPs as a result of insecure tenure and rights of access. In Dyala several respondents expressed that they would rely more heavily on NTFPs as a safety-net if it was not for the permit system in place. McSweeney (2005) noted the impact of harvesting restrictions on the use of NTFPs as a rural safety-net in Eastern Honduras. Prior to Hurricane Mitch when the restrictions on harvesting were minimal, households reported the sale of NTFPs as means to meet various household needs including the purchase of medicine and food (in response to crop failure). However, the harvesting restrictions enforced shortly after Hurricane Mitch undermined the use and sale of NTFPs as rural safety-net function, denying the poor of an important rural safety-net. Fisher (2004) highlights the importance of taking restrictions on use into consideration bearing in mind the impacts these may have on those that most depend on continued access to resources for both livelihood and coping. According to Scherr (2000)

continued and well managed systems of access to natural capital (including NTFPs) should be considered crucial in promoting poverty alleviation and sustainable use.

5.3.4.2.2 The opportunity costs of collection

The collection of NTFPs is a labour intensive activity and is associated with potentially high opportunity costs. The labour-intensive nature of this activity was identified in this study as a limitation to the rural safety-net function particularly for those with disabilities, the elderly and households without sufficient labour. De Waal and Whiteside (2003) noted a decreased reliance on NTFPs in households whose labour is affected through illness, injury and HIV/AIDS. Pattanayak and Sills (2001) found those households with the oldest head reduced their collection trips as a result of the labour intensive nature of these trips. It is also hypothesised that this restricts wealthy households from relying on NTFPs as a coping strategy as these households face labour constraints.

5.3.4.2.3 The loss of and/or changing knowledge and skills

McSweeney (2003) identified environmental knowledge as a factor that influences the way households deal with crises and the strategies they rely on: the youth don't know about useful NTFPs and therefore are less reliant on NTFPs as a coping strategy. Respondents in this study identified the loss of knowledge both of the NTFPs available as well as skills associated with the collection and use of these products to be a limitation of the rural safety-net function. For example, respondents indicated that they could not rely on the sale of grass hand-brushes or reeds mats because they did not have the skills to make these. Other respondents stated that as they do not rely extensively on NTFPs on a regular basis they are uncertain of what products they could rely on as a rural safety-net. De Waal and Whiteside (2003) noted the impact of HIV/AIDS on the transference of knowledge from one generation to the next with the knowledge of preparing wild foods being lost. Pattanayak and Sills (2001) argue that whilst NTFPs can help households to smooth consumption, households must first know about the products as well as where they are found. Therefore the regular use of NTFPs affects the safety-net options in terms of both the use and sale of NTFPs (Pattanayak & Sills, 2001). It was found that longer established households more accumulated knowledge of NTFPs relied more on NTFPs as a rural safety-net than younger households with less knowledge and changing preferences (McSweeney, 2005).

5.3.4.2.4 Resource scarcity, seasonality and over-use

Respondents in this study expressed that NTFPs were not always an effective strategy as they are not always available. The primary reason given for this was seasonal fluctuations in availability however respondents also noted resource scarcity as a result of over-use and harvesting by outsiders. Cavendish (2000) found resource use to fluctuate not only in response to economic parameters but also as a result of climatic changes affecting availability. Respondents in this study noted seasonal fluctuations in NTFP availability as a potential weakness of the rural safety-net function. In addition to this general discussions in Dixie indicated that during the last drought households were unable to rely on wild foods as these were not

available. Cavendish (2000) also noted that during drought years wild edible fruits and wild edible herbs often fail to appear impacting on household food consumption. Belcher *et al.* (2005) emphasise the benefit of a range of NTFPs in livelihood portfolio (both use and sale) as it allows households to spread the risk and modulate the timing of income. This is supported by Cavendish (2002) who noted that although preferred species were not available to households during years characterised by drought, the variety of products offered by NTFPs meant that less preferred foods were still available. This supports the safety-net role of NTFPs. Cavendish (2000) found NTFPs were still available for both household consumption and trade even when crops failed due to drought or disease. According to Pattanayak and Sills (2001) the seasonal distribution of NTFPs offered by a range of species, can stabilise household incomes.

5.3.4.2.5 Weak or absent markets

The respondents in this study expressed that the sale of NTFPs as a rural safety-net was often constrained by weak or absent markets. With respect to the overall trade in NTFPs, the local context plays an important role with the sale in Dyala predominantly restricted to intra-village trade whilst households in Dixie were selling to visiting tourist as well as at monthly pension points in surrounding villages. The character of the market in both villages is likely to affect the option of selling NTFPs as a rural safety-net. McSweeney (2003) emphasises the role of both access to resources and proximity to markets in determining the rural safety-net function of NTFPs. The results of this study suggest certain markets for NTFPs to be seasonal therefore restricting the sale of products outside of these periods.

5.4 Conclusion

The findings of this study show that rural households are vulnerable to a range of risks, shocks and trends. Sen (2003) identifies factors that contribute towards vulnerability to include crisis factors (i.e. natural disasters, health hazards and ceremonies), lifecycle factors (i.e. an increasing dependency ratio) and structural factors (i.e. decreasing employment opportunities and access to credit). This study has focussed predominantly on identified crisis factors and considered how rural households cope with these. The findings show that in response to vulnerability rural households turn to a range of possible coping options with certain strategies being more prevalent and effective. The rural safety-net function of NTFPs was found to be a common feature of rural households manifesting through both the increased use and sale of certain products. The household characteristics, wealth and gender of the *de jure* household head, were found to influence susceptibility to particular risks as well as influence the coping strategies used. For the more indiscriminate risks identified neither characteristic was found to be influential however for those risks associated with particular assets (e.g. livestock disease) wealthy households were found to be more prone to the risk although this does not give an indication of the extent of the impact on household well-being. With respect to the coping strategies the most prevalently use by poor households were kinship and increased NTFP extraction and sale. Wealthy households relied to a greater extent on internal strategies making economic adjustments to household spending and food consumption, selling livestock and relying on stokvels. Whilst poor households still rely on these strategies, they are constrained by way of their

economic position and existing asset base. Wealthy households however still rely extensively on NTFPs and kinship and it is argued that a reliance on these allows wealthy households to maintain their alternative strategies for more severe crises (Skoufias, 2003). With respect to gender of the de jure household head, no strategy was reported by a greater proportion of either group although for female-headed households NTFPs and kinship were more prevalent than the individual strategies. Households identified both opportunities and constraints to the rural safety-net function of NTFPs yet despite the constraints the reliance on this form of insurance is prevalent.

In addition to the prevalence of the rural safety-net function, the findings highlight that the function can manifest through the increased use of NTFPs, through the substitution of commercial goods with freely available NTFP alternatives and through the sale of various products, predominantly fuelwood. The increased use was found to be a common manifestation irrespective of household wealth or gender of the de jure household head however the sale of NTFPs was almost exclusive to poor households despite wealthy households being involved in the more regular trade of NTFPs. McSweeney (2003) highlights that understanding how people use resources is important for planning both economic and environmental sustainability. Understanding households' own strategies for combating poverty and vulnerability is important for the effective targeting of public safety-nets (Skoufias, 2003). If increased livelihood security is a development goal then all aspects of the vulnerability context as well as the range of potential coping strategies households rely on require attention and development. According to Fisher (2004) there is the need for a range of poverty alleviation approaches. NTFPs are considered an important rural safety-net for the poor who often do not have access to alternatives (Pattanayak & Sills 2001) however the realisation of the contribution made must not detract attention from other development strategies required to ensure livelihood security and poverty alleviation. Forests may not be the ultimate panacea for poverty alleviation however findings from this study of their prevalent role as a rural safety-net suggests this rural safety-net warrants further investigation. However this should consider the function within the broader portfolio of coping options.

CHAPTER SIX: CONCLUSION

6.1 Introduction

Rural households, particularly in the developing world, are vulnerable to adversity arising from changes in the social, economic, bio-physical and political environments in which they exist (DFID, 1999; Wood, 2003). These changes include either short-term shocks or long-term trends. Poverty is the driving cause of the susceptibility of rural households to these crisis events and, is now considered to be more than just an economic concept but includes social and geographic dimensions (Reardon & Vosti, 1995; Sen, 2003). The risks to which households are vulnerable are inextricably linked to chronic poverty and whilst households might cope with these, chronic poverty is often beyond the control of individual households and requires responses at the broader scale. Households may be able to recover and move out of transient poverty because of the assets (human, social, natural, physical or financial) at their disposal (Sen, 2003). Poverty is not homogenous nor is it purely a function of low income (Angelsen & Wunder, 2003). Internationally, goals are now in place to significantly reduce global poverty by 2015, however the challenge is considerable. Distinctions are made between poverty prevention and poverty reduction with poverty prevention implying the maintenance of a minimum standard of living and survival whilst poverty reduction implies moving out of poverty over time (Angelsen & Wunder, 2003). Means to achieve these may differ depending on the objective with poverty reduction as the ultimate goal and poverty prevention, a more immediate need.

In light of these goals to significantly reduce global poverty within the next decade, increased focus is being placed on examining how rural households manage and secure their livelihoods both on a daily basis and during times of increased vulnerability. Commentators suggest that rural households are adept managers of vulnerability and, invest in a variety of livelihood and coping strategies to minimize the impact of crises as well as to achieve their livelihood outcomes (Moser, 1998; Block & Webb, 2001). Although rural households may be able to cope with idiosyncratic risks, there is evidence that in the face of larger, covariate risks, many of the informal insurance mechanisms households have at their disposal, fail. Covariate shocks that impact at multiple levels often leave households in a vulnerable position that can result in a downward spiral of increasing poverty and vulnerability particularly when households' efforts to feed and educate their children are constrained (Skoufias, 2003). Despite this there is the need to take households own attempts/means of securing their livelihoods into account (Kepe, 2002). Poverty, vulnerability as well as rural livelihoods are all complex and dynamic themes making it difficult to achieve a "one size fits all" solution – with a better understanding of the nature of rural livelihoods, the pressures rural households face and how they go about coping with these, efforts to reduce poverty and assist these households in overcoming vulnerability can be effectively targeted and geared to take into account households' own capabilities and efforts. Indeed, it is the dynamic and complex nature of rural livelihoods that is considered by many to be rural households' key means of reducing their susceptibility to vulnerability (Block & Webb, 2001; Niehof, 2004; Bryceson & Fonseca, 2006). According to Pattanayak

and Sills (2001) there is the need to acknowledge that households may respond differently to risk depending on factors such as the household's socio-economic class, its lifecycle stage, its exposure to risk, its asset base and the coping strategies at its disposal.

Rural households invest in a diversity of livelihood strategies and assets in order to spread potential risk and provide a buffer against vulnerability. Whilst some see this diversity as an inevitable poverty trap, households diversify as a means of coping as well as in response to changing opportunities and constraints in the surrounding environment (Ellis, 1999). The strategies in which households engage include both off-farm and land-based strategies (Shackleton *et al.*, 2001). Many previous assessments of rural livelihoods have focused on select strategies but have often failed to take the complete livelihood portfolio into account. In addition to this, there is a degree of interconnectedness between and within the strategies (Smith *et al.*, 2001). By investing in these various strategies households spread the risk across their entire asset base in the hope that shocks will not impact on all aspects simultaneously (Dekker, 2004). By diversifying households allow for various fall-back options, making livelihood diversification a pre-emptive means of coping. Shocks that impact off-farm activities drive households to an increased reliance on land-based activities, whilst shocks to land-based strategies can be minimized by a reliance on off-farm strategies.

In recent years both research and policy debate have increasingly considered reliance on NTFPs as a livelihood strategy, with many commentators highlighting a high dependence on forests and NTFPs especially amongst asset-poor households (Shackleton *et al.*, 2001; Fisher, 2004). Rural households throughout the developing world rely to varying degrees on a range of products and species collected from the surrounding ecosystems (Shackleton *et al.*, 2002; Angelsen & Wunder, 2003). These are used either for direct household consumption or sold in local, regional and national markets and when included into rural livelihood strategies, help reduce peoples' vulnerability to risks (Neumann & Hirsch, 2000). The products and species used can be diverse. In certain cases the income from these products (as both a direct cost-saving and through their sale) has been found to be more than or on a par with other sources of income (Cavendish, 2000; Shackleton & Shackleton, 2000; Dovie, 2001). Additionally, the potential income from NTFPs has been seen to be comparable with other land-use options motivating proponents to consider whether or not transformative land-use options (e.g. agriculture) make long-term economic sense. The commercialization of NTFPs may potentially make both economic sense and offer an incentive to biodiversity conservation although the sustainability of the resource base is of concern if the harvesting and commercialization of products is not effectively monitored and managed (Ticktin, 2004; Emanuel *et al.*, 2005). Additionally there is the risk that if products assume a high commercial value, local residents and traders may lose out to elite groups with access to transport, markets and credit (Cavendish, 2000). With growing concerns that the contribution of the commercialization of NTFPs (both to poverty alleviation and biodiversity conservation) may not, in all cases, be as considerable as desired focus has shifted somewhat to the potential safety-net role of NTFPs (Crook & Clapp, 1998; Byron & Arnold, 1999; Godoy *et al.*, 2000; Pattanayak & Sills, 2001). This safety-net role is argued, in certain cases, to be of greater value to rural households than the direct use of these products (Shackleton & Shackleton, 2004a). Although there is

considerable reference to and appreciation of the safety-net role of NTFPs, the empirical data on this function and its potential contribution is limited particularly with respect to the prevalence of use and the determinants of reliance on NTFPs as a rural safety-net, both as an ex-ante and ex-post strategy (Pattanayak & Sills, 2001; Skoufias, 2003; Shackleton & Shackleton, 2004a). There are still critical questions regarding the motivating factors for NTFPs as a safety-net including whether household characteristics and capabilities, as well as the nature, frequency and duration of risk determine reliance on this strategy (McSweeney, 2003).

In light of this research gap, this study set out to establish the role of NTFPs as a rural safety-net within the broader livelihoods context. More specifically, it sought to determine the prevalence of the use of NTFPs as a rural safety-net compared to other insurance mechanisms, to explore how the safety-net function of NTFPs manifests and whether particular products have a “higher” insurance value than others and, whether particular household characteristics determine the reliance on NTFPs as a rural safety-net. Within any given community there is significant socio-economic differentiation as determined by households’ access to different forms of capital therefore, within a community there are households that are more vulnerable than others and as such, less able to secure a sustainable livelihood. In addition to this, communities are both spatially and temporally diverse. This study considered two villages in rural South Africa, one in the Eastern Cape province and one in Limpopo province, stratifying the sample households in each village according to household wealth and gender of the de jure household head. In order to answer the key questions regarding the role of NTFPs as a rural safety-net, it was necessary to consider the more regular use of NTFPs and contribution of these products to rural livelihoods. It also had to be acknowledged that NTFPs as a livelihood strategy form a part of a greater suite of strategies and, that as a rural safety-net, NTFPs are only one of several coping mechanisms households can and do rely on and invest in.

To examine the use of NTFPs as a safety-net for rural households is a complex task which, required multiple skills and analytical approaches. Household and individual misfortune is not a favoured discussion topic particularly within a group setting. Whilst the participatory rural appraisal exercises assisted in establishing an important base-line understanding of the livelihoods and vulnerability contexts within both villages, the household interviews were the preferred approach for discussing more sensitive topics. It was decided to hold the workshops and PRA prior to the household interviews rather than as an arena to discuss questions arising from the interviews. This played an important role in raising awareness of the research objectives and introducing the research team, which ultimately aided in the interviews, particularly in light of the sensitive nature of the topic. The household interviews were done in two parts, the first of which dealt with more general livelihood strategies and NTFP use whilst the second dealt with the vulnerability context and coping strategies. These two parts were conducted on different days but ensured that when addressing the second part, the respondent was potentially more relaxed in the interview setting and aware of researcher and her objectives. Various factors contributed towards the complexity involved including: the difference between NTFP use as a daily-net and as an emergency-net is often indistinct and, although the use of NTFPs may originate as a coping strategy it may develop into a full time activity in cases where the rewards are high enough or the alternatives lacking. Smith *et al.* (2001, p428) emphasizes this

complexity, explaining that the “line between coping behaviour, adaptation strategies, and wealth accumulation, can be difficult to draw, and households may be engaging in more than one strategy as a consequence of changing circumstances.” The safety-net role of NTFPs manifests both through the use and sale of products and therefore both these aspects had to be addressed (McSweeney, 2005). Rural households face a range of crises and have a variety of potential coping strategies at their disposal. The prevalence of these crises in both communities was higher than anticipated. This allowed for the safety-net role of NTFPs to be examined for a variety of risks but limited the extent to which each scenario could be investigated. NTFPs as a rural safety-net are one of many possible informal insurance options households may turn to in the face of misfortune, therefore it was decided that NTFPs could not be investigated in isolation but had to be considered within the broader portfolio of livelihood and coping strategies. The time constraints involved in the project as well as the diverse issues addressed leaves room for further investigation including the duration of each crisis, households’ recovery time and whether or not there are particular coping strategies or combination of strategies that assist households in responding more positively and rapidly. The study examined the livelihoods, vulnerability context and coping strategies of a semi-random sample (stratified by wealth and gender of the de jure household head) rather than approaching households using NTFPs as a coping strategy and asking what had initiated the reliance on NTFPs. Whilst this might not give as detailed a picture of the safety-net role itself, it contributes towards an understanding of the prevalence of use within rural communities in savanna and woodland ecosystems of South Africa.

6.2 Livelihood diversification – spreading the risk and responding to opportunity

This study found that households in both sites have adopted multiple livelihood strategies which include both off-farm and land-based strategies (Chapter 3). The overall diversification of strategies is a common feature of the sampled households irrespective of household wealth or gender of the de jure household head suggesting that households endeavor to diversify to provide livelihood security. This diversity of livelihood strategies has been reported as a common feature of rural livelihoods with numerous commentators having noted the mix of off-farm and land-based strategies adopted by rural households at a global scale (Pattanayak & Sills, 2001; Shackleton *et al.*, 2001). There is however evidence of different levels and extents of diversification as determined by household characteristics such as wealth and gender of the de jure household head. For example Smith *et al.* (2001) found diversification to be most extreme in middle income groups with the wealthy and poor less diverse: the wealthy favouring specialization whilst the poor lacked the options for diversification. Smith *et al.* (2001) also found men to have a greater diversity of livelihood strategies than women, although women and female-headed households were being compelled to diversify in response to increasing hardship. Although the findings of this study indicate diversification as a common feature irrespective of household wealth and gender of the de jure household head, differences within the individual strategies were noted (Chapter 3). These differences are largely determined by (and determine) household wealth and to a lesser degree, by gender of the de jure household head. Although both wealthy and poor households diversify, the results suggest that the wealthy households are able to

diversify more positively within each strategy and that this ultimately provides increased security and insurance options. Block and Webb (2001) found households that survived famine in Ethiopia were characterized by higher income, a more diversified income base and more valuable assets especially livestock. In this study wealthy households are predominantly distinguished from their poor counterparts through the contribution of a regular formal cash income either in the form of wages or government grants (particularly old-age pensions). The number of cattle owned, the number of saving schemes invested in and the overall asset base also distinguish the two wealth groups (Chapters 2 & 3). The formal cash income allows households to invest in these options: these investments (both in assets and savings) provide security in response to a range of potential crises. Both male- and female-headed households receive formal cash inflows although the source may differ, allowing both categories of households to invest in other strategies, assets and saving schemes.

The contribution made by these off-farm strategies was found to be spatially diverse and strongly determined by the surrounding environment and the opportunities provided. As such, in Dixie, where employment opportunities in the surrounding area are comparatively high, formal waged labour distinguishes wealthy households from poor ones (Chapters 2 & 3). Additionally, the surrounding region provides opportunity for the establishment of micro-enterprises. In Dyala, where employment opportunities are scarce, households rely heavily on government grants for formal cash income, so that those households receiving an old-age pension are categorized as wealthy (Chapter 2). This formal cash income allows for investments in other livelihood strategies and in a variety of assets and saving schemes. If this investment in strategies and assets is indicative of improved livelihood security and a households' ability to cope with aspects of the vulnerability context, then household wealth is a greater determinant of a household's ability to cope than gender of the *de jure* household head. Although findings from this study suggest that both wealthy and poor households diversify, it is the "value" of this diversification that differs between the two groups, with wealthy households better positioned to self-insure. Both wealthy and poor households have saving schemes, invest in household assets, are involved in arable agriculture and animal husbandry and make use of NTFPs (Chapter 3). However, a greater proportion of wealthy households have saving schemes and a greater diversity of schemes per household, a greater proportion of wealthy households own household assets including higher value assets, have arable land at their disposal and own livestock (Chapter 3). These households own a greater variety of livestock as well as a greater average number per household. They also own high value livestock particularly cattle (Shackleton & Shackleton, 2006). Although not all wealthy households cultivate the option is available to the wealthy households who have land at their disposal and who can more easily afford the associated expenses. To contrast, a greater proportion of poor households rely on the sale of NTFPs and on kinship. All of the households sampled use NTFPs.

The diversity and investment in each strategy and coping option contributes positively towards households' ability to cope. For example, wealthy households own a greater diversity of household assets, including those which may be considered as non-essential items (e.g. televisions). Households are able to sell these items without having to deplete productive assets such as cattle and agricultural implements. Poor

households do not have the same selection of assets and therefore the liquidation of assets to meet financial need, may entail selling productive assets ultimately increasing vulnerability by reducing the households financial capital (Niehof, 2004). Gender of the de jure household head is not as strong a determinant of this although the findings suggest male-headed households may be more secure than their female-headed counterparts with respect to ownership of assets, livestock and arable land. Female-headed households are acknowledged to be particularly vulnerable (Posel, 2001). According to Adger (1999) accessible resources and disposable capital assets are central to coping. Of the range of strategies and assets available, the two that do not require any form of cash injections are kinship and NTFPs making these the most accessible to the poor households both as a livelihood and coping strategy. Poor households rely on these strategies because they are economically constrained. These strategies are still open to wealthy households, however and the results of this study indicate that wealthy households make considerable use of these strategies both as a daily- and an emergency-net. Other livelihood strategies, the accumulation of assets and investments in saving schemes, together with their associated coping strategies, offer entry barriers to poor households: saving schemes require investments and membership fees, an investment in a diverse asset base requires available financial capital, and both arable agriculture and animal husbandry can be constrained by cash shortages. According to Angelsen and Wunder (2003) previous assessments of poverty have focused on poverty as a function of low income and have not considered the non-income dimensions such as access to disposable assets. These aspects may be of importance particularly with respect to rural safety-nets.

Land-based livelihood strategies are significant in terms of the proportion of households involved and should not be discounted, even though incomes from off-farm strategies appear to contribute more towards wealth and asset accumulation. This supports other studies suggesting that although formal cash income through waged labour, remittances and government grants is considered the “mainstay” of many rural households, a high proportion still rely on land-based strategies, including arable agriculture, animal husbandry and the use and sale of NTFPs (Dovie, 2001; Shackleton *et al.*, 2001). Involvement in these strategies is influenced by household wealth and to a lesser degree by gender of the de jure household head. A greater proportion of wealthy and male-headed households have land at their disposal (although they are not necessarily cultivating) and are involved in animal husbandry (with a particular focus on cattle). This is however spatially variable with the differences being less significant in Dixie (Chapter 3). With respect to the use of NTFPs, the findings highlight the important role of NTFPs in rural livelihoods in terms of the proportion of households using NTFPs. All households sampled make use of at least one NTFP with particular NTFPs being used prevalently. In addition to the direct consumption of NTFPs, households are also involved in the sale of these products. This supports other findings from South Africa and elsewhere of the important contribution of NTFPs to rural livelihoods (Cavendish, 2000; Shackleton *et al.*, 2001; Dovie, 2001). Just as off-farm strategies contribute towards household security by allowing for investments in land-based strategies, assets and saving schemes, so to do land-based livelihood strategies also contribute towards household security and coping options. Households in both villages reported storing produce for winter crop shortfalls, storing seed to reduce the input costs associated with cultivating home-gardens and fields, selling livestock to cover a variety of expenses as well as maintaining livestock as a type of savings (respondents referred to their livestock as “their bank”) and, using NTFPs for both consumption- and

income-smoothing. The results indicate that livelihood diversification is not only a common feature of rural livelihoods but also contributes to household security by providing a range of coping options however the dynamic nature of livelihoods is also referred to and needs to be taken into account: Bryceson and Fonseca (2006) considered livelihood diversification as a risk minimizing strategy in Malawi and found the strategy to be showing weakness in the face of HIV/AIDS suggesting that proponents that encourage support for diversification may be misguided.

In Ethiopia perceptions of what determines vulnerability include poor land quality and seed stock, lack of financial markets, climatic variability, a lack of livestock, an aged household head, a lack of household assets, a small area of arable land and a lack of off-farm employment (Block & Webb, 2001). This study found the number of jobs, old-age pensions, cattle, saving schemes and overall asset ownership to be related to household wealth. These criteria determine wealth and in accordance to the findings by Block and Webb (2001), the absence of these influences vulnerability and ability (or inability) to cope. Poor households with a limited cash income are immediately vulnerable: they cannot easily establish micro-enterprises as they lack the capital, they cannot invest in a range of saving schemes (or any at all), they do not own high value non-productive assets to sell to meet financial need, they cannot invest in arable agriculture as they either do not have land or struggle to afford the inputs and they do not have high value and large quantities of livestock at their disposal. Those strategies that they can rely on both as a daily-net and as rural safety-net include kinship and NTFPs as access to these is not influenced to the same extent by household wealth. However, there may be other controls to these suggesting no strategy can be invested in, in isolation.

6.3 The use and sale of NTFPs

With respect to the overall use of NTFPs, the results indicate that households, irrespective of wealth or gender of the de jure household head make use of a variety of NTFPs. Findings on the high proportion of households using NTFPs, the resources used most prevalently as well as the procurement and trade in NTFPs support findings from elsewhere in South Africa (Dovie, 2001; Shackleton & Shackleton, 2000; Shackleton *et al.*, 2002). The use of NTFPs by all households in both communities suggests the potential safety-net option is available to them all and not constrained by issues such as availability, although this may depend on the resource in question. Further research would be required on abundance, re-growth rates and so forth to establish the strength of the resource base and the impact of these factors on the rural safety-net function of NTFPs. According to Pattanayak and Sills (2001) the risks involved in NTFP collection as a livelihood strategy are less than those of strategies such as arable agriculture. Furthermore, the use of NTFPs as part of the greater livelihood portfolio reduces future risk by allowing for investments in other livelihood and coping strategies (Pattanayak & Sills, 2001). This study found that although the use of NTFPs is spatially diverse there is little indication in either site that household wealth or gender of the de jure household head influence the proportion of households relying on NTFPs, suggesting that the poor collect NTFPs out of necessity whilst the wealthy maximize on the cost-saving offered by free and “risk free” NTFP extraction. There is some evidence of wealth and gender of the de jure household head

influencing the frequency with which households consume/use NTFPs and the number average number of NTFPs consumed/owned, however these aspects would require more detailed analysis. A clearer pattern emerges however with respect to the procurement of NTFPs and, to some extent in the trade of NTFPs, with wealth being a greater influencing factor than gender of the de jure household head. Whilst most households buy at least one NTFP, wealthy households buy a greater variety of products supporting findings by Shackleton and Shackleton (2006). Shackleton and Shackleton (2006) argue that this suggests that poor households depend more on these resources than their wealthy counterparts. There is mixed evidence in the literature on the relationship between household wealth and gender (including gender of the household head – de jure or de facto) and NTFP use (Clarke *et al.*, 1996; Cavendish, 2000; Takasaki *et al.*, 2001; Shackleton & Shackleton, 2006) and whilst the poor, women and de jure female-headed households are generally seen as the most dependent on these resources, the better-off and male-headed households (and men) often use greater quantities and benefit more particularly in terms of income earned from the trade in these products (Chapter 4). This study did not consider quantities used nor take into account the gross/net direct-use value, therefore dependence in this sense could not be established. Additionally as there are no differences in the overall use of NTFPs as determined by wealth or gender of the de jure household, dependence cannot be gauged this way. However, according to Shackleton and Shackleton (2006) the greater average number of resources bought by wealthy households suggests the poor are more dependent on the resources and continued accessibility. The findings of this study support this statement. The greater number of resources bought by wealthy households suggests that the opportunity costs of collecting are too high and that these households would rather purchase what is essentially a free resource, allowing time and labour for other options.

The results show fewer households involved in the trade of NTFPs, although in both villages households are trading in certain NTFPs (22 %). With respect to the trade, local conditions play a determining role. In Dyala where the market for NTFPs is limited and internal, no wealthy households sell, suggesting the importance of this income source to poor households both on a regular basis and in response to financial need (Shackleton & Shackleton, 2006). Both male- and female-headed households sell. In Dixie, where there is a market both in the surrounding region and to tourists, wealthy households have responded to the opportunities at hand and are involved in the sale of NTFPs. These wealthy households are particularly involved in the sale of curios, both wood and reed based. Curios are potentially a high value product (Fisher, 2004). Furthermore, most of the curios sold are pre-bought and then resold. Therefore, there are limited labour requirements to this trade, making it a favourable option for wealthy households who are often labour-constrained as a result of one or more adult members involved in full-time employment. The only other resource sold by wealthy households that is not aimed at the tourist market is sand. Wealthy households dominate the trade in sand as they have access to transport and as the “business” involves family members from several households, there are limited restrictions in terms of labour. According to Belcher *et al.* (2005) wealthy households are better placed to respond to new markets however the reason many NTFPs are available to poor households is because they have low commercial value. Numerous observers have found that wealthy households are involved in more lucrative trade, whilst poor households are involved in low-skill, low-return products (Ellis, 1999; Cavendish, 2000; Fisher, 2004; Shackleton &

Shackleton, 2006). Those trading in high return NTFPs have been predominantly identified as younger men whilst those involved in the sale of low return products are women, the elderly, the asset poor and those with few alternative livelihood choices (Fisher, 2004). Fisher (2004) also identified location as an influencing factor. Households sell NTFPs for a variety of reasons (Chapters 4 & 5). For most the trade is a recent development in response to increasing vulnerability with the majority of households involved in the trade stating they would continue to sell NTFPs due to a lack of alternative income sources. In this sense the trade initiated as a safety-net and has since become a livelihood strategy. Shackleton and Shackleton (2004a) also found an increasing trend of NTFP commercialization in response to limited alternative strategies, with households selling products such as marula (*Sclerocarya birrea subsp. caffra*) beer, an activity once considered taboo. NTFPs, as a rural safety-net, offer both consumption and income smoothing opportunities. Shackleton and Shackleton (2004a) highlight that even the daily use is a safety-net of sorts in that it allows for savings to be made that can be re-directed to other strategies (both livelihood and coping). For example, wealthy households may use and sell NTFPs not out of necessity but because this use/sale allows for investments in other livelihood strategies and in the accumulation of assets and saving schemes therefore ultimately contributing towards their ability to weather misfortune.

6.4 Vulnerability and coping

Sen (2003) identified various factors that affect a household's potential descent into poverty, including death of a breadwinner, retrenchment, natural disasters and expenditure on social ceremonies. These idiosyncratic risks are a feature of chronic poverty and a common feature of rural households. This study emphasizes the range of crises to which rural households are vulnerable, corroborating others that have noted this vulnerability (Pattanayak & Sills, 2001; Wood, 2003). The results from this study show that rural households are vulnerable to a diverse range of risks some of which are anticipated household costs whilst others are unexpected shocks. Furthermore the results highlight the extent of vulnerability within these communities with all of the households reporting experiencing at least one misfortune over the two year period, with many households experiencing more. To some extent the risks experienced are related to the households' asset base and therefore households with particular assets are obviously susceptible to particular risks. Other risks are more general and therefore impact on households, irrespective of household characteristics such as wealth and gender of the de jure household head. For this reason it makes sense to gauge vulnerability in terms of ability to cope, recovery time, the frequency of risk and the extent of impact and associated costs rather than the "experience" of risks. The results indicate that although household wealth influences security in terms of the livelihood strategies adopted and assets accumulated, it does open households up to a range of risks not necessarily experienced by poor. For example, a greater proportion of wealthy households with a greater number and variety of livestock are more vulnerable to livestock disease and losses, however the impact of such a crisis is possibly less severe than if a poor household were to experience the same. Wealthy households are also more prone to expected costs, such as those associated with social ceremonies, partly out of choice but possibly out of social responsibility. Wealthy households choose to celebrate a variety of social ceremonies because they have the available capital, poor households will choose not to celebrate because they cannot afford it, but they will celebrate with wealthy, extended

family (Dekker, 2004). The findings show that households can experience multiple crises within a limited time frame suggesting the need for various coping strategies in order to ensure resilience. Should a household use only one strategy per crisis and expend that option, then the household's future ability to cope could be undermined particularly if another crisis were to follow shortly after the first. As crises appear to be a regular feature of rural livelihoods with a potentially limited recovery time between crises, households need to maintain enough remaining strategies in order to cope and maintain a sustainable livelihood. This is also where poor households are more insecure and therefore highlights the importance of access to NTFPs as a rural safety-net.

Additionally crises have multiple impacts that require varied responses (Dekker, 2004). For example illness not only reduces available labour but may also impact on household consumption as a result of medical expenditure. Therefore, households may turn to kinship to assist with the labour and sell livestock to purchase the medicine or, use money from household savings and rely on wild foods whilst money normally spent on food is directed elsewhere. Dekker (2004) found different shocks to be associated with different impacts which determined the response, as well as different responses for idiosyncratic and covariate risks. This implies households have and need a range of strategies with which to respond. Dovie *et al.* (2006) explain that reliance on livestock (both as a livelihood and coping strategy) can increase vulnerability in the face of drought, therefore endorsing the need for alternative fall-back options. Theoretically wealthy households are more secure and better positioned to cope in the sense that they have more savings, more assets, more livestock and so forth. Sen (2003) identifies those households that are able to move out of poverty as those who accumulate assets faster, are better at diversifying their livelihood strategies and are less dependent on land-based (farm) strategies. This study found that in a two year period all households experienced some misfortune (including those listed by Sen (2003)) suggesting the need to examine the frequency with which households experience misfortune as a determinant of vulnerability and cause for descent into poverty. Gender of the *de jure* household head did not significantly influence vulnerability to the selected crises.

6.5 NTFPs as a rural safety-net

NTFPs contribute towards risk reduction and decreasing vulnerability on a daily basis and not only during exceptional circumstances (Pattanayak & Sills, 2001; Wunder, 2001). However, it is the safety-net role that was the focus of this study. The rural safety-net function of NTFPs can manifest through both the use and sale of NTFPs allowing for consumption- and income-smoothing. McSweeney (2003) identified that over a two year period those households most likely to sell NTFPs were those who'd experienced a bad harvest or had ill/injured household members for an extended period of time. This study identified the use of NTFPs as a safety-net in response to a range of crises. The findings show that rural households use NTFPs to cope with shocks (e.g. crop failure, retrenchment and death) and also to tide households over more predictable periods of vulnerability (e.g. seasonal crop shortfalls and the payment of schools fees). Households also turn to NTFPs in response to general trends such as inflation. Shackleton and Shackleton (2004a) noted the increasing use of NTFPs in response to increasing maize prices with the reliance becoming a permanent

strategy as prices failed to decrease. In this study the safety-net role was found to manifest through both the use and sale of NTFPs with more than two-thirds of the sample population reporting using NTFPs in response to one or more crises. This compares favourably to the other coping strategies used. The use of NTFPs was predominantly restricted to the use of wild foods as a dietary supplement, the use of medicinal plants, the use of fuelwood as a cost-saving on alternative energy forms and the sale of fuelwood and other products. The predominant manifestation was through the increased use of NTFPs or the use of NTFPs not normally used, whilst a smaller proportion of households sold NTFPs in response to risk. The key resource sold was fuelwood. According to Shackleton and Shackleton (2004a) the changed or increased use of NTFPs is a common manifestation of the safety-net function although the commercialization can also be prevalent. The sale of NTFPs has been identified as a means for coping with both seasonal food and cash shortfalls in various studies throughout Africa and elsewhere (Arnold & Ruiz-Perez, 1998; De Merode *et al.*, 2004; Shackleton & Shackleton, 2004a). This study supports these findings identifying the use and sale of NTFPs as a rural safety-net in response to seasonal periods of vulnerability including winter crop shortfalls and the annual expense associated with the payment of school fees. However, the safety-net function was also used in response to stochastic, non-seasonal crises such as the death of family members. Pattanayak and Sills (2001) noted the use of NTFPs in response to agricultural shocks with the importance of this function not restricted to the poor. This study found the overall use of NTFPs as a rural safety-net to be a common feature and not influenced by household wealth or gender of the de jure household head.

The manifestation of the function however does show differences particularly for household wealth. Taking the composite safety-net use for all the selected crises, neither household wealth nor gender of the de jure household head influenced the use of wild edible herbs, medicinal plants or wild edible fruits. However, no wealthy households reported the use of bushmeat whilst a greater proportion of wealthy households reported the increased use of fuelwood. The use of bushmeat by poor households suggests that whilst wealthy and poor households rely on wild edible foods for consumption-smoothing the safety-net is of greater importance to poor households who are prepared to enter into illegal activities such as hunting in response to food insecurity. Numerous respondents stated a fear of arrest associated with hunting suggesting that poor households that rely on bushmeat are driven to discount the potential risks involved, by the extent of need. This supports the findings of Pattanayak and Sills (2001) that although the use of NTFPs as a safety-net is not restricted to the poor, those most reliant on the function are those with few other alternatives. This use may however also be determined by the regular use of NTFPs with poor households relying on bushmeat as a source of meat on a more regular basis and therefore having the necessary skills to hunt. Wealthy households rely to greater extent on fuelwood as a substitute to paraffin when the household faces financial constraints, poor households already rely on fuelwood as the primary energy form and therefore cannot cut back spending on alternatives in favour of fuelwood. The sale of NTFPs as a rural safety-net (in response to the selected crises) was restricted to poor households with both male- and female-headed households selling. Wealthy, poor, male- and female-headed households sell NTFPs on a more regular basis indicating that the sale of NTFPs as a rural safety-net is an option open to both wealth and gender categories. Whilst both male- and female-headed households sold in response to risk, no wealthy households did so, suggesting possible constraints to this strategy. Responses indicated

that whilst NTFPs are helpful for consumption smoothing, their sale is restricted by weak and unpredictable markets therefore wealthy households with alternative strategies may prefer to rely on these for immediate cash rather than risk the possibility of trying to sell NTFPs and not finding a market. Poor households with fewer alternatives cannot afford to be as selective in their choice. Belcher *et al.* (2005) highlight the limitations associated with unpredictable NTFP markets. In more general questions on coping a small proportion of wealthy households reported selling NTFPs however the increased sale of NTFPs was restricted to the poor households. It is possible that wealthy households use NTFPs both on a regular basis and in emergencies as it allows for investments elsewhere. Regular use is part of diversification and also ex-ante coping strategy.

The use of NTFPs as a rural safety-net is likely to be context specific as determined by various exogenous and endogenous factors. According to McSweeney (2003) households' response to shock is determined by the nature of the shock itself as well as the households' options for coping and therefore households may respond differently to the same shocks. Despite the use of NTFPs as a rural safety-net in both villages the results indicate that households' responses to the range of crises were seldom restricted to the exclusive use of NTFPs as a rural safety-net but rather involved a combination of strategies. For each crisis considered, NTFPs were not the favoured strategy in terms of proportion of households nor were NTFPs the least favoured. Despite this though, more than two thirds of sampled households reported the use of NTFPs as a rural safety-net. This supports findings from Brazil: NTFP collection was found to be positively correlated with agricultural shocks and expected agricultural risks but a range of other strategies were identified including kinship and waged labour (Pattanayak & Sills, 2001).

6.6 The diversity of coping strategies

Households rely on a variety of coping mechanisms, seldom using them in isolation, thereby highlighting the role of livelihood diversification in securing rural livelihoods. The literature shows differences in households' selection of strategies with some studies indicating a reliance and investment in one strategy (Godoy *et al.*, 1998) whilst others substantiate my findings of a combination of strategies used (Sauerborn *et al.*, 1996; Maxwell *et al.*, 1999; McKenzie, 2003; Mock *et al.*, 2003; Wong & Godoy, 2003; Dekker, 2004). According to Dovie (2001) the reliance on NTFPs is determined to an extent by the alternatives at hand whilst Dekker (2004) highlights the role of the crisis in determining the use of the strategy. For example covariate shocks such as crop loss often weaken kinship as a strategy as each household endeavors to cope with its own loss. Stokvels have also been identified as being inappropriate for covariate shocks (Skoufias, 2003). McSweeney (2003) also identified different responses according to the crisis, with a focus on the role of NTFPs. Her findings suggest that NTFP extraction as a coping strategy depends on the impact of the crisis on available household labour. Households in this sample reported a range of strategies, however certain strategies are more common than others both in terms of the proportion of households using them as well as the range of coping situations in which they are used. These strategies include a reliance on kinship and community-support networks, reduced spending, changes to the household's diet, the use and sale of NTFPs, the sale of livestock and a reliance on stokvels. Of these strategies the two that

are not determined by the households existing asset base and economic position are kinship and NTFPs. As a coping strategy kinship was identified by the greatest proportion of households. It was also ranked the highest. In an assessment of the contribution of forest product commercialization to households in Eastern Honduras during adverse times, McSweeney (2003) found that kinship and soliciting loans from family/friends was the primary form of insurance and that only some households sold forest products for the necessary cash. Kinship and soliciting loans was found to offer more immediate assistance whilst NTFPs were sold later to cancel these loans (McSweeney, 2003). The findings from this study support those of McSweeney (2003) with kinship being the key strategy. Although NTFPs were used by a high proportion of households, this manifested predominantly through the use of NTFPs and not the sale. The predominant role of kinship in households coping portfolio has been well documented (Skoufias, 2003; Dekker, 2004; Heemskerk *et al.*, 2004). In contrast, Godoy *et al.* (1998) found that of the range of strategies used in Bolivia kinship and reciprocity played a lesser role to forests as a safety-net, although the focus was more on converting forest land for agricultural purposes than on using NTFPs. The use of savings and borrowing or credit was also found to be negligible however, once again the crisis itself was found to be a determining factor (Godoy *et al.*, 1998). The results of this study show some difference in use as determined by the crisis. For example, for death and agricultural expenses less than 20 % of households from each category reported the use of NTFPs. For seasonal crop shortfalls and illness/injury more than 30 % of households relied on NTFPs. McSweeney (2003) noted increased NTFP use for illness and decreased use for death although it depended on the household member ill.

Commentators suggest that the use of coping strategies is variable in accordance with particular household characteristics. For example Heemskerk *et al.* (2004) noted the use of kinship, food storage and rotating cash systems more by women than men. This study found that with respect to the use of NTFPs and kinship as safety-nets, these strategies are used by both wealthy and poor households as well as male- and female-headed households and show no significant differences between either. The remaining strategies however show differences for household wealth but not gender of the de jure household head. Wealthy households have other strategies at their disposal, yet despite this they still rely on kinship and NTFPs (Chapter 5). Reasons for this could be either that their existing strategies are often not enough to tide them over or, that because kinship and NTFPs are essentially “free”, households choose to rely on these rather than deplete their asset base. Skoufias (2003) points out that if households rely on NTFPs for minor crises they can save their other options ensuring future welfare. The use of NTFPs as a rural safety-net was examined using several variables in an attempt to find correlations between particular household characteristics and a reliance on NTFPs, particularly as neither wealth nor gender of the de jure household head appear to be strongly influencing factors. The only significant relationship found was between NTFP use and kinship, although only the reliance on other community members, not on family. Dekker (2004) noted that relatives and non-relatives assist each other with different crises and that the greater the diversity of strategies the less the reliance on kinship. A hypothetical explanation for this correlation identified in this study is as follows: whilst social capital makes an important contribution towards livelihood security and households actively invest in this option through reciprocal exchanges of labour, goods and money, assistance from family is likely to secure households across a greater range of misfortunes than assistance from community

members. According to respondents from this study, this family assistance is almost always guaranteed. Reliance on community members (both as a regular strategy and for coping) suggests no family in the community itself (with migrant members no longer remitting) or family members that are worse off and therefore unable to assist, and a dearth of alternative options. Assistance from community members is likely to be a weaker form of insurance than assistance from family members, with the ever-present possibility that for some crises, members will be unable to assist to the same extent as family members. This suggests the need for an alternative, freely available, wealth-independent insurance mechanism, hence the reliance on NTFPs.

6.7 Opportunities and constraints to the use of NTFPs as a rural safety-net

The findings show there are opportunities offered by NTFPs as a rural safety-net compared to other insurance mechanisms as well as constraints. Opportunities include that NTFPs are free and in most cases easily obtainable, there is a range of products that can be used for both consumption and income-smoothing and they reduce reliance on other coping strategies. NTFPs are perceived to be attractive to the rural poor because in many cases, whilst collecting NTFPs is labour intensive it requires little capital investment or skills (Angelsen & Wunder, 2003). This however also means that NTFPs as an insurance option are open to the broader community. As daily NTFP use appears not to be restricted by either wealth or gender of the de jure household head (all households reported this use) and as NTFPs essentially constitute a “free” resource, the proportion of households not using NTFPs as a safety-net suggests there are limitations to this role compared to other insurance options. Whilst NTFPs can be free and easily obtainable, factors such as land-tenure, resource availability and accessibility, institutional dynamics, available alternatives and, population dynamics (age, wealth and gender) affect consumption (Kepe, 2002; Shackleton & Shackleton, 2006). This study identified the constraints to NTFPs as rural safety-nets to include: insecure tenure, inaccessible locations and restrictions on access; age, health and strength; the opportunities costs of collection (distance, time, lack of transport); a loss of knowledge and skills required for the collection of NTFPs; resource scarcity, seasonality and over-use and, weak, absent or ill-timed markets. Various commentators have noted these constraints to NTFPs as a rural safety-net. De Waal and Whiteside (2003) found that famine and HIV/AIDS affect households’ available labour thereby undermining those strategies that depend on labour such as NTFP extraction. Additionally, knowledge was being lost on the preparation of wild foods. Bryceson and Fonseca (2006) and Niehof (2004) support these findings. Pattanayak and Sills (2001) link the daily use of NTFPs to the rural safety-net function explaining that the knowledge of NTFPs and where they are located, is an ex-ante coping strategy but that with changing times and preferences this knowledge is being lost. Pattanayak and Sills (2001) found longer established households with more accumulated knowledge of NTFPs collected more in response to crises. Additionally Pattanayak and Sills (2001) note the influence of age on collection with the oldest reducing their collection trips as a result of the labour-intensive nature of the trips. Personal observations in both Dyala and Dixie noted elderly people either paying others (in cash or kind) to collect for them or relying on younger family members for help.

De Merode *et al.* (2004) and Cavendish (2000) both note that seasonality affects which NTFPs contribute, suggesting the need for a broad knowledge of NTFPs (including the range of products and species), their uses and functions. Cavendish (2000) noted the affect of rainfall on particular resources and that consumption of wild foods decreased during drought years. Related to the seasonal availability of NTFPs is the seasonality of NTFP markets, therefore restricting the trade of certain NTFPs as a rural safety-net to particular times of the year. In some cases households have responded to this seasonal opportunity as with the sale of marula (*Sclerocarya birrea subsp. caffra*) beer and *Opuntia ficus-indica* fruit, selling these products to meet seasonal financial need (Shackleton & Shackleton, 2004a). However, seasonal variability of NTFPs and markets don't always coincide with periods of increased vulnerability (e.g. seasonal crop shortfalls). Knowledge of the diversity of products offered by NTFPs is therefore an important aspect of the rural safety-net function. According to Pattanayak and Sills (2001) the seasonal distribution of NTFPs (resulting from a range of products and species) can have a stabilizing affect on household consumption and income. Belcher *et al.* (2005) highlight that using a variety of NTFPs in an economic portfolio is advantageous as households can spread the risk and modulate the timing of income. Where products such as wild edible herbs and fruit are seasonally available, wood products play an important role in livelihood security because they are permanently available although they may be seasonally influenced in terms of demand. For example the study found increased sale of fuelwood in response to increased demand during winter and for ceremonial purposes. The market for curios is driven by the seasonal tourist market. McSweeney (2003) noted that with respect to the commercialization of NTFPs as rural safety-net, proximity to markets and access to resources are important determinants. In addition to seasonality, Shackleton *et al.* (2000) and Smith *et al.* (2001) draw attention to the influence of different agro-ecological zones on natural resource endowments.

In many communities the most vulnerable are often the elderly and/or infirm; women and female-headed households; the poorest households and, those with little control over local rules and who are restricted by their social, economic and political position (Block & Webb, 2001; Posel, 2001). If one takes the constraints to the rural safety-net function identified in this study into account then theoretically, by the very nature of their position these households are both the most dependent on NTFPs as a rural safety-net as well as often the least able to access this potential safety-net. This study found no clear distinguishing relationship between wealth or gender of the de jure household head and the use of NTFPs for either direct household consumption or as a rural safety-net, suggesting that these household characteristics do not seriously constrain or promote households use of these products. There are however opportunity costs involved in the collection of NTFPs and therefore households with alternative options may choose to rather go for an option that offers a more immediate and accessible solution depending on the crisis in question. Although there are constraints to NTFP use as a rural safety-net this study identified constraints associated with each of the alternative strategies. Mock *et al.* (2003) also highlight the constraints to other strategies and the associated costs. The strengths and weaknesses of each strategy would have to be properly analyzed to determine which strategies contribute more positively. Each individual strategy has certain strengths and weaknesses and whilst the crisis itself may determine the response, it is also possible that households with a range of strategies select their strategies for each crisis by the extent of effectiveness.

For NTFPs to make a positive contribution to coping the opportunities need to outweigh the constraints. Some of these constraints can be addressed through policy, land-use planning, market and product development and skills training. The constraints to NTFPs as a rural safety-net suggest that NTFPs may contribute more towards poverty prevention and income smoothing but make less of a contribution towards poverty reduction. Those classified as the most vulnerable within rural communities may be the least able to benefit, unless these constraints are addressed. Angelsen and Wunder (2003) and McSweeney (2003) state that a household's degree of vulnerability and the forest products used as a safety-net are determined by the nature, probability and intensity of the shock and the household's ability to cope with such shocks in terms of safety-nets, alternative income sources and insurance mechanisms. Findings from this study suggest that NTFPs are used in response to a broad range of crises irrespective of a household's ability to cope (as determined by access to other insurance mechanisms). Additionally in terms of the products used, for the crises examined in this study, the findings suggest that the NTFPs used for coping are limited to certain products, predominantly wild foods and fuelwood. According to Belcher *et al.* (2005) the role of NTFPs in rural livelihoods is variable depending on opportunities and circumstances. This variability has implications for the safety-net role and supports reasons for a diversity of coping strategies.

This study has shown rural households to be involved in a diversity of livelihood strategies including the use and sale of NTFPs. These strategies not only contribute to households on a regular basis but they inform and influence the insurance mechanisms households have at their disposal. The study has shown rural households are susceptible to a range of risks and trends, both anticipated and unanticipated. Households draw from their asset base in response to these, relying most prevalently on kinship and community-support networks. The objective of this study was to examine the concept and nature of rural safety-nets in the South Africa situation with a focus on the rural safety-net role of NTFPs and with the intention of answering the key questions established at the outset of the research.

6.8 The key questions:

1.) How prevalent is the use of NTFPs as a rural safety-net?

With respect to the prevalence of NTFPs as a rural safety-net, the study found over a two year period that more than two-thirds of households had relied on NTFPs in response to selected crises; over 80 % if inflation is included. This includes wealthy, poor, male- and female-headed households. NTFPs were used in coping with a diverse range of crises however, were seldom the only strategy used but rather contributed towards coping in conjunction with other strategies. Households' use of NTFPs in response to a variety of crises highlights the importance and multi-functionality of this role. However, it is also important to note that NTFPs as a rural safety-net form a part of a greater bundle of insurance mechanisms with each strategy having associated opportunities and constraints. For each of the selected crises, the use of NTFPs was not the most prevalent strategy but neither was it the least used. NTFPs were used both in the anticipation of shock and in its wake although predominantly in the wake for consumption-smoothing. The most common strategy employed by households was kinship, followed by reductions to household spending, then equally

changes to the household diet and saving/budgeting, fourth was the use and sale of NTFPs followed by the sale of livestock and, relying on out-payments or loans from stokvels. Although these are the most prevalent strategies, the poor are restricted from some as a result of their lack of access to financial capital therefore highlighting the importance of ensuring and maintaining poor households' access to those strategies that are not determined by household wealth, most particularly kinship and NTFPs.

2.) How does the use of NTFPs as a rural safety-net manifest and do certain NTFPs make a greater contribution to coping than others?

As with daily NTFP use the rural safety-net function of NTFPs can manifest in two primary manners, through the use of NTFPs and through the sale. Although NTFPs were used in response to a range of crises, the manifestation and the resources used were similar throughout. For the selected crises no wealthy households reported the sale of NTFPs. The greater proportion of households increased their use of NTFPs in response to crises with a smaller proportion selling products. The NTFP use manifested as both a gap-filler and a safety-net. For example, in Dixie the drying of wild edible herbs constitutes a gap-filler in response to seasonal crop shortfalls, whilst in Dyala a woman sold thatch when her husband was retrenched, highlighting the safety-net aspect. For poor households the use manifested both through the increased use of products and through the sale. No wealthy households reported selling in response to the selected crises although a small proportion reported selling in response to other misfortunes. The findings suggest that household wealth plays a greater role in determining the sale of NTFPs as a rural safety-net and how the role manifests, than does gender of the de jure household head. Although other studies have found women (and female-headed households) to be particularly dependent on NTFP-based activities, including the trade, because they are not full-time and can be home based-allowing women to continue with household responsibilities (Shackleton & Shackleton, 2004a; Shackleton, 2005).

3.) What characterizes those households that are dependent on NTFPs as a rural safety-net?

Wealthy, poor, male- and female-headed households were found to be relying on the safety-net function offered by NTFPs. This finding gives an indication of importance of the safety-net function to rural communities as a whole. The results however don't give an indication of dependence. Angelsen and Wunder (2003) distinguish between "forest dependence" and using accessible natural resources that offer a cheap alternative. There is a greater distinction in the products used and in the manifestation of the use as determined by these household characteristics, than in the actual use itself. When tested against various factors, only one showed significance namely, those that rely on kinship from community members (as opposed to family members), rely to a greater degree on the rural safety-net function of NTFPs.

4.) Do households that rely on NTFPs as a rural safety-net selectively choose particular NTFPs when responding to adversity? If so, what characterizes those NTFPs (e.g. are they marketable or do they provide a good source of nutrition)? Alternatively, do people resort to whatever NTFPs are available to help them cope?

In addition to the manifestations of rural safety-net function of NTFPs the actual products used were considered in order to determine whether households selectively choose particular NTFPs when responding to adversity and if so what characterizes those NTFPs (e.g. are they marketable or do they provide a good source of nutrition). Alternatively, do people resort to whatever NTFPs are available? The findings suggest that particular resources are used more commonly for coping, with a focus on fuelwood, medicinal plants, wild foods and products for sale geared towards the tourist market. Whilst the products used are determined to some extent by the crisis experienced as well as factors such as household labour, accessibility and available markets, there are certain products that are relied on more. Fuelwood and curios are selected for their marketability whilst wild foods and fuelwood contribute to household consumption-smoothing. The results indicate seasonality of resources as a potential weakness of NTFPs as a rural safety-net however wood products are not seasonal and therefore are permanently available as a safety-net although the market for these products may fluctuate. Certain products are more crisis dependent in terms of their use (e.g. building materials were used in response to damage to houses). The focus on select products implies that were increasing poverty to drive more and more households to an increased reliance on NTFPs, particular products face the risk of unsustainable use and over-utilization. This has been noted in regions such as Bushbuckridge with the hardwood trees (especially *Pterocarpus angolensis*) used for carving (Shackleton & Shackleton, 2004c).

6.9 Future research

These findings give a general overview of the rural safety-net function of NTFPs within the broader livelihood portfolio and in doing so respond to the existing research gap. The study as well as the analysis of the findings has raised some potential areas for future investigation.

- 1.) The study shows the rural safety-net function of NTFPs to be an important informal insurance strategy manifesting through both the use and sale of products. However, households rarely rely on one strategy in response to crisis but employ various different strategies determined by their existing activities and assets. The results do not however indicate whether these individual strategies were employed simultaneously or sequentially. Commentators have suggested that households employ strategies in sequence with certain strategies being favoured whilst others are strategies of last resort (De Waal & Whiteside, 2003; Mock *et al.*, 2003). It would be useful to determine where NTFPs fit into the sequence thereby establishing favoured strategies and informing actions geared to improve the insurance options of rural households.
- 2.) Household wealth and gender of the de jure household head were the household characteristics selected for stratifying the sample. However, there is a range of other household characteristics that may potentially determine the use of NTFPs as a rural safety-net as opposed to other strategies. According to Shackleton and Shackleton (2006) the influence of socio-economic factors on NTFP use is largely under-researched in South Africa. This also applies to the safety-net function. As identified by McSweeney (2003) “households respond differently to shock depending on the nature of the shock and the household’s capabilities with the role of rural safety-nets likely to be context specific.” The gender

composition of households as well as the households' development cycle are suggested as two particular areas of interest. Cavendish (2000) highlights the importance of taking not only the gender of the household head into account, but also the gender composition of the household as a whole. This study focused on gender on the de jure household head and did not take composition into account. This possibly explains the minimal differences as determined by gender of the household head. Pattanayak and Sills (2001) draw attention to the correlation between a household's development cycle and available labour, thereby influencing NTFP collection.

- 3.) This study whilst giving an indication of the prolific use of NTFPs both as a livelihood and coping strategy does not indicate dependency in terms of contribution to income. A similar study with a focus on the cost-saving offered by NTFPs as opposed to other coping strategies would be of interest.

6.10 Policy implications and issues

- 1.) Livelihood diversification is widely practiced by rural households irrespective of household wealth and gender of the de jure household head. Whilst this is considered by some to constitute a poverty trap, this diversification provides households with a range of insurance mechanisms they can turn to when facing a variety of crises. Households' ability to diversify should not be undermined unless secure forms of income and insurance strategies are provided irrespective of households' socio-economic characteristics. Block and Webb (2001) highlight that the concepts of vulnerability and poverty are fluid, as is livelihood diversification. To deliver "real" benefits to those living with persistent vulnerability, cognizance needs to be given to the variability of opportunities, risks and choices households face. The variable nature of livelihoods and risks makes targeting appropriate responses a challenge.
- 2.) Despite the often documented status of communal lands as unproductive systems, research has found they make a significant contribution to rural livelihoods. This study has indicated a high proportion of households involved in arable agriculture, animal husbandry and the use and sale of NTFPs. Additionally the findings suggest these strategies have associated insurance values. This contribution needs to be recognized both in terms of rural livelihoods as well as in terms of the coping strategies offered (e.g. the sale of livestock or NTFPs). Restrictions to these strategies including lack of extension services and insecure land-tenure need to be addressed for these strategies to continue to make a meaningful contribution to rural livelihoods both through direct-use and as a safety-net.
- 3.) In light of evidence that NTFPs contribute to a significant proportion of households in both villages on both a regular basis as well as through the rural safety-net function, access to and maintenance of this resource base must not be undermined unless alternatives are provided (Cavendish, 2000). According to Scherr (2000) well managed systems of access to basic subsistence resources should be essential both with respect to national safety-nets and environmental sustainability. The rural safety-net role needs to be communicated to policy developers and land-use planners not only for the benefit of poverty alleviation strategies but also to ensure the sustainable use of NTFPs. Ackermann (2003) advocates the need for long-term forest management, a focus on increasing agricultural production,

land-use planning, sustainable use, the provision of alternative insurance mechanisms and the domestication of wild foods. DFID (1999) refers to a sustainable livelihood as one that can recover from shocks and maintain and improve its assets without unsustainably impacting on the natural resource base. Findings of the high proportion of households relying on NTFPs both as a daily and emergency net, recommends further research and suggests that the realization and valuation of the safety-net function may contribute to arguments to sustain natural systems in order to contribute towards poverty alleviation. Maintenance of and continued access to communal lands and the resources provided may contribute significantly towards sustaining and improving the welfare of rural households particularly poor households.

- 4.) The importance of the rural safety-net function of NTFPs is governed by access to and availability of these resources. Respondents indicated several constraints to the safety-net function that need to be addressed if NTFPs are to continue to make or make an increased contribution to poverty alleviation goals. Interventions need to be targeted at each of these constraints. For example, although the sale of NTFPs is a manifestation of the rural safety-net function, respondents indicated weak markets as a problem. Market development, marketing skills, value addition and product development may assist in this regard. Respondents noted the loss of knowledge and skills associated with the use of NTFPs to be a constraining factor. Here skills training and knowledge transfers may contribute to the opportunities offered by NTFPs.
- 5.) Households invest in a range of coping strategies that are used in combination when coping with crises. If improved livelihood security is a policy and development objective then each of these strategies requires attention. These household coping mechanisms need to be recognized for the contribution they make. According to del Ninno and Dorosh. (2001) the good mix of public and household insurance strategies played a crucial role in averting disaster after the 1998 floods in Bangladesh. According to Skoufias (2003) understanding households own strategies is key for the effective targeting of public safety-nets.

6.11 Concluding statement

In conclusion, this study has given some insight into the diversity of rural livelihoods in terms of the strategies they adopt to secure their livelihoods but also in terms of the range of risks households face and the strategies used to tide households over. The study has given insight into the sorts of shocks to which rural households are vulnerable as well as the proportion of households that experienced these over a two year period. It has shown that in response to these shocks households adopt a range of strategies of which NTFPs are only one yet despite this 70 % of households reported the use of NTFPs as a rural safety-net. Households' access to these alternative insurance mechanisms is largely influence by household wealth and the existing range of strategies and assets in which households invest. Gender of the de jure household head is less of an influencing factor. The study has also given some quantitative and qualitative ranking of which coping strategies are used and their relative importance. The role of NTFPs has been placed within the

broader picture of rural livelihoods and households ability to cope. The study has identified areas for future research as well as briefly discussed possible policy implications

APPENDICES

7.1 Entrance Permits to DWAF Forests

Appendix 7-1 Entrance permit to state forests (DWAF)

PERMISSION FOR ENTRANCE TO STATE FOREST: SPECIAL CONDITIONS

PERMISSION TO VISIT: KATBERG.....State Forest is granted in terms of National Forest Act, No. 84 of 1998, and the regulations made thereunder and is further subject to the conditions listed on this and numbered 1 to 7. The conditions listed on the visitors book/register which Mr./Mrs./Miss TRINOWATI.....of DALFOUR.....has signed on behalf of his of her party of THREE.....members for the period 2005.03.15 to 2005.03.15.....

1. VISITORS may be on the forest estate only between sunrise and sunset.

2. NO FIRES may be made except where special fireplaces have been provided and all fires shall be properly extinguished before the fireplaces are left.

3. NO PICNICS may be held except at indicated picnic sites.

4. ONLY ROADS and paths on the Estate forest where access has not been prohibited by means of notices, approved road signs, obstructions or gates may be used.

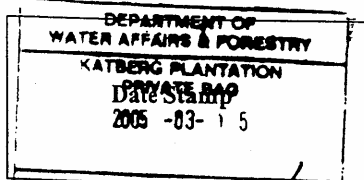
5. NO LITTER such as papers, bottles, tins, etc., may be left along roads, halts or picnic sites except in litter bins at places where such facilities are available.

6. PICKING OF flowers, removal, of any plants or forest produce, is STRICTLY PROHIBITED.

7. DOGS MUST BE KEPT ON A LEASH WHILE ON THE STATE FOREST.

KEEP FOREST CLEAN. PREVENT FOREST FIRES. DRIVE CAREFULLY

TO BE PRODUCED ON DEMAND TO A FOREST OFFICER/SECURITY



Issuing Officer: BALFOUR 5749 *[Signature]*

Date: 2005.03.15

Group Leader: *[Signature]*

Date: 2005.03.15

Appendix 7-2 Exemption to entrance permit to state forests (DWAF)

40 No. 20603

GOVERNMENT GAZETTE, 12 NOVEMBER 1999

NOTICE 2450 OF 1999

DEPARTMENT OF WATER AFFAIRS AND FORESTRY

EXEMPTION IN TERMS OF SECTION 24(6) OF THE NATIONAL FORESTS ACT (NO. 84 OF 1998)

By virtue of the powers vested in me by section 24(6)(a) of the National Forests Act, 1998 I, Ronald Kasrils, Minister of Water Affairs and Forestry, hereby exempt members of communities-

- (a) which live near or around state forests, and
- (b) which have not entered into a community forestry agreement in terms of section 29,

from the requirement to obtain any licence in terms of section 23(1)(c), (d) and (f)

1 This exemption is granted upon the following conditions-

- (a) The persons referred to may collect and remove firewood and other forest produce for household purposes only and may not sell or in any way deal in it for the purpose of gain
- (b) No live wood or branch may be collected, cut or removed
- (c) Only such forest produce as is customarily used for domestic, cultural, health or spiritual purposes may be collected and removed
- (d) Only such quantity of firewood or other forest produce may be collected and removed as can be carried on the person
- (e) No firewood or other forest produce may be collected or removed by means of any vehicle from within the forest
- (f) No firewood or forest produce may be collected or removed from-
 - (i) a protected area declared in terms of section 8, of
 - (ii) a controlled forest area declared in terms of section 17(2)
- (g) No firewood may be collected or removed-
 - (i) before sunrise or after sunset

- (ii) more than once a day by the same person or member of his or her household
 - (h) No hunting of any animal may be done
- 2 For the purposes of collecting and removing firewood and other forest produce in terms of this exemption the persons referred to must-
- (a) enter and leave the state forest through designated entrances
 - (b) where possible, notify the forest officer or other person in charge of their entrance
- 3 For the purpose of ensuring sustainable production, the forest officer or other officer in charge may-
- (a) limit or control the number of people allowed in the forest at any one time
 - (b) impose reasonable restrictions to prevent fires or harm to persons or property
 - (c) if the forest is a plantation, impose such restrictions as to ensure that its economic purpose is not defeated
 - (d) examine any firewood or forest produce collected or removed by any person
 - (e) limit or control the quantity of firewood that may be collected and removed by any person on any one day
 - (f) limit or control the collection and removal of firewood or forest produce derived from any species
 - (g) identify places at which or periods during which no collection and removal of firewood or forest produce may take place
 - (h) seek the assistance of the community in performing his or her tasks

R KASRILS
Minister of Water Affairs and Forestry



7.2 Time Trends and Seasonal Calendars

Appendix 7-3 Time trend for Dyala

	No. people	No. deaths	Health	Employment	Degree of poverty	Difficulty of life	Infrastructure	Rainfall	No. cows	No. goats	No. other livestock	Available grazing	No. fields	Size of fields	Amount produced/field	No. gardens	Size gardens	Amount produced/garden	NTPP use & sale	Fuelwood	Wild edible herbs	Wild edible fruit	Medicinal plants	Wood for household items & furniture	Grass & twig hand-brushes	Indigenous poles for fencing	Bushmeat	Building materials	Mushrooms	Wild honey
1940	2	1	10	10	1	10	10	10	0	0	3	2	1	1	3	8	8	8	10	10	9	1	10	1	10	10	10	10	5	1
1950	5	2	10	9	2	9	10	3	0	0	3	2	1	1	1	8	8	3	10	10	7	2	9	1	10	10	9	10	4	2
1960	8	3	10	8	3	9	10	7	0	0	3	2	1	1	3	8	8	7	10	10	6	3	8	3	8	10	8	10	3	3
1970	9	4	9	9	4	6	7	8	6	6	8	4	5	5	8	10	10	7	5	10	5	6	5	5	10	10	7	10	2	5
1980	10	6	8	4	9	3	6	5	10	10	10	10	8	8	5	10	10	6	2	10	4	7	4	9	8	10	6	10	2	6
1990	10	8	6	1	9	2	4	3	5	8	8	10	8	8	2	10	10	3	2	10	3	9	3	9	10	10	3	10	1	8
2000 - 2005	9	10	3	2	10	2	4	10	8	9	10	10	10	10	10	10	10	10	1	10	2	10	2	10	10	10	1	10	1	10

Appendix 7-4 Time trend for Dixie

	No. people	No. deaths	Health	Employment	Degree of poverty (Group 1)	Degree of poverty (Group 2)	Difficulty of life	Infrastructure	Rainfall	No. cows	No. goats	No. other livestock	Available grazing	No. fields	Size of fields	Amount produced/field	No. gardens	Size gardens	Amount produced/garden	NTPP use & sale	Fuelwood	Wild edible herbs	Wild edible fruit	Medicinal plants	Wood for household items & furniture	Curios (wooden)	Grass & twig hand-brushes	Indigenous poles for fencing	Bushmeat	Building materials	Wild honey
1960	2	1	10	10	10	1	2	0	10	10	10	10	10	10	10	10	1	1	1	10	10	10	10	10	10	2	10	10	10	10	10
1970	3	1	10	10	10	1	2	0	5	10	10	10	10	10	10	10	1	1	1	10	10	10	10	10	10	2	10	10	10	10	10
1980	8	5	5	10	10	5	5	3	1	5	10	10	1	7	10	1	1	1	10	10	10	10	10	5	2	8	10	10	10	10	8
1990	10	8	5	6	5	5	8	4	2	5	8	5	5	4	10	8	3	3	3	5	10	5	5	10	3	8	6	3	5	5	3
2000 - 2005	7	10	2	2	2	10	10	5	10	10	8	10	10	10	7	10	10	10	10	4	5	2	2	7	2	10	5	1	5	1	1

Appendix 7-5 Seasonal calendar for Dyala

	January	February	March	April	May	June	July	August	September	October	November	December
Rainfall	7	6	6	4	0	8	0	0	0	0	6	10
Planting	6	5	5	2	2	2	6	2	2	10	8	6
Harvests	7	7	8	0	0	7	0	0	0	0	10	8
Increased labour needed	8	0	0	0	0	0	0	0	0	0	0	10
Crop pests & diseases	9	9	6	0	0	0	0	0	0	0	10	8
Crop shortfalls	0	0	0	0	10	8	6	0	0	0	0	0
Livestock diseases	6	2	4	2	0	2	2	0	0	2	10	8
Human diseases	6	4	2	2	2	2	2	2	2	2	10	8
Social events	9	0	0	8	0	6	0	0	0	0	0	10
High expenditure	8	0	6	4	0	6	0	0	0	4	0	9
Cash income	8	1	1	1	1	1	1	1	1	1	1	10
Migrant remittances/contributions	0	0	5	0	0	0	0	0	0	0	0	5
Cash shortages	10	2	2	2	2	8	2	2	2	2	2	2
Livestock sales	6	4	6	1	1	10	1	1	1	1	4	8
Fuelwood	4	5	6	10	10	10	9	0	5	5	10	10
Sale of fuelwood	0	0	9	6	8	8	10	8	5	8	10	10
Wild edible herbs	9	8	8	2	2	2	2	5	7	9	10	10
Wild edible fruits	10	8	7	0	0	6	0	0	0	0	8	10
Sale of wild edible fruits	5	2	0	0	0	0	0	0	0	0	0	2
Medicinal plants	8	8	8	2	3	4	6	7	7	8	8	8
Bushmeat	1	1	1	1	1	10	1	1	1	1	0	0
Wild honey	8	8	6	2	1	2	2	9	9	9	10	10
Mushrooms	0	0	0	0	0	0	10	0	0	0	0	10
Sale of brooms	10	8	5	2	2	2	2	2	2	2	6	6

Appendix 7-6 Seasonal calendar for Dixie

	January	February	March	April	May	June	July	August	September	October	November	December
Rainfall	10	0	0	0	0	0	0	0	0	8	8	10
Planting	0	0	0	0	0	0	0	0	0	8	8	10
Harvests	10	0	0	0	0	0	0	0	0	0	0	0
Increased labour needed	10	0	0	0	0	0	0	0	0	10	10	10
Crop pests & diseases	7	0	0	0	0	0	0	0	0	7	7	7
Crop shortfalls	0	3	3	5	6	6	6	6	6	0	0	0
Livestock diseases	0	0	0	0	0	8	10	0	0	0	0	0
Human diseases	0	0	0	0	0	10	10	0	8	10	0	0
Social events	0	0	4	4	0	8	0	0	0	0	0	10
High expenditure	8	0	6	0	0	8	0	0	0	0	0	10
Cash income	8	8	8	8	8	8	8	8	8	8	8	10
Migrant remittances/contributions	0	0	0	0	0	0	8	0	0	0	0	10
Cash shortages	10	6	0	0	0	0	0	0	0	0	0	0
Livestock sales	4	0	2	0	0	0	0	0	0	0	0	6
Fuelwood	6	6	6	6	10	10	10	6	6	6	6	8
Sale of fuelwood	4	4	6	4	10	10	4	4	4	4	4	8
Wild edible herbs	10	6	4	8	8	8	2	2	10	10	10	10
Sale of wild edible herbs	6	6	6	6	6	6	6	6	6	6	6	6
Wild edible fruits	4	4	4	4	4	4	4	4	4	10	10	10
Sale of wild edible fruits	2	0	0	0	0	0	0	0	0	4	6	10
Medicinal plants	6	6	6	6	6	8	6	6	8	8	6	6
Bushmeat	6	6	6	6	6	6	6	6	6	6	6	6
Sale of bushmeat	6	6	6	6	6	6	6	6	6	6	6	6
Wild honey	2	2	2	2	2	2	2	2	2	2	2	2
Sale of crafts	8	8	8	9	8	8	8	9	8	8	8	9

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