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Unlocking resources: The impact of land reform on sustainability of forest and woodland resources and rural livelihoods- The case of Mufurudzi resettlement scheme (Zimbabwe)

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4.4.2 Frequency of Occurrence of Damaged Keystone Species

It has already been explained that different tree species play different roles within the livelihood systems of the community and their damage is inevitable whenever products are harvested from them, as is normally the case when NTFPs are collected. The frequencies of damaged trees for different keystone species found along all the eight surveyed transects is summarized in Appendix IV. However, some of the species are discussed below.

- ***Lannea discolor***

Lannea discolor is a relatively rare species in Mufurudzi, as only 25 members of this species were encountered in the entire survey, the majority of which occur at the periphery of the surveyed areas, as shown in Appendix IV. Transects for Mufurudzi II and Mupedzanhamo villages had the highest number of trees of this species, with eight and ten members, respectively. *L. discolor* was virtually non-existent along Mudzinge, Chidumbwe I and Chidumbwe II village transects. In the villages where the species was found the proportion of damaged trees varied from village to village and also spatially within each village. Overall, the percentage of damaged trees decreased from 100% in the first 200 metres to 0% within the 301- 400m zone, before rising again to 40% in the 401-500m zone, that is the outermost zone. Generally, there is a decrease of human induced pressure on *L. discolor* as distance from the homesteads increases.

- ***Brachystegia boehmii***

As already noted, with a total of 307 members there was, on average, at least a *B. boehmii* tree for every sampling point from which species distribution was determined. Overall, 73% of the trees of this species reflected human related damage, indicating that the tree is in great demand. The species is very common in Mufurudzi II and Mupedzanhamo

villages and least common in Chidumbwe I and Chidumbwe II, as shown in Appendix IV. Mufurudzi II and Mupedzanhamo villages had the highest proportion of damaged trees of this species.

Surprisingly, even though the *B. boehmii* tree is regarded as the most suitable source of firewood for tobacco curing in Zvataida, the village with the highest number of tobacco growers, the village is not necessarily the one with the highest population of damaged *B. boehmii* trees. However, Zvataida village was the third least endowed village in terms of the abundance of the *B. boehmii* species. Overall, there is a sharp decrease of the proportion of damaged trees with increasing distance from homesteads, again indicating that there are greater chances that a tree of this species found in locations that are close to the homesteads is damaged than in more distant locations, as shown in table 4.6.

Table 4.6: Distribution of *B. boehmii* in Mufurudzi

Distance from homesteads (metres)	0-100 m	101-200 m	201-300 m	301-400 m	401-500 m
Number of trees	54	52	57	67	77
% of damaged trees	77.8	76.9	68.4	65.7	75.3
Average diameter of trees (cm)	5.1	9.2	8.0	9.1	9.2
Number of trees with diameter exceeding 5.10 cm	16	27	28	37	38

Table 4.6 shows that in general the average diameter for *B. boehmii* increases with distance from homesteads. There is greater likelihood that the larger trees of this species are more readily felled within shorter distances than in more distant locations, again indicating that the demand for the species is high. Table 4.6 also shows that the number of trees whose diameters exceed the average diameter for trees within the distance of 100

metres from households increases with distance, indicating that larger trees are generally preferred to smaller ones. Thus, it is not only the proportion of trees that are damaged which varies with distance but the size of the trees as well.

- ***Julbernardia globiflora***

Julbernardia globiflora is generally a low population species, as shown in Appendix IV. Overall, 73 members of this species were recorded in the entire survey and about 66% of them were found along Principe A and Principe B transects. *J. globiflora* is a rare and relatively localized species. For example, not a single member of the species was recorded along Chidumbwe I transect. Only about 32% of the members of the species were damaged in all transects. There does not seem to be any relationship between the spread of species damage and distance. However, in areas that are close to homesteads the average diameter of trees is significantly variable and has a tendency of increasing with distance as shown in figure 4.8 below.

- ***Terminalia stenostachya* and *Terminalia sericea***

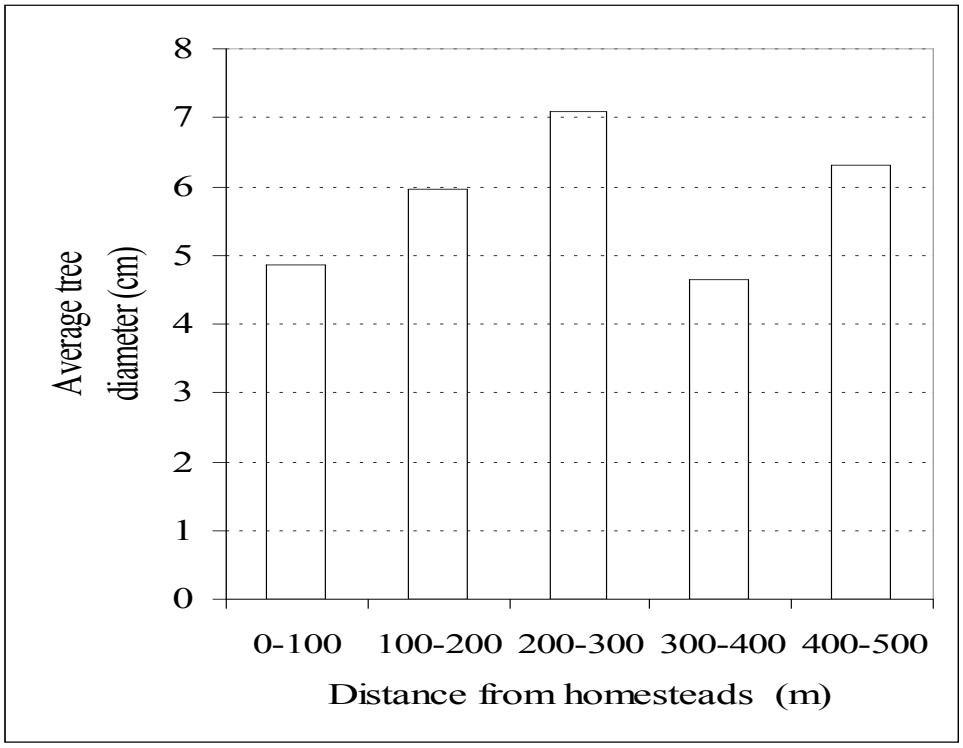
T. stenostachya and *T. sericea* are generally localized. The former is more common in Zvataida where a total of twenty four members of the species were recorded, while none were recorded in Principe B. Similarly, thirteen members of *T. sericea* were recorded within the first 200m of Mufurudzi transect, while insignificant numbers were recorded elsewhere, as shown in Appendix IV. *T. sericea*, is however, relatively more abundant in Mufurudzi II. Overall, villagers prefer *T. sericea* to *T. stenostachya*, and consider it as a better source of wood for a wide range of household uses. Consequently, the frequency of damage for *T. sericea* is double that of *T. stenostachya*, as shown in appendix IV. Wood from the former is generally regarded as relatively more superior in terms of durability

and toughness, while wood from the latter cracks more easily when it dries. Thus, the demand for *T. sericea* is higher than that for *T. stenostachya*. However, there is a general decrease in the number of damaged trees for both species, as distance from homesteads increases.

- ***Diospyros kirkii***

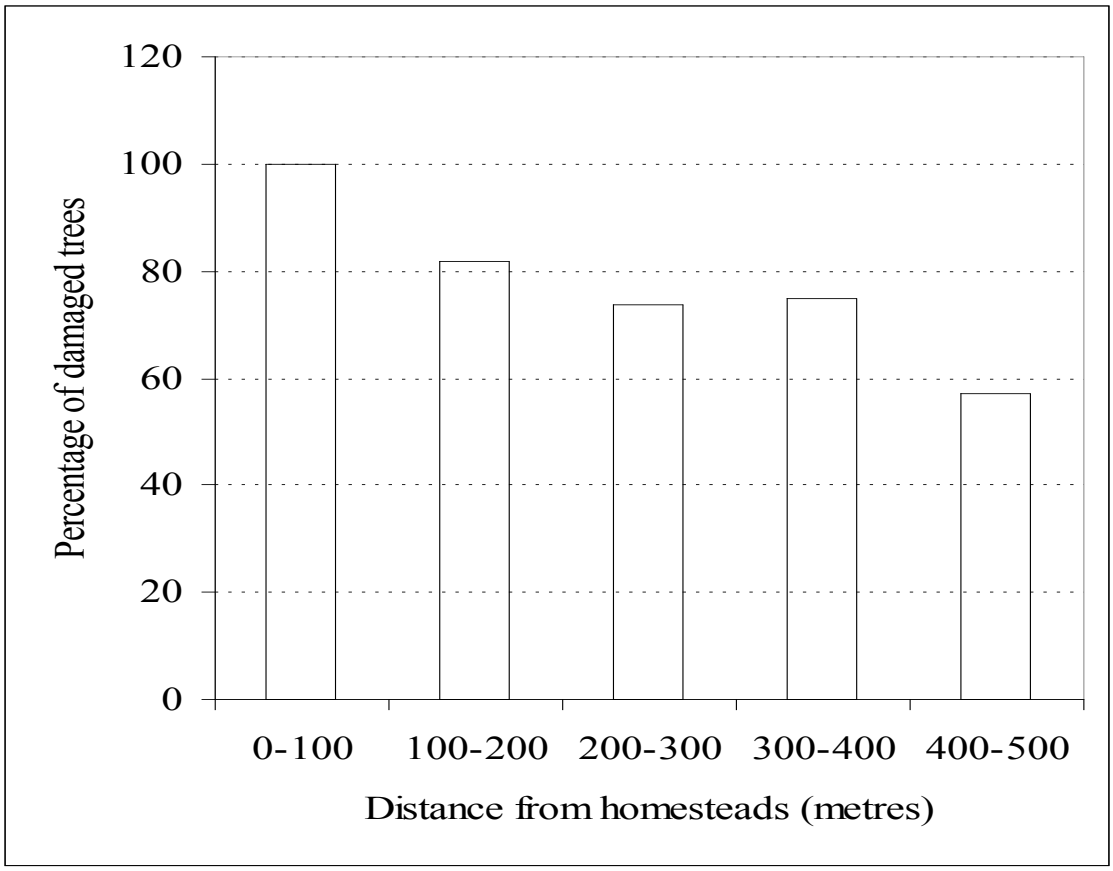
The occurrence of *D. kirkii* is fairly widespread in geographical terms, though no single member of the species was recorded in Chidumbwe II (see appendix IV). However, the species could be considered as rare since it constitutes only about 4% of the total tree population. Of the 49 members of this multi-purpose species that were recorded in the entire survey 37, amounting to 76% of the species' population, were damaged, dispelling the widely held perception that fruit trees are always sufficiently protected by traditional institutions, community by-laws, rules, regulations or other traditional controls. As explained in Chapter 2 the exploitation of fruit trees is sanctioned by taboo and pragmatic controls. *D. kirkii* is one of the species that are preferred for tobacco curing, especially in Mudzinge village. The use of *D. kirkii* for tobacco curing by individual households challenges the notion of 'collective proprietorship' on which CBNRM is based. The notion assumes that if a group of people jointly enjoy sanctioned use rights over resources the group will manage the resources according to their own rules and strategies to ensure the conservation of the resources (Jones, 2004). In the case of *D. kirkii* individual utility overrides any sense of 'collective proprietorship' in the sense that even though individual tobacco growers are aware of the community rules that prohibit felling of fruit trees the expediency to maximize economic benefits associated with tobacco curing outweighs community goals of conservation.

Figure 4.8: Spatial Variation of Diameters of *J. globiflora*



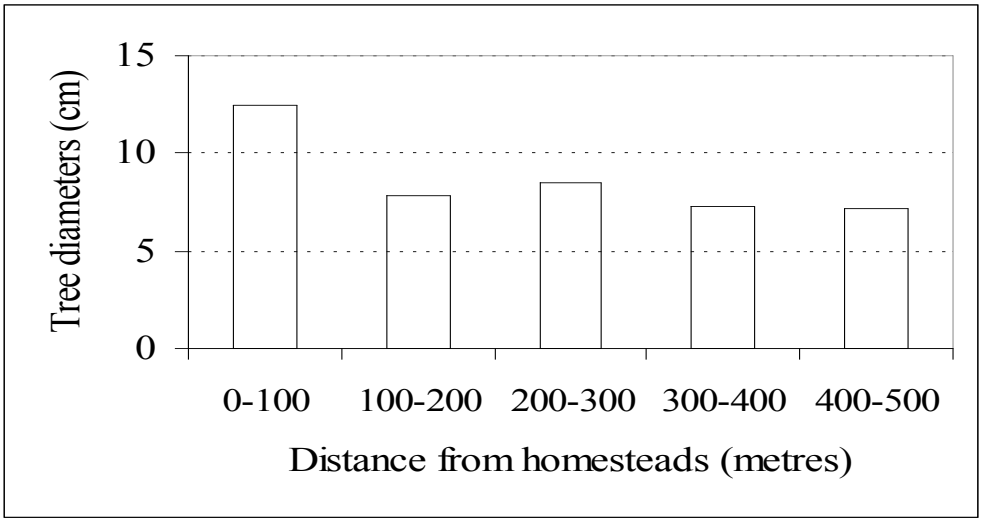
The transect that was surveyed in Zvataida village had the highest number of damaged trees. The felling of *D. kirkii* trees for firewood in this village can be explained by the low relative abundance of the most preferred species, namely *B. boehmii*, as explained above. However, the highest proportion of damaged trees were found in Mufurudzi II, where the ratio of damaged trees reached 100%. As has been reported with other species, the proportion of damaged *D. kirkii* trees decreases with distance from homesteads, as shown by figure 4.9

Figure 4.9: % Frequency of Damaged *D. kirkii* Trees in all Transects of Mufurudzi



There is an inverse relationship between tree diameter and distance as demonstrated by figure 4.10. This situation can be explained in terms of the selective nature of agents of deforestation. Most of the trees that have been spared in the locations that are close to the homesteads are large diameter mature trees which already bear fruit. Yet, the likelihood of encountering members of this species decreases with distance as the prevalence of other species in the woodland increases. This is particularly so for trees of large diameter, thus further diminishing the probability of encountering such trees down the transect.

Figure 4.10: Spatial Variation of Diameters of *D. kirkii*

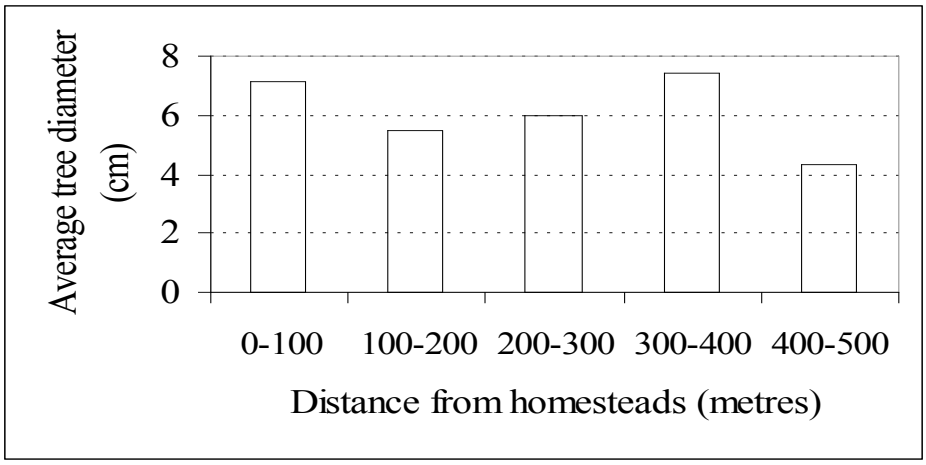


- ***Dichrostachys cinerea***

D. cineria is found almost in every village, though the highest population of the species was recorded in Chidumbwe II, as shown in Appendix IV. No members of this species were recorded in Chdumbwe I, while insignificant numbers were found in Mupedzanhamo, Zvataida, Mudzinge, Principe A and Principe B. The number of trees recorded for this species decreases with distance from homesteads. However, there is no discernible relationship between the number of trees that were damaged and distance from homesteads. The same applies for average tree diameters (see figure 4.11). From the foregoing discussion on tree resource inventory it can be noted that there is a wide range of species that play an important role in sustaining rural livelihood systems in Mufurudzi resettlement scheme. Both the relative abundance and relative densities of these species are spatially variable, defining different limits of resource endowment in different

locations within the scheme, and similarly defining different opportunities and options to resource users.

Figure 4.11: Spatial Variation of Diameters of *D.cinerea*



In Mufurudzi, forest and woodland resource endowment is a phenomenon that varies not only between villages but also within individual villages. The mean average spacing for all trees found along the transect ranges from 2.0 metres in Principe A to 6.8 metres in Chidumbwe II (see Appendix V), thus providing different ranges of opportunities to different village communities, depending on local situations and complexities.

Even though there are numerous natural factors that have influenced the distribution of tree species at micro level, anthropogenic pressure is perhaps the most important factor, since it has affected both the density of species, as well as the size of trees available. However, it should be noted that the abundance of a species does not necessarily always reflect the value that is attached to the species by local communities. In the case of Mufurudzi, even very rare species such as *P. angolensis, D. kirkii, T. sericea* and *L.*

discolor may be extremely valuable to local communities. This is because different species have different capacities of meeting critical livelihood needs, depending on their characteristics and use within the rural economy, as examined in the next chapter.

4.5 CONCLUSION

In Mufurudzi, tree population density, size and species composition vary spatially at both the macro and micro levels. Tree resource endowment is, therefore, a spatially variable phenomenon. Villages such as Mudzinge, Chidumbwe I and Chidumbwe II are the least endowed, in terms of availability of the forest and woodland species from which key resources are derived for rural livelihood inputs. Conversely, with woody vegetation densities exceeding 1000 trees per hectare, villages like Mupedzanhamo, Principe A and Principe B have access to a richer resource base, characterized by an abundant supply of keystone species. Grundy *et al* (1993) noted that the spatial distribution of plant species may be influenced by site characteristics, including physical and environmental factors such as availability of soil nutrients, light and water. Undeniably these factors have had an influence on the distribution of tree species in Mufurudzi, including the keystone species that have been discussed in this chapter. However, the complex tree resource distribution patterns that occur in this resettlement area also owe their origin to variability in anthropogenic pressure. Abundant evidence derived from API, satellite imagery and transect analyses strongly suggests that anthropogenic factors, including human related exploitation of forest and woodland resources, have had the most significant impact on this distribution. Consequently, it can be argued that the demands of the rural production and extraction economies that characterize local livelihood systems in Mufurudzi have

exerted pressure on these resources, thereby transforming the resources into open woodlands in some places. These demands are fully examined in the next chapter.

From the foregoing discussion a number of conclusions can be made. First, due to the complexities of tree resource distribution, opportunities related to access to forest and woodland resources are also unevenly distributed within Mufurudzi resettlement scheme. As noted by Clarke and Grundy (2004) spatial and temporal heterogeneity in resource availability is reflected in variable and changing patterns of resource use and value. Second, the complex spatial patterns exhibited by the distribution of tree resources in Mufurudzi does not support the widely held view that conservation of forest and woodland resources and land resettlement are diametrically opposed, though pressure on these resources is evident in many areas.

Third, in order to fully understand the range of options that local communities have about tree resource availability there is need to complement the macro-level analyses that are based on aerial photographs and satellite imagery by micro-level analyses. Though macro-level analyses unraveled vegetation distribution patterns in the studied farms within Mufurudzi, these analyses do not constitute a sufficient basis for CBNRM policy formulation because of their failure to unmask micro-level patterns.

Ironically, in Zimbabwe, as is the case elsewhere, whereas policy formulation is undertaken at the macro-level, the actual use of resources and their conservation are undertaken at the micro level. Often, decisions concerning resource conservation policy

formulation are largely based on macro-level analyses, presumably due to their perceived technological superiority and efficacy, yet in reality it is the micro-level resource distribution and use patterns that determine the success of any CBNRM policy implementation, since it is the local responses to CBNRM policy that determine the success of the policy. The case of Mufurudzi unveils the gap that exists between the policies that are formulated for forest and woodland resource conservation and their implementation, a situation that renders the policies irrelevant.

CHAPTER 5

RURAL LIVELIHOOD PORTFOLIOS AND FOREST AND WOODLAND RESOURCE UTILIZATION IN MUFURUDZI

5.1 INTRODUCTION

As demonstrated in Chapter 4 the forest is a complex ecosystem that offers an array of opportunities to different categories of people in the local environment. Indeed forest and woodland resources have remained the life support system of land reform beneficiary communities in Mufurudzi, even where these resources have been reduced to an open access entity. Whereas Chapter 4 examined the state of the bio-physical landscape in Mufurudzi this chapter explores the complex relationships that exist between the social-economic, cultural and political processes that have been responsible for transforming that landscape by analyzing the interface between the livelihoods of land reform beneficiary households and natural capital, in particular forest and woodland resources.

This chapter argues that resettlement has increased opportunities for livelihood diversification in Mufurudzi by creating a new resource base upon which the beneficiary community can draw its livelihood inputs. In this respect resettlement has improved access to productive land, which is a key resource for both the productive and extractive sectors of the rural economy. The research supports findings by Kinsey (1998) that in Zimbabwean resettlement areas household monthly incomes were more than double those in abutting communal areas. Kinsey found out that household monthly incomes in resettlement areas were approximately US$467.00, compared to US$102.00 in the communal areas. Besides creating new opportunities for cash cropping and livestock holding, as well as other forms of livelihood strategies, resettlement has ‘unlocked’

resources by enhancing access of land reform beneficiaries to forest and woodland resources. In this respect resettlement has provided a mechanism for both resource transfer and wealth generation for resettled households.

Whereas several studies that have been commissioned during the past two decades have demonstrated that resettlement has improved the lives of the beneficiaries (Kinsey, 1998; Hoogeveen and Kinsey, 2001; Kinsey, 1999; Chimhowu, 2002; Kinsey, 2002), these studies have tended to downplay the significance of enhanced access to forest and woodland resources in contributing to this improvement. While the success of resettlement in Zimbabwe has been assessed using income-based measures, these measures alone "inadequately capture the consequences of resettlement" (Kinsey, 1999: 177). This chapter contributes to the ongoing discussion on the relationship between resettlement and livelihoods by focusing on the role of forests and woodlands in the livelihoods of land reform beneficiaries.

The second argument in this chapter is that the *trajectory* of livelihood diversification for individual households has not been uniform, due to differences in mechanisms and services used to support farmers in different parts of Mufurudzi, as well as the capacity of farmers to make use of the provided support services. Other factors such as the households' income levels and sources, cultural background, duration of settlement and level of formal education attained, have also influenced patterns of resource access and use. The chapter demonstrates that there is no single 'model' for livelihood

diversification and also that access to land for crop and livestock farming is not the sole determinant of livelihood outcomes in resettlement areas.

Different livelihood outcomes denote differential access to resources and resource use patterns, a factor that provides challenges to resource management efforts, as well as the sustainability of forest and woodland resources and that of the livelihoods of land reform beneficiaries. The chapter suggests that resource use patterns reflect the quality of the environmental information and Indigenous Knowledge Systems (IKS) that the community or households or even individuals have, though household resource use patterns are also shaped by the broader opportunities and challenges that Zimbabwe's macro-economy has been subjected to during the past 25 years.

While the first part of the chapter traces livelihood diversification in Mufurudzi as an historic process, the second part explores the role that forests and woodlands play in meeting the basic needs of the resettled community. The second part also examines the stratification of the community, in terms of livelihood strategies, which has forestalled CBNRM in the resettlement scheme.

5.2. DIVERSIFICATION OF LIVELIHOOD OPTIONS IN MUFURUDZI

Upon independence in 1980 the new government in Zimbabwe was confronted with the challenge of a dualistic economy, in which 700 000 small-holders occupied 16,4 million hectares of mostly poor land while as much as 15,5 million hectares of prime agricultural land was owned by only 5000-6000 large-scale commercial farmers (Kinsey, 1999). This discrepancy in land ownership prompted the government to implement a British funded

land reform programme on a 'willing-buyer-willing seller' basis. When the programme started in 1980 one of its key objectives was to improve the standard of living of the poorest sector of the Zimbabwean population (GOZ, 1980). In line with this objective, as Kinsey (1999: 181) aptly puts it:

> The criteria originally employed to choose participants for resettlement emphasized the selection of the poor, the landless, the economically disadvantaged and those particularly affected by the liberation war. Although many of the records of the earliest settlers are no longer available, it is estimated that over 80 per cent fell into the categories of the most needy: refugees and the war-affected, the landless, and those with insufficient land to maintain themselves.

The above citation gives some clues about the state of livelihoods that prevailed in Mufurudzi resettlement scheme when the first land reform beneficiaries were resettled. For the majority of those resettled, provision of land through resettlement provided means for livelihood diversification since they could now raise crops and livestock in the communal areas where they were prior to resettlement. The questionnaire survey (conducted as part of this study) revealed that in 1981 when they were resettled 65% of the land reform beneficiaries in Mufurudzi had no cattle, 90% had no goats, while 99% did not own any sheep. This also applied to those beneficiaries whose livelihoods were formerly based on wage labour, particularly those who worked on large-scale commercial farms, the majority of whom were immigrants from Mozambique and Malawi. The questionnaire survey showed that none of the immigrants who were resettled in Mufurudzi owned large livestock such as cattle, goats and sheep or fields. They survived on wage labour prior to resettlement.

Livelihood diversification in Mufurudzi mirrors that which prevailed in Zimbabwean resettlement schemes at large. The key drivers of livelihood diversification were the worsening of the macro-economic environment and occurrence of environmental hazards, particularly drought. Although in Zimbabwe as a whole the process of planned resettlement has been slow, having resettled only 40 000 households by 1987, and only 71 000 by 1996, documentary evidence indicates that resettlement has led to both livelihood diversification and improved livelihoods among its beneficiaries. Both comparative studies between resettlement areas and communal areas adjacent to them, as well as 'longitudinal' studies within the resettlement areas themselves support this ascertain, even though it has been subjected to considerable debate. Pointing to livelihood diversification Kinsey (1999: 181) posits:

> Other comparisons with smallholder families in non-resettlement areas of Zimbabwe reveal that resettled families typically have much more arable land, grazing land which is less under pressure of livestock numbers and less access to facilities, such as markets, which operate most efficiently with high population densities.

Migration to urban areas for purposes of temporary employment was forbidden during the early years of the resettlement programme, thus curtailing livelihood options for resettled households. Surveys which were conducted in Zimbabwean resettlement schemes by Kinsey showed that between 1982 and 1984 resettled households relied far less on cash remittances than their communal counterparts. For immigrants the range of livelihood options was even more limited due to lack of social connections. The livelihood they had known were crafted around wage labour, since many of them were formerly employed on commercial farms.

During the early years of resettlement government policy prohibited land reform beneficiaries from holding jobs outside their resettlement schemes. Chimhowu and Hulme (2006: 731-732) argue:

> It was not envisaged that resettled households would engage in off-farm or no-farm activities. To enforce this thinking beneficiaries were encouraged to pursue predetermined livelihood routines based on farm project plans….These conditions were meant to ensure that that the settlers would not seek off-farm employment and would be available throughout the year. They were to be full time, small farmers.

This stringent condition, according to Kinsey (1999), prevented land reform beneficiaries from diversifying their livelihoods through wage labour or cash remittances. In line with its doctrine of 'scientific socialism' and paternalistic command approach to planning (discussed in Chapter 6), that prevailed in the early 1980s, the government insisted that resettled households rely exclusively on agriculture. This restriction was only removed in the 1990s to enable beneficiaries to cope with worsening economic hardships and drought. Prior of 1990 none of the land reform beneficiaries in Mufurudzi could even supplement their income by working for the Madziwa mine, which was located within the scheme. Following the devastating drought of 1992 as well as the worsening of the macro-economic environment due to structural adjustment, the government relaxed migration rules to enable settle farmers to hold jobs in urban areas as a way of providing them with the means of repayment of agricultural loans. The resultant emigration from the resettlement areas created a new form of livelihood diversification. Government's change of policy on urban employment reflects a shift from the rigid command approach to planning which dominated the early 1980s to a more flexible position that was in line with the new philosophy of liberalization, in tandem with the Economic Structural Adjustment Programme (ESAP) that it introduced in the early 1990s.

When compared with the livelihoods of those households in communal areas, the livelihoods of land reform beneficiaries became better-off and more diversified even a few years after resettlement. A survey conducted by Kinsey around 1997 revealed that resettled households cropped twice as much land as that cropped by households in communal areas, produced an average crop output that was four and half times that of an average communal area household, earned 6.8 times more from crop sales and earned 3.4 times more as livestock revenue.

> Values of livestock, crop production, food and non-food expenditure, and holdings of cereal stocks are all higher and more equitably distributed in resettlement areas than in neighbouring communal areas (Kinsey, 1999: 194)

It is therefore logical to conclude that resettlement has led to diversification and improvement of the beneficiaries' livelihoods, considering that these beneficiaries were selected from the communal areas because they were initially worse-off than other residents of the communal areas. This clearly applies in Mufurudzi where households have developed a range of strategies in an attempt to build sustainable livelihoods during the 25 years that followed their resettlement. In the case of Mufurudzi, however, improved access to forest and woodland resources has accentuated the process of livelihood diversification by yielding a stream of pecuniary benefits, which hitherto had not been accounted for in studies on resettlement areas. Compared with Mufurudzi, the degraded communal areas where they lived prior to resettlement offered limited access to forest and woodland resources. About 83% of the households that were included in the questionnaire survey indicated that forest and woodland resources were more available in

Mufurudzi than in the areas where they originated. These areas include communal areas such as Bushu, Rushinga and Madziwa.

Shackleton *et al* (2000: 1) maintain that a holistic view of sustainable livelihoods embraces social and economic dimensions, reduced vulnerability and environmental sustainability, and:

> recognizes that households pursue a range of livelihood strategies based on the assets (natural, financial, social, human and physical capital) they have to draw on and the livelihood outcomes they wish to achieve. The ability to access various combinations of assets helps to determine how vulnerable or robust a livelihood may be.

Within Mufurudzi resettlement scheme patterns of livelihood diversification have been complicated by recurrence of drought and an unstable macro-economic environment. There is evidence that 'new' livelihood strategies have emerged in the scheme while the 'older ones' have been retained. This differs from Smith's (2001) notion of productive replacement where households that are confronted with shocks and stressors are expected to embrace new livelihood strategies in place of existing ones. Livelihood diversification is evident in all the spheres of the production system of the rural economy, including dryland farming, irrigation farming and livestock holding systems and is a response to the changes that have taken place within the macro-economic environment that has prevailed in Zimbabwe, particularly during the early 1990s when the ESAP was implemented.

Prior to the introduction of ESAP land reform beneficiaries in Mufurudzi relied on a limited range of cash crops, particularly maize and cotton. This was especially the case shortly after resettlement when the livelihoods of many resettled peasants in Mufurudzi

were generally similar to those that prevailed in the communal areas (Lahiff, 2003), though in many cases they were worse-off (Kinsey, 1999). Livelihoods in Zimbabwean resettlement schemes at that time were based on a mixture of dryland farming, livestock and, rarely on remittances from family members employed in towns, farms and mines (Kinsey, 1999; Lahiff, 2003). Greater access to land based resources in resettlement areas, including forest and woodland resources, constituted the major difference between the livelihoods of land reform beneficiary households and those of communal households.

The adoption of ESAP by government liberalized the economy and worsened the plight of most poor rural households in Zimbabwe. In response to these circumstances some farmers in Mufurudzi (in both dryland and irrigable plots) diversified their livelihoods by searching for once banned urban employment, while others diversified crop production by increasing the number of crops that were grown for sale and investing in livestock or by adopting new off-farm activities such as gold panning, wage labour, craft making, and to a small extent sale of bush meat, fish and traditional beer, as well as the practice of traditional medicine. These activities created more diversified and complicated livelihoods as demonstrated below.

5.2.1 Cash Crop Diversification in Dryland Farming

Even though cash crop farming in Mufurudzi dates back to the pre-resettlement period its existence among land reform beneficiaries is as old as the scheme itself. However, the scale and intensity of cash cropping increased considerably following the introduction of

ESAP. This pattern mirrors the broader picture of the agricultural changes that occurred in Zimbabwe as a whole. Alluding to this view Tekere (2001: 7) notes:

> Removal of price controls which has resulted in producer prices going up has benefited agricultural communities who have access to markets and with the ability to shift into alternative cash crops according to the shifts in relative prices….There has been a significant growth in export crops such as cotton, floriculture, tobacco, sugar etc, that has led to the creation of employment on commercial farms for rural workers who are to a greater extent women.

Another important export bound cash crop whose production increased during this period is paprika, most of which was previously grown for the global market by white commercial farmers. However, ESAP led to agricultural decline in the country, as well as in other southern African countries. For instance, in South Africa the decline mainly resulted from the reduction of subsidies and state inputs into agriculture (Andrew, *et al,* 2003). In Zimbabwe, the adverse macro-economic and political changes that gripped the country during the 1990s led to the increase of cash cropping in the country as a whole. The grafting of ESAP on what was largely a state managed command economy transformed it into a more market oriented economy, in which cash crops exports played a more important role in the national economy. Increase in cash cropping was also observed in the communal areas where market-oriented agricultural production expanded (Lahiff, 2003).

ESAP, which lasted for five years, was brought to an end by government in 1995, when it was realized that it was doing little besides worsening the state of the national economy. Instead of growing, the economy actually shrank to unprecedented levels, with significant losses on jobs and real income earnings, while the cost of living soared. This

development worsened the plight of the vulnerable poor communities who were "disproportionately hurt by short-run volatility and economic downturns", a situation which was complicated by the droughts of the early 1990s (Ersado, 2003: 1), particularly the 1991-92 drought which was the worst to be experienced in Zimbabwe during the 20th century (Bird and Shepherd, 2003).

Driven by poverty, many small-scale farmers in Zimbabwe resorted to intensified cash crop farming as a means of diversifying their sources of income. Since ESAP many households in Mufurudzi have continued to rely on cash cropping for livelihood. Results from the questionnaire survey that was conducted in 2003 (as part of this study) indicate, for example, that 69%, 13% and 91% of the households in the scheme derived most of their income from cotton, tobacco and maize, respectively. Ersado (2003) argues that few households in developing countries derive the bulk of their income from a single source. Households use income diversification for pre-risk management or to cope with the shocks that have taken place (Rosenzweig and Binswanger, 1993). In Mufurudzi, though farmers retained some of their produce for household food requirements, especially grain and beans, most of the produce was sold in order for farmers to cope with worsening macro-economic conditions. Buyers came from as far as Shamva and Bindura towns, approximately 40 and 60 km away, but trade also flourished between the scheme and the surrounding communal areas. Successful farmers also diversified their sources of income by investing in livestock and other assets, as explained later. In Principe villages, where irrigation farming is practiced, crop sales contributed close to 100% of all the income

earned by households, while most of the produce from the small dryland plots owned by these households was retained for household use.

The worsening of the economy persisted throughout the late 1990s. Since then there has been a decline in export earnings from cash cropping. For example, there has been a significant decline in tobacco exports from the large scale commercial sector, causing a slump in foreign exchange earned from the crop. The production of other commercially produced cash crops was affected in a similar way. In the case of tobacco two major factors contributed to this situation. First, the adoption of ESAP triggered inflation and raised the costs of tobacco inputs, most of which are imported, and forced some commercial farmers out of business. Campbell *et al* (2002: 14) maintain that:

> the decline of the national economy has had a negative impact on CPR institutions. The economic structural adjustment programme (ESAP) which was implemented in the early 1990s, has led to increasing farming input costs, reduced remittances from urban areas, higher costs of services, such as health, education, etc., without higher prices for outputs.

Inflation led to the increase of the prices of imported inputs such as fertilizers and pesticides and even those of locally found inputs such as coal, the main fuel used for tobacco curing on commercial farms. Whereas peasant households turned to a number of income generating activities some of which are socially and ecologically destructive due to declining cash income (Campbell, *et al*, 2002) commercial farmers responded to the harsh economic climate by scaling down their operations.

Second, in Zimbabwe there was a mass exodus of white commercial farmers, including reputable tobacco producers, during the first decade of independence. This partly resulted

from the government's massive land reform programme, which caused significant displacement of these farmers from prime commercial farmland. More recently, the emigration of large-scale tobacco growers has created a situation whereby government has had to encourage small scale farmers, including those in resettlement schemes, to grow tobacco with the view to satisfy the external demand for the crop, against the backdrop of falling foreign exchange earnings. In addition, the erosion of the local currency by inflation has also weakened the local currency and affected the exchange rate to a point whereby tobacco farming is perceived as a lucrative business by some villagers, who are now more inclined to increase its acreage or even grow it for the first time.

Tobacco farming recently emerged as part of the cash crop farming system within the rural economy of Mufurudzi. Data from the 2003 questionnaire survey indicate that though tobacco farming was only introduced as recently as 1998 in some villages such as Mufurudzi and Mupedzanhamo, it has already become an important livelihood strategy in the resettlement scheme where nearly 20% of the households grow it on a regular basis. Zimbabwe as a whole has seen more small-scale farmers turning to tobacco farming in recent years. For example, during the first five years following Zimbabwe's land invasions of 2000 the number of small-scale tobacco farmers nearly trebled, even though the amount of tobacco produced has fallen drastically during the same period (Tobacco Research Board, 2005).

The increase of small-scale tobacco growers has also been widely reported in Mufurudzi where loss of tree resources has been blamed on a small but ever burgeoning population

of small-scale tobacco farmers. Table 5.1 shows the distribution of households whose livelihoods are partly based on tobacco farming. In Mufurudzi average annual tobacco output ranges from zero in Principe A and Principe B, where resettlement permits prohibit farmers from growing the crop, to as many as 35-48 bales in some households in Mupedzanhamo and Chidumbwe I villages.

Table 5.1: Number of Tobacco Farmers in Eight Villages of Mufurudzi

Village	**Number of Tobacco Growers**
Mupedzanhamo	4
Chidumbwe I	1
Chidumbwe II	1
Mufurudzi II	7
Mudzinge	11
Zvataida	13
Principe A	0
Principe B	0
Total	37

5.2.2 Livestock Holding

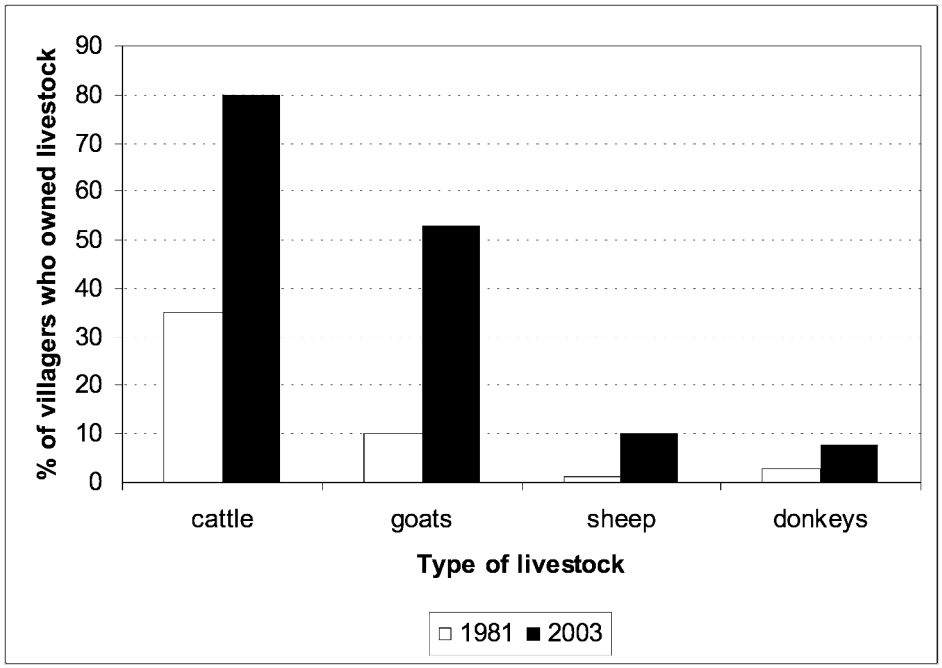
Evidence from the research that was carried out in India suggests that livestock sales and purchases are used as part of farm households' consumption smoothing strategies (Rosenzweig and Wolpin, 1993). This is also the case in Mufurudzi where a wide range of livestock are reared. Held livestock include cattle, donkeys, goats, sheep and small livestock such as chickens and rabbits. Though livestock holding is not a new livelihood strategy in Mufurudzi it can still be regarded as one of the ways through which some households have diversified their livelihood options. This argument is supported by the increase in the percentage of households that raise livestock.

There has generally been an increase in both the number of livestock owned and the proportion of farmers who own livestock. Figure 5.1, below shows changes in patterns of

livestock ownership between 1981 and 2003. The biggest changes in livestock populations during the past 25 years are those of cattle and goats. However, these patterns are not unique to Mufurudzi. Kinsey (1999), for example, noted that 90 per cent of households in Zimbabwean resettlement schemes now own cattle, with an average holding of 10 animals per household. From this point of view it could be argued, therefore, that resettlement has provided some beneficiaries with a new means of sustaining a livelihood. The decline in the economic fortunes of rural households in Mufurudzi may have induced households that did not previously own livestock to take up livestock holding as a coping strategy.

Even though goats, sheep, chickens and rabbits may be raised as a source of income most households keep them for household protein requirements. Quite to the contrary, cattle are raised for sale, though their disposal is normally in response to the shortage of essential household requirements, particularly money for food, school fees and *lobola* (bride price), where someone is marrying. In the case of *lobola* live cattle may be exchanged for the bride.

Figure 5.1: Changes in number of people who keep different types of livestock between 1981 and 2003



Many households keep cattle as a form of security against environmental shocks and stresses. For instance, in the event of drought or poor harvests or other perceived worsening fortunes, cattle are sold to raise money for food or execution of other 'stop gap measures' to avert environmental adversity. Ersado (2003: 4) notes that:

> Keeping cattle as an insurance substitute has longstanding importance in the economic literature on Africa.

In Mufurudzi a single head of cattle can fetch anything between Z$3 million and Z$6 million (November 2005 prices), depending on size and how the marketing is done or the gravity of the impending crisis that the seller is trying to avert. In many households cattle are also raised as a symbol of wealth. In addition, cattle holding is the major way through which the local community can be assured of milk supply. Most cattle owners indicated

that one of the reasons they raise cattle is to produce milk for household requirements. Furthermore, many households regard both cattle and donkeys as the main reliable source of draught power for their farming operations, especially when the country is facing critical fuel shortages. The role that cattle play in the livelihoods of the resettled communities in Mufurudzi is very similar to that reported in other resettlement schemes in Zimbabwe. While referring to Nyamakate resettlement scheme in Hurungwe, Chimhowu and Hulme (2006: 740) noted:

> Cattle have the advantage that they provide draught power and can be sold off in times of need. Further, cattle were an important part of household consumption and income smoothing strategies providing cash when sold or leased in addition to the meat and milk proteins. During cultural events like *lobola* (bride wealth payment) cattle are exchanged, while at funerals and related socio-cultural events they are the choice beast for slaughter in libation rituals. It is for such reasons that households were prepared to take on the risk of investing in cattle.

Though donkeys are not popular with most land reform beneficiaries those who keep them cite resistance to drought as the main reason for keeping them. The government approved livestock budget for Mufurudzi, like that of nearly all early intensive resettlement schemes, was based on the assumption that settlers would own only five head of cattle during their first year of resettlement and also that the stock build-up would be achieved by natural growth to reach the optimal head of 10 cattle during the ninth year of resettlement (CONEX, 1981). It was also assumed that the growth of the herd would be achieved through natural growth rather than by purchases of breeding stock. Pastureland was considered as an inadequate source of feed, in which case supplementary feeding of livestock was highly recommended. In this respect, even though elaborate plans for cattle holding were explicitly drawn by government the importance of other livestock in the rural economy was overlooked in such plans.

However, the number of livestock owned by households is highly variable in Mufurudzi. In the questionnaire survey that was conducted in Mufurudzi in 2003 as part of this study some farmers owned as many as 34 cattle while 20% of the 213 households that were included in the survey owned none. In the livelihood survey that was conducted in August 2005 (also as part of this study) one household in Principe A owned 43 head of cattle, 32 sheep, 18 goats, while some households owned virtually none.

5.2.3 Wage Labour

If urban employment is a means of livelihood diversification, then the local wage labour market provides the same means without individuals having to migrate. This is the case in Mufurudzi where more successful households normally augment their labour supply by hiring other villagers to perform physically exerting tasks such as clearing of new fields, construction, brick moulding, ploughing, weeding, herding, digging manure, cutting of firewood and other forms of wage work or drudgery. In some cases those who are hired to perform such tasks are paid in kind. Instead of receiving cash payment they receive goods such as soap, cooking oil, salt, mealie meal, clothes and other basic commodities that may be in short supply. During the dry season, for example, many households in the dryland farming areas within Mufurudzi are hired in Principe irrigation scheme where they exchange their labour for vegetables, green maize and other agricultural products.

5.2.4 Wood Carving, Weaving, Curio and Craft Making

Though it is not a widely practiced livelihood strategy the sale of wood carvings, curios and crafts is an important source of income for some households in Mufurudzi resettlement scheme. About 9% of the households in this scheme depend on wood

carving, weaving, curios and crafts as source of income. Unlike other off-farm livelihood diversification strategies these non-farm activities draw heavily from the cultural background of households and expertise or indigenous knowledge that occurs within individual households. There are a number of types of carvings and artifacts whose raw materials are readily derived from natural forest and woodland resources. A considerable range of these artifacts and carvings are sold to tourists as curios. Nevertheless, the majority of the artifacts that are made in the scheme are either used by the households that make them or sold within the local community. These include baskets, mats, grain mortars and pestles, harnesses, tool handles and other artifacts such as wooden plates, bowls, spoons, cooking sticks, walking sticks, knobkerries, bows, arrows, drums, ox harnesses and yokes.

Carvings and artifacts find a ready market locally because their non-wood substitutes are expensive and unaffordable to most members of the local community. In Mufurudzi, the plant species that are normally used to produce some of the artifacts are listed in table 5.2. Table 5.2 shows those species that are considered as most economically rewarding by wood carvers. In carving, weaving and curio making considerable amount of expertise and specialized knowledge are required regarding the selection of suitable raw materials, as well as how to process them. This is because raw materials for these trades vary considerably in both strength and décor.

For most of the artifacts that are made of wood villagers indicated that they preferred species whose wood has suitable grain arrangements which are capable of yielding a smooth polished finish. This is especially the case with artifacts that are sold as curios.

Other desirable characteristics preferred in craft wood are strength and durability, ability to withstand elements of harsh weather, especially exposure to rain, suppleness (for bows and some musical instruments), and multi-colouring for decoration. However, for hoe and axe handles, relatively young trees with intertwined wood grains above the root collar are usually the most preferred.

Table 5.2: Common Artifacts Produced From Forest and Woodland Products

Artifacts	**Species most preferred and used**
Baskets	Bamboo, reeds, illala palm, wild sisal, *Combretum spp*
Yokes and harnesses	*Terminalia sericea, T. mollis, B. boehmii, Julbernardia globiflora, Diospyros kirkii*
Curios, walking sticks, knobkerries, bows and arrows	*Breonadia salicina, Pterocarpus angolensis, Swartzia madagascariensis, Dalbergia melanoxylon, Erythrina abyssinica, Afzelia quanzensis, Diplorhynchus condylocarpon*
Grain mortars, bowls and plates	*Sclerocarya birrea, Kigela africana*
Cooking sticks and wooden spoons	*Crossoptery febrifuga, Diospyros kirkii*
Mats	Reeds, *Adonsonia digitata, B. boehmii*
Tool handles	*Diospyros kirkii, T. sericea, T. mollis, Garcinia buchananii*

Examples of tree species that exhibit these characteristics include *D. kirkii, J. globiflora* and *T. sericea.* In the local craft industry, the quality and marketability of some crafts and artifacts are enhanced by use of dyes. Dyes are normally used to decorate artifacts such as baskets, bags, hats and mats. Different sources and characteristics of dyes are noted in Appendix IX.

5.2.5 Gold Panning

Even though its total contribution to household income could not be ascertained due to its illegal status, gold panning was widely reported to be taking place throughout Mufurudzi resettlement scheme, and is arguably one of the most important off-farm preoccupations

that are pursued by villagers Principe A, Principe B and Mupedzanhamo. Interviews with land reform beneficiaries from these villages revealed that gold panning mostly involves young and middle aged males, though a few women may also take part in the practice. In Zimbabwe as a whole, an increasing number of people whose incomes depend on gold panning has been reported due to worsening unemployment. It has been noted that the livelihoods of 20% of the poorest people in Zimbabwe depend on gold panning (Chipeta and Kowero, 2004). After panning, the gold is partially processed before it is sold to a middleman who either sells it to the government owned Fidelity Printers, the only official gold buyers in the country, or smuggle it outside the country where it is sold on the black market. Small-scale claim holders normally operate as middlemen and the prices they offer for the gold they receive are normally higher than those offered on the official market, making the illegal practice difficult to control in Mufurudzi. However, there are two other major reasons why gold panning is difficult to control.

First, the key decision-makers in some villagers, including village heads, are benefiting directly from the practice and hence they are reluctant to ban it. Many of those who engage in the illicit practice are family members or relatives of traditional leaders, especially village heads. Second, some gold panners originate from distant areas and have little regard for traditional authority, to the extent that village heads find it difficult to regulate their activities. Both villagers and RDC officials noted that gold panning is a difficult practice to control.

Panning destroys vegetation in many ways, including the uprooting of trees that are found along perceived 'gold veins' as well as cutting of trees for the construction of temporary shelters and for supply of mining 'props'. Conflicts normally emerge within the community when panners open their 'new mines' in other people's fields without the consent of the owners. This situation has been worsened by the weaknesses exhibited by traditional institutions and the community's heavy reliance on technocratic and bureaucratic forms of environmental monitoring and management. In the late 1990s panners received considerable backing from corrupt political heavy weights, some of which served as middlemen for this lucrative activity. During this period panning was publicly acknowledged and justified by government as a legitimate alternative strategy for coping with environmental adversity, especially drought, as well as general economic hardships.

As demonstrated above, the livelihood portfolio that a household may adopt depends on the combinations and permutations of the livelihood options available to land reform beneficiaries, as well as the conditions that prevail within the macro-economic environment. In the case of Mufurudzi, the process of livelihood diversification has not been uniform, rendering some households more successful than others. In this scheme there has been no single 'model' for livelihood diversification and some households have been able to use the productive resources more effectively than others.

Though livelihood diversification has taken place within the productive system of the rural economy of Mufurudzi, especially within the agricultural sector, the livelihood

options that have resulted from this diversification are still limited. Such a situation renders natural capital, especially forest and woodland resources, an important safety net for survival, though the degree to which a household depends on these resources depends on the status of the household.

5.3 FOREST AND WOODLAND RESOURCES AND THE BASIC NEEDS OF THE MUFURUDZI COMMUNITY

As noted in Chapter 4, the extent to which forests and woodlands are incorporated into the livelihood strategies of households depends on the spatial distribution and species composition of local forest and woodlands. While this interpretation is generally valid and reflective of how forest and woodland resources are differentially accessed by different communities in Mufurudzi, the actual contribution of these resources to household livelihoods is largely influenced by the nature of the livelihood portfolio that a household has adopted, consisting of the diversity of survival options available to it. Such a portfolio comprises the household's source of income, food, energy requirements and other essential household inputs. In Mufurudzi, resettlement has provided the means for both livelihood diversification and for accessing natural capital to settler farmers. As demonstrated below, to virtually all households in Mufurudzi, resettlement has broadened the resource base by availing forest and woodlands that they previously had little or no access to.

Forest and woodland resources are the main natural capital that local communities turn to when all other forms of assets (financial, social, human and physical) fail to provide an

adequate safety net for human survival, making them the 'linchpin' of the livelihoods of the resource poor majority. Andrew *et al* (2003:2) maintain that:

> The ability to generate livelihoods from a diversity of key ecological resource areas is a crucial aspect of … risk minimizing strategy. Access to diverse ecological resources ensures that the household is unlikely to lose access to all its livelihood options in the event of an environmental or socio-economic disaster.

However, forest and woodland resources have proven to be a 'hidden resource', due to their omission from welfare and livelihood surveys, as already discussed above. In this regard the role of forest and woodland resources in shaping household livelihoods has been underestimated. Not only are forest and woodland resources an important source of income (a financial asset), as well as basic physical needs such as shelter and food, but they are also important for the spiritual well-being of local communities. This makes forest and woodland resources the loci of the community, regardless of whether or not the community is vulnerable to prevailing shocks or stresses. Nonetheless, in Mufurudzi forest and woodland resources may be used differently by different households to diversify their individual livelihoods, depending on the complexity of the knowledge base (indigenous knowledge system in particular) that the households have.

Forest and woodland resources have a huge role to play within the livelihood portfolio of resettled peasants (see plate 5.1). Forest and woodland products constitute essential inputs for livelihood systems in Mufurudzi. These include non-timber forest products (NTFPs), among which are non-wood forest products (NWFPs) (Wong, Thornber and Baker, 2001:), referring to goods of biological origin other than wood, derived from forest, other woodland and trees outside forests (FAO, 1993).



A	Wooden poles are commonly used as fencing posts
B	Poles and grass for roofing and thatching
C	Trees provide shade and shelter from stormy weather and strong winds
D	Trees are an indispensable source of energy
E	Livestock pens and garden fencing involving materials from trees
F	Fodder such as that derived from *Acacia spp.* (in the picture) are an important source of livestock feed

Plate 5.1: Range of household needs that require forest and woodland products for an average household in Mudzinge

Communities in Mufurudzi resettlement scheme acknowledged that resettlement has improved their access to a considerable range of timber and non-timber forest products (NTFPs) such as construction materials, fuel wood, fodder, herbal medicines, latex and waxes. This finding confirms research elsewhere in southern Africa showing that local communities derive a variety of products from woodlands, including edible products such as fruit, mushrooms, '*mopane* worms', locally known as *madora,* but also called phane

(Chipeta and Kowero, 2004), that is, caterpillars of the emperor moth, *Imbrasia belina,* and other insects, as well as raw materials for crafts and artifacts. Forest and woodland resources meet many different livelihood needs within the scheme. Tree species supplant basic livelihood needs such as food, shelter and health and other requirements at little cost.

During PRA, communities from the surveyed villages stated that '*mopane* worms' and other forms of caterpillars such as *nhowa* (from *Diplorhynchus condylocarpon), magandari* (from *Julbernardia globiflora*) and *harati* (from *Burkia africana*), as well as insects such as termites are widely used as relish or past-time snack, underscoring earlier research findings about the importance of insects in the diets of low income communities in miombo woodlands (Campbell, Grundy and Matose, 1993; Bradley and Dewees, 1993; Brigham *et al,* 1996; Cunningham and Davis, 1997). For instance, Bradley and Dewees (1993) noted that species of termites such as *Macrotermes belliscosus* and *M. natalensis* are widely eaten in Zimbabwe, particularly in their alate form. Cunningham and Davis (1997) noted that in southern Africa as a whole wild foods often supplant unreliable staple diets characterized by deficiency in nicotic acid, vitamin C, calcium, riboflavin and protein.

Communities in Mufurudzi also derive products such as dyes, medicines, aphrodisiacs, anti-helminthes, emetics, crafts and artifacts, latex, gum, soap, pesticides, water divining equipment, baking requirements and materials used for other purposes (Appendix IX).

In addition, forests and woodlands are central to the provision of ecological services such as soil conservation and enhancement wildlife habit conditions. It has also been noted that forests and woodlands are central to eco-religion because they provide spiritual fulfillment to local communities. In Mufurudzi, local communities are linked to forest and woodland resources through a system of values, controls, beliefs and practices, all of which have an important link to the conservation of these resources. The relationship between people and forest and woodland resources in Mufurudzi is a microcosm of the situation that prevails in Zimbabwe, as well as southern Africa as a whole. In Zimbabwe about 40% of the total income earned by poorer households and 29% of that earned by the wealthier households is generated from wild resources (Cavendish, 2000; Cavendish, 2002). Also, in Zimbabwe, forests and woodlands are an important source of raw materials for crafts, jam, jelly, natural oils and extracts, cosmetics, hardwood furniture and herbal teas such as Makoni tea (*Fadogia ancylantha*) (Odero, 2004). It has been further demonstrated that in southern Africa as a whole many households supplement their incomes by earnings generated from NTFPs, even though to many households NTFPs actually constitute a primary source of income (Shackleton and Shackleton, 2004).

As shown in Appendix IX, in Mufurudzi, trees and their products are regarded by the local community as an indispensable resource that is needed at every stage of the life cycle of the human being, celebrated through rites of passage related to birth, adulthood and death. Within the belief systems of many ordinary land reform beneficiaries of *Kore-kore* origin, trees are central to the quest for fertility enhancement in women, potency in

men, survival of the offspring, initiation into adulthood, burial of the dead and the appeasement of the 'living dead'. In this respect acknowledgement of the importance of tree resources in all aspects of life and the knowledge of their uses is critical to the foundation of CBNRM.

5.3.1 Importance of Forest and Woodland Resources in Construction

Communities in Mufurudzi resettlement scheme depend on forest and woodland products for construction of huts, granaries, cribs, rakes, livestock pens and tobacco barns, as well as other structures that are constructed of wood. In this scheme, indigenous forests and woodlands are the major source of construction poles, withies, rope fibre and thatch. Such materials are important to the poor majority who cannot afford alternative materials for construction. Plates 5.1 and 5.2 show some of the structures that were built from forest products. Usually specific materials are derived from specific tree species, depending on both their use and availability. Species preferences vary according to the structures to be constructed and the durability of the materials derived from the species. Choice of species largely depends on the local 'scientific' knowledge base, that is, indigenous knowledge systems, as discussed later in this chapter.



Plate 5.2: A 'family' of three tobacco barns at a homestead Mudzinge, each with the capacity to hold 600kgs of tobacco at a time, requiring approximately 10 m^3 of firewood wood to cure.

5.3.2 Fuel Wood and Household Energy Requirements

Virtually all households in Mufurudzi depend on fuel wood for their household energy requirements. For a typical household in Mufurudzi fuel wood is the cheapest form of energy that can be relied on for lighting, cooking and heating purposes. However, fuel wood is also required in tobacco curing and brick burning. This is largely due to unavailability of coal. Even where coal is available its price tends to be beyond the reach of most tobacco growing peasants. As a result most small-scale tobacco farmers find firewood a more cost effective fuel, unfortunately with grave consequences on the environment.

5.4 COMMUNITY STRATIFICATION AND DIFFERENTIAL RESOURCE USE: THE MANAGEMENT PROBLEM

As may be recalled from above, different forms of livelihood diversification create heterogeneous communities. However, not all forms of community heterogeneity result from livelihood diversification. Kinsey (1999) noted at least two ways in which Zimbabwean resettled communities are segmented. One of them is that resettled communities consist of 'better-off' and 'worse off' households. This type of heterogeneity can result, but not necessarily, from livelihood diversification. The other form of heterogeneity, which is more implicitly demonstrated in surveys that were undertaken in Zimbabwean resettlement schemes by Kinsey, is that resettled communities consist of 'aliens' and indigenous populations. This form of community segmentation has obviously not resulted from any form of livelihood diversification.

However, both forms of heterogeneity, and other forms of heterogeneity as well, exist in Mufurudzi. Communities in Mufurudzi are heterogeneous due to economic, social and cultural diversity. Evidence from this research suggests that different categories of households within these communities pursue different livelihood portfolios because of their different economic, social and cultural status. Such differences have important implications on CBNRM in general, and forest and woodland resource use patterns in particular, as shown below.

The recognition of the importance of stratification and diversity within the community is critical to the success of CBNRM and project implementation in general. The existence of diversity or pluralism within any community is one of the major sources of conflict

within that community and is thus a primary threat to CBNRM. For instance, while examining differences within land reform beneficiary groups in the Northern Cape Province of South Africa, Bradstock (2005) identified two categories of beneficiaries, namely 'core' members and 'recruits', the interests of which were so diametrically opposed that there was need to allocate resources for the management and resolution of the conflicts that emanated from their co-existence.

Evidence from Mufurudzi demonstrates that the selection of livelihood options by any one household is primarily the function of the household's sources and levels of income, cultural background, how long the household has been resettled (duration of resettlement) and quality of environmental information and IKS within the household, all of which have created heterogeneity and stratification within the community.

It is acknowledged in this chapter, though that there are crosscutting values that permeate social strata which have an influence on all social groups within the community. These include spiritual values, practices and taboos which exert control on how certain forest and woodland products are controlled used. Nevertheless, in Mufurudzi, community heterogeneity creates enormous challenges for CBNRM, since it undermines social cohesion, as demonstrated below.

5.4.1 Inter-Household Power Dynamics, Poverty, Livelihoods and Differential Forest Resource Utilization

Catalyzing household differences within the communities of Mufurudzi are conditions such as socio-economic and cultural variability which not only complicate the

relationship between livelihoods and forest and woodland resource use patterns but also stifle CBNRM within these communities. Kinsey (1999: 183) maintains that:

> It is not uncommon to find that, as mean incomes rise, so also does the variability in incomes, and income distribution may worsen as well.

The analysis of household income distribution based on the questionnaire survey that was conducted in Mufurudzi revealed three categories of households: 'worse-off' (poor) households, 'middle' income and 'better-off' (rich) households. These categories have resulted from the intensification of inequality and processes of marginalization, and are a reflection of social differentiation. Cernea and McDowell (2000) argue that past resettlement policies served to intensify inequality and marginalization within resettled communities. Furthermore, not all households are able to build on their initial wealth.

As would be expected, understanding income disparities within resettled communities is important in the sense that there is a close association between source and level of income on the one hand and dependence on off-farm income generation activities (including forest and woodland resource use) on the other. While referring to the semi-arid communal areas of Zimbabwe, Bird and Shepherd (2003: 601), for instance, noted that:

> nonfarm and wage income were important income sources for a large proportion of households, and remittances for some, but the main economic activities pursued by severely poor households differed substantially from those pursued by the nonpoor, as did their major sources of income.

Research conducted in Zimbabwean resettlement schemes has shown that poor households and non-poor households pursue different strategies when coping with environmental stressors. For example, in Nyamakate resettlement scheme in Hurungwe,

poor households diversified differently from non-poor households and very poor households displayed a higher level of diversity of income sources compared with the non-poor (Chimhowu and Hulme, 2006). Piesse, *et al,* (1998) suggested that in rural areas that are less connected to urban markets, for instance, households with higher farm incomes were more able to benefit from non-farm activities than low income households. Furthermore, many studies in rural Africa have revealed that there is a positive association between non-farm diversification and household welfare (Ersado, 2003: 5). Similar findings were highlighted by Turner *et al,* (1993), who observed that research in sub-Saharan Africa has revealed the importance of earnings from non-farm activities to rural livelihoods.

In Mufurudzi, poor households survive purely on subsistence farming, without any substantial means of income generation. These constitute about 4% of the households. On the other hand, apart from cash cropping, rich households earn a living from a range of other activities, including off farm activities. These households account for about 16% of the households in Mufurudzi and earn at least Z$156 000 per month (that is Z$5200 or US$1 per day, at the exchange rate that prevailed on 31 March 2004). The middle income category, comprising 80% of the households earn monthly incomes that range between Z$4170 and Z$156000. The majority of the households that fall within this category consist of land reform beneficiaries who ventured into cash crop production but without any other substantial sources of income. Whereas the low and middle income households are more vulnerable to natural hazards such as drought, the 'rich' households have more robust livelihood portfolios that are characterized by diverse options which enable them

to cope with these hazards. It needs to be acknowledged, however, that the nomenclature that was applied in the above classification is arbitrary and relative to local conditions within Mufurudzi since the majority of land reform beneficiaries in this scheme are low income earners who are living in abject poverty, that is when situated within the broader macro-environment.

Questionnaire surveying revealed, for example, that about 57% of the households earn monthly incomes that are less than $10 000 (US$1.92, at the exchange rate which prevailed by 31 March 2004). They belong to the resource poor households found in the scheme. In Mufurudzi the natural ecosystem provides products to many of those poor households that could otherwise be unable to afford alternative products from formal markets. However, virtually all households in the resettlement area depend on local forest and woodland resources in one way or the other, though the degree of such dependence varies according to a household's livelihood portfolio.

In addition to the income they generate from cash crops such as tobacco and cotton, 'rich' households owning a wide range of livestock and in some cases derive additional income from pensions, demobilization earnings or remittances from kith and kin or from off-farm activities. The importance of diversification of non-farm income sources has been reported to be growing in developing countries (Ersado, 2003) and now accounts for an average of 42%, 40% and 32% of the total share of household income in Africa, Latin America and Asia, respectively (Reardon *et al,* 1998). Diversification of non-farm income sources has also occurred in resettled areas. In Mundena, a resettlement area in

southern Ethiopia, for example, trade and wage labour were found to be the most important non-farm livelihood activities.

In Mufurudzi some richer households generate income from grocery shops, tuck shops and grinding mills. Furthermore, these households provide tillage services or loan their implements to the resource poor in exchange for a fee or for farm labour. Due to their diverse livelihood options richer households rely less on natural resources such as forest and woodland products for survival than 'poor' households. The livelihood survey that was conducted as part of this study revealed that most of the 'rich' households were already in possession of a variety of assets when they arrived in Mufurudzi, including ploughs, scotch carts, wheelbarrows and livestock. A few were trained skilled farmers who held the National Master Farmer Certificate. Such households found it easy to break into the cash crop economy and have since become established small scale tobacco and cotton growers.

Unlike the richer households, resource poorer households in Mufurudzi have fewer livelihood options and tend to depend more heavily on land based resources such as forest and woodland products. Due to lack of draught power and agricultural implements 'poor' households usually cultivate smaller fields and loan some of their land to their 'richer' neighbours. They supplement their incomes and food supply by planting small vegetable gardens, most of which are located on the riverbed. Occasionally, they trade their labour for money, loaned farming implements, draught power and basic needs such as soap, cooking oil, salt and mealie meal. As noted by Bird and Shepherd (2003) the

poor often struggle to maintain some income by taking arduous work though such measures only offer means of survival rather than means to escape poverty. Similar observations were made in Zimbabwean resettlement schemes by Kinsey *et al* (1998). Kinsey *et al* (1998) examined the livelihoods of 400 resettled households in Zimbabwe and found that income diversification is a coping strategy used during times of drought but also concluded that the sources of income that could be tapped by resettled households were likely to be low-return activities such as day jobs or agricultural piecework.

In Mufurudzi the above coping strategies do not usually provide a sufficient safety net for coping with hostile environmental conditions such as severe drought and consequently some households resort to off-farm activities such as gold panning, sale of traditional beer, and activities that involve the exploitation of forest and woodland products, especially when food aid is considered as inadequate. Such activities include fishing; collection of wild foods such as bush meat, wild honey, fruit; as well as sale of crafts and firewood. During the 1991-92 and 2001-02 droughts, for example, about 58% of the surveyed households relied on non-timber forest products (NTFPs) as a supplement for household food requirements, making NTFPs particularly important for the survival of vulnerable low income earning households.

The 1991-92 drought, which is still in the living memories of most villagers in Mufurudzi because of its severity, led to widespread crop failure and serious food shortages throughout Zimbabwe. Bird and Shepherd (2003) noted that the 2001-02 drought was

equal in severity. During the 1991-02 drought the national social security net failed to cope with the threat of the looming starvation, while both local and international NGOs, which normally assist the government to distribute aid food were overwhelmed by the number of people who were in need of food assistance. Faced with uncertain food supply and impending starvation, poor people within the local community turned to wild foods for survival. As noted by one villager:

> The government came to our assistance during the drought. It brought us some food. The army was responsible for distributing the food. There were also other organizations (NGOs), which gave us food. However, food supplies were meagre and erratic. At times it was not possible to tell when your next meal would be. Under these circumstances we had no choice but to forage for food in the bush.

The above is a story commonly told by villagers throughout Mufurudzi resettlement scheme. When confronted with serious environmental stresses and shocks, poor households in Mufurudzi rely both directly and indirectly on forest and woodland resources as buffer against starvation, thus revealing that tree resources are key to livelihood systems in the scheme. In Mufurudzi forests and woodlands are, therefore, the life support system of the poor and are indeed an important source of many livelihood system inputs that would otherwise be unaffordable to the resource poor communities, if they had to be sourced from formal markets, elsewhere.

The on-farm and off-farm livelihood activities that are often pursued by 'poor' households are intricately linked to loss of forests and woodlands. During the land clearing and collection of some NTFPs, especially honey, as well as hunting the damage of forest and woodland resources is in some cases inevitable. For instance, even though many villagers regard failure to extinguish cigarette stumps by smokers as one of the

causes of bush fires, these fires were also blamed on use of smoke to 'drug' bees during honey collection and the use of fire to 'flush out' small game from their hideouts by hunters and use of fire during land clearing, which is typical in areas where new fields are opened. As shown above some of the practices that cause bush fires are central to the livelihoods of the poor. With their limited access to food and resources such as labour and agricultural implements, it can be argued in this case that the 'poor' are driven to engage in environmentally destructive practices by need rather than by negligence.

Appendix IX, demonstrates the numerous ways through which 'poor' households derive livelihoods from forest and woodland products. To Vimbikani Kadziche's 'poor' household, (Kadziche is a resettled *ng'anga* [ethno pharmacists], of Malawian origin), the sale of herbal medicines is the major source of livelihood. Though Kadziche's household was allocated land alongside other land reform beneficiaries in Chidumbwe I village (Freugh) in 1981, it has not managed to break into the agricultural based cash economy because of its failure to afford key inputs for tobacco and cotton farming. Kadziche's rare knowledge of herbal medicines, however, enables him to use plant resources differently from other land reform beneficiaries.

Kadziche's neighbour, Shadreck Chisukwa**,** on the other hand, is now a locally respected businessman. Apart from owning the only grinding mill in Chidumbwe I, Chisukwa**,** is also the sole supplier of groceries and commercial beer in the village. Armed with the national Master's Farmer Certificate which he acquired soon after his resettlement, and other skills obtained through attending short training courses in livestock, cotton and

tobacco farming, as well as loans from the Agricultural Finance Corporation (AFC), Chisukwa, who is now married to three wives and has 10 children (one of his household's main source of labour) is now a local icon due to his success. Chisukwa's major success is attributed to tobacco farming. In addition to labour obtained from members of his own household Chisukwa hires poorer villagers within Chidumbwe I and other people from the nearby Bushu communal area to carry out chores such as ploughing, weeding, harvesting and chopping of firewood for tobacco curing.

The differences between the livelihood portfolios adopted by different social classes, as exemplified by the livelihoods of Kadziche and Chisukwa's households are the major source of inter-household power dynamics in Mufurudzi. There is no agreement between 'rich' and 'poor' households regarding the manner in which forest and woodland resources should be used, neither is there consensus about how these resources, which are important to both categories of households, should be conserved. Neither Kadziche nor Chisukwa acknowledged that their livelihoods are responsible for loss of forest and woodland resources within Mufurudzi, even though they both are. What is clear however, is that the two use forest and woodland resources differently, and in accordance with their livelihood strategies, which are also completely different.

Whereas the livelihood of Chisukwa's household is moulded on on-farm activities and depends largely on sales of well cured tobacco, in which access to firewood plays a central role, Kadziche's household relies more on an off-farm livelihood strategy that is

based on ethno pharmacy and indigenous knowledge. The two households are on completely different livelihood 'trajectories'.

There are cases, however, where particular economic activities have led to different livelihood portfolios not only because of the differences that these activities have created between the economic statuses of different households but also because the activities are organized differently. For example, cash crop farming in Principe A and Principe B is organized very differently from the way it is organized elsewhere in Mufurudzi. In Principe A and Principe B cash crop farming is based on irrigation, thus making livelihood portfolios in these villages unique from those found in all the other villages where cash crop farming is based on 'dry land farming'. The permits of settlement only allow the beneficiaries in these villages to grow food crops, though the beneficiaries may grow other crops on dryland plots that are rented from other land reform beneficiaries. Consequently, demand for firewood for tobacco curing, which characterizes other villages is non-existent in Principe A and Principe B. Considering the volume of firewood that is required for tobacco curing the differences in firewood demands between tobacco producing and non-tobacco producing villages are enormous, as demonstrated below.

The type of tobacco that is grown by most local tobacco farmers is Virginia, which needs to be flue cured before further processing. The average annual tobacco production in the surveyed villages varies from household to household though the highest annual total output for each village largely depends on the number of households that grow the crop in

the village. Some households in Mupedzanhamo produce as much as 35 bales (2500-3000kgs) of tobacco each year, thus exerting considerable demands on fuel wood for curing the crop. About 1.5 m^3 to $2m^3$ of wood, equivalent to about four mature *Brachystegia boehmii* trees, is required to cure every 140kg – 180kg (about 2 bales) of the crop. The average tobacco yield is four bales per acre. Thus, for every acre of tobacco that is planted at least eight mature trees are felled.

Tobacco growers target soft trees such as *Brachystegia boehmii, Acacia spp.* and *Combretum fragrans* for firewood and tobacco barn construction materials, some of which are shown in plates 5.3 and 5.4. However, where firewood is scarce farmers become less selective, to the extent of even felling fruit trees, especially *D. kirkii*. In Mupedzanhamo, a community by-law has been instituted to forbid the cutting of all the trees that one requires for tobacco curing from any one specific location, to ensure that the ground is not left completely bare. Mupedzanhamo village is a case that demonstrates the nature of influence that contemporary local institutions can exert on natural resource conservation. Mupedzanhamo was the residence of the late councilor of Ward 16, the biggest ward in Mufurudzi. The councilor was instrumental in the formulation of the by-law.

Due to the large amounts of firewood required for curing tobacco, most land reform beneficiaries singled out tobacco curing as one of the most important potential threats to forest and woodland resources in Mufurudzi. This is the case even in Chidumbwe I and

Chidumbwe II villages (located in Freugh), where only one household in either village grows the crop.



Plate 5.3: Pile of firewood waiting to be to be fed into the barn. Most of the wood in the pile is from B. boehmii and D. kirkii, a fruit tree.



Plate 5.4: Inside the barn, with tobacco 'hangers' that are suspended on props, all of which require tree resource utilization.

It should be noted, however, that the highest presence of damaged trees is not necessarily found in villages where the highest number of tobacco growers is found, suggesting that loss of forest and woodland cover is an outcome of an interplay of several factors, some of which are related to household livelihood portfolios as already discussed. It is, nevertheless, evident that tree density is highest in Principe A and Principe B villages, where tobacco is not grown, as already shown in Chapter 4.

Whereas the economic activities that households engage in and their social classes determine inter-household power dynamics and differential resource use such dynamics are not shaped by the nature of economic activity and social class alone. In some cases inter-household power dynamics were induced by secondary resettlement, understood to mean the allocation of land within the scheme to households that are not officially or legally recognized as beneficiaries. This type of later resettlement benefited the households of the offspring of the original land reform beneficiaries, as well as other households that were 'recruited' from the surrounding communal areas. In most cases this type of resettlement was done by the local community with the assistance of local politicians, but without the permission of local government authorities, that is Chaminuka Rural District Council.

The emergence of 'new households' in Mufurudzi and their subsequent illegal resettlement within this resettlement area has created a dichotomous situation characterized by differential utilization of forest and woodland resources. Though Kinsey

(1999) argues that broad-based land reform leads to declining inequality, there is evidence that such a situation does not exist in all cases, especially in Mufurudzi. For example, secondary resettlement in Mufurudzi has actually created inequalities between households within the scheme. Understandably, in line with the objective of evaluating resettlement through time Kinsey (1999) employed the 'longitudinal' analyses of income-based and welfare indicators in which a 'permanent' panel of land reform beneficiaries who were resettled in the early 1980s was selected and monitored for nearly two decades. Findings from these analyses support the notion of declining household inequality. Such an observation is only valid because secondary settlers were not included in the analyses.

In this study 'snap shot analyses' in which 'longitudinal' (historical) accounts of individual households were recoded for all categories of land reform beneficiaries, including 'new households' give a different picture. Evidence from these analyses reveals that inequalities exist between 'old households' and 'new households'. 'New households' are less endowed in material assets than 'old households', and the incorporation of forest and woodland resources into livelihood strategies by 'new households' is critical to the survival of these households. In their daily struggle to eke a living 'new households' require greater access to forest and woodland resources than households of the original land reform beneficiaries. For example, households which were resettled in the early 1980s received housing loans from government, unlike households which were resettled in later phases of resettlement. Even though in subsequent years of resettlement these 'old households' have continued to rely on forest and woodland resources for building and repairing huts, rakes, kraals, cribs and pens for small livestock their demand for

construction materials within this category of households is not as high as demand exerted by 'new households', which still need to become established. Thus better-off households that have been building upon their wealth for the past 25 years are less dependent on forest and woodland resources for some activities.

Forest and woodland products such as building materials are more important in the livelihood portfolios of 'new households' than in those of 'old households', leading to varying demand and differential use of these resources between the two categories of households. Nevertheless, the actual selection of which forest and woodland products to use by any household depends on both the environmental information and IKS that the household has.

Paradoxically, within the village community the kind of ethno botanical knowledge and environmental information that households have does not necessarily always translate into wise use of resources. This is because views held by different members of the local community are both dynamic and variable. One such contested view is centred on the issue of resource depletion. In Mufurudzi, the concept of forest and woodland resource depletion is not homogenously subscribed to. This is because perceptions about resource depletion vary with age. Whereas the concept seems to have taken root and is readily accepted among the more educated and conventionally schooled youths, the same cannot be said about most adults. Such a situation poses important implications for emerging debates on the relationship between management of forest and woodland resources on the

one hand, and resettlement, resource depletion, indigenous knowledge systems and poverty, on the other.

One important implication that emerges from this research is that the concept of resource depletion, which is the 'bone of contention' between Neo-Malthusians and their opponents, is not necessarily the purview of scientists and researchers alone, but a commonly debated issue among villagers. During PRA activities youths were quite keen to refer to the 'scientific knowledge' gained from past Geography and Science lessons at school, indicating the extent to which the Neo-Malthusian philosophy about the relationship between natural resource use and depletion has permeated the Zimbabwean school curriculum. Some less conventionally schooled adults regard forest and woodland resources as an abundantly available and inexhaustible God given resource. Such views are consistent with ecological religion or spiritual ecology (Bernard and Kumalo, 2004), and though they appear to be simplistic they are rooted in an elaborate IKS, as noted in the next chapter, and understanding them might be fundamental to the success of CBNRM.

The widely held perception among adults is that despite deforestation, trees, especially those that can easily regenerate, are inexhaustible. Thus, *Lannea discolor, Commiphora spp., B. boehmii* and *Bauhinia petersiana* are generally regarded as abundant because they readily coppice while the first two can even be grown from truncheons. About 18.3% of household heads whose responses were recorded in the questionnaire survey believed that the population of at least two tree species had increased since their arrival.

Also, 39.9% of the land reform beneficiaries believe that the availability of wild fruits has either increased or has remained the same, while 44.6% think the supply of fodder within the natural woodland has either increased or remained the same. Thus, the perception that forest and woodland resources are not affected by their utilization is quite common in Mufurudzi. This perception seems to be in line with the environmental transformation model, which challenges the resource depletion philosophy, as discussed in Chapter 2, and is consistent with the view that is expressed in contemporary literature that deforestation even has the capacity to improve biomass productivity and resource availability (Scoones and Matose, 1993). Ironically, it is the younger and the more 'awakened' conventionally educated, as well as the 'new households', the majority of which are headed by younger people, that are blamed more for loss of forest and woodland resources in Mufurudzi.

From the above discussion it can be argued that inter-household power dynamics and differential access to forest and woodland resources, as well as general socio-economic and cultural heterogeneity, are the biggest hurdle facing CBNRM in Mufurudzi. These factors complicate patterns of resource use and undermine social cohesion within the community. Though patterns of resource use are complicated by cultural and socio-economic stratification this situation is exacerbated by intra-household power dynamics.

5.4.2 Role of Intra-Household Power Dynamics and Differential Roles in Natural Resource Exploitation and Livelihood Construction

Resource utilization within the resettled household is a process that is 'negotiated' between the constituents of the household and household composition further complicates

patterns of resource exploitation within the community. Such a situation makes CBNRM more difficult to implement. Household constituents include men, women and youths, each with a *de facto* locus of responsibility aligned to traditional ethos and in some cases aided by a panoply of rules and taboos. In this case the question of who does what and why becomes fundamental. Whereas the relationship between the above constituents and the management of forest and woodland resources is already widely recognized (Behan, 1988; McDougall, 2001; Tiani, 2001; Brown and Lapuyade, 2001), in Mufurudzi it is the manner in which forest resources are harvested or used that makes this relationship interesting.

In Mufurudzi, masculinity, feminity, age and spirituality of task clearly play a role in deciding which tasks are performed by which categories of constituents. Youths are expected to herd livestock and collect edible NTFPs such as mushrooms, phane, and other wild foods such as fruits and vegetables for household consumption or sale. Opportunistic collection of firewood is regarded by the community as a chore for women and girls, the major headloaders who transport it in small bundles from within the vicinity of their homesteads. A headloader is:

> an individual gathering or harvesting fuel wood and carrying it to the market to sell (usually in bundles of a size that can be carried on the head) (Arnold *et al,* 2003: 31).

During opportunistic collection of firewood women recover utilizable parts of felled trees that could otherwise be relegated to waste. Such parts include branches that are trimmed from trees during pole harvesting, a task normally performed by men in most male headed households. However, in Mufurudzi, firewood stockpiling is usually carried out in

areas where the resource is sourced from distant places due to scarcity. Where firewood has become scarce its collection is usually done by the male members of the household, occasionally with the assistance of women and older youths, and the sizes of the collected pieces tend to be larger in diameter compared to those sourced from less distant places. Ox-drawn carts are normally used to transport firewood in the process. Under these circumstances sourcing of firewood becomes a joint responsibility that is shared by all household constituents. Thus men and women 'close rank' or even switch roles when household livelihoods are threatened with resource scarcity. This also applies where large volumes of firewood are required for brick burning.

Firewood for brick burning normally comprises freshly cut large diameter logs, though dry wood would still be required for kindling kiln fires. The logs are normally transported by scotch carts (mostly ox drawn carts) or simply tugged, individually or in bundles, to brick kilns, causing soil erosion in the process. Men are responsible for more labour intensive chores such as clearing of fields, collection of building materials and the construction of huts, cribs, rakes, pens and other wooden structures required in the home. In the majority of cases men are also expected to build fences around homesteads, gardens and fields, as well as undertake other forms of drudgery. Male adults and youths are almost exclusively responsible for hunting and fishing.

Whereas the above are recognized as the mundane roles of different household constituents there are certain practices involving use of forest and woodland resource that are purely determined by spirituality of purpose. For instance, in *mukwerera*, a traditional

rainmaking ceremony, the beer that is sacrificed in the appeasement of ancestral spirits can only be brewed using firewood that has been collected either by elderly women who have reached menopause or young girls who are still virgins and have not reached puberty. In this case both categories of women assume rare positions of power and spiritual responsibility than is normally accorded to them in mundane life.

Results from this research revealed also that in Mufurudzi IKS and environmental information, and the resultant use of forest and woodland resources, vary according to age and gender. There is great likelihood that men, women and youths harvest woodland resources differently due to the differences between the nature of the IKS and environmental information they have. This applies mostly with the harvesting of wild fruits and construction materials.

For instance, among the fruit trees that are most highly rated by youths are *Strychnos spinosa* and *Strychnos cocculoides*. The edible fruit pulp from these species yields lethal toxins when subjected to protracted exposure to ambient air. For this reason the two species were ranked lowly by adults (both men and women), showing that even though Bradley and Dewees (1993) observed that local knowledge on edible fruits is passed on to children at an early age, in Mufurudzi quality of IKS and environmental information are still age dependent.

Another observation that was revealed through PRA is that adult male groups were more knowledgeable about indigenous wild fruit tree species and their environmental habitats

than both women and youths. For example, only adult male groups mentioned *Vitex payos* and *Garcinia livingstonei* among locally available edible fruit trees and successfully described the habitat conditions under which the two species thrive. It can therefore be concluded that species preferences are highly influenced by both age and gender, as well as by the quality of the local ethno botanical knowledge held by different categories of people within the community.

Gender related responses indicated that men and women have different perceptions, information and knowledge about the natural products that are derived from their environment. For example, there were differences between the way men and women perceived the construction materials that are derived from indigenous hardwoods. Whereas most men indicated that the heartwood of *Pericopsis angolensis* and *Burkea africana*, species most preferred for construction poles, has reputation for blunting or even breaking working tools, there was no indication that women were aware of this problem. Fewer women were also aware that the two species are rare within their local environment.

The differences that have been discussed above have important implications for CBNRM. Important issues regarding resource conservation are difficult to resolve where consensus is threatened by differences in age, gender or even spiritual role.

5.4.3 Local Political Power Gaps and Conflicts

Whereas inter-household and intra-household power dynamics and conflicts determine patterns of forest and woodland resources use at different levels within the village there

are macro-level differences that pose even greater threat to formal CBNRM in Mufurudzi. Two main categories of such conflicts exist: those related to excludability along the resettlement-communal continuum and those that characterize internal struggles within the resettlement area itself. Both have the potential to wreak havoc on CBNRM.

- **Problems of the resettlement – communal area continuum**

The interaction between resettlement areas and communal areas in Zimbabwe has already been explored (Elliot, 1995; Kinsey, 1999; Hoogeven and Kinsey, 2001). For example, Elliot (1995) observed that the interaction between resettlement and communal areas is a complex product of environmental, political, economic and social factors. However, in Mufurudzi, results from PRA and interviews held with local traditional leadership indicated that the interface between resettlement and communal areas (CAs) is one characterized by both conflict and complementarity. Conflicts emanate from both the ownership and use rights over forest and woodland resources, as both communities vie for resource control and incorporation of the resources into their livelihood strategies. Conflicts have been reported in all resettlement villages that are adjacent to CAs such as Mufurudzi II, Chidumbwe I, Chidumbwe II and Mupedzanhamo villages. In these villages deforestation and destruction of natural resources is generally blamed on people who live in the CAs.

Resource poaching, a problem that dates back to colonial rule, is one of the main direct causes of the conflicts. Prior to independence, people from the communal areas (formerly known as Tribal Trust Lands (TTLs) such as Nyamaropa in the north-west, Madziwa in the west and Bushu in the south, illegally grazed their livestock in Mufurudzi ranch and

occasionally collected firewood, fruit and other NTFPs from the ranch. Cases of prosecution and livestock confiscation, as punishment for trespassing within the ranch, have been widely reported by villagers in Mufurudzi. During this period the conflict was between the residents of TTLs and the white commercial farmers who owned the ranch. This conflict has been perpetuated even long after the designation of Mufurudzi ranch into a resettlement area. Residents of the CAs that are adjacent to Mufurudzi resettlement scheme conceded that the resources in this resettlement area fall under their jurisdiction. They claim that prior to colonization their ancestors were displaced from the areas that are now administered as Mufurudzi resettlement scheme. This seems to confirm the argument that:

> in many cases, local populations consider themselves the original owners of the woodlands that have been nationalized, and still depend upon them for elements of their livelihood (Matose and Wily, 1996).

However, virtually all communities from the villages that are adjacent to CAs complained that deforestation was the outcome of the 'poaching' of forest and woodland resources or the burning of these resources by the residents of CAs. Not only do people from the CAs graze their livestock in Mufurudzi, but they also cut trees when collecting firewood, construction materials and NTFPs. Studies in the Wenimbi and Tokwe resettlement schemes, found near Macheke and Gweru, respectively, revealed similar patterns of resource use by residents of adjacent communal areas (Elliot, 1995). Land reform beneficiaries in Mufurudzi complained that officials have addressed the problem of 'poaching' half-heartedly, even though they are fully aware of its existence.

In Mufurudzi, legally defined usufruct and exclusion rights are difficult to enforce, making it impossible to control the exploitation of forest and woodland resources by those who live on either side of the communal-resettlement divide. This problem largely stems from the composition of the resettled communities. The definitions of community and land reform beneficiaries are not tight enough to allow the enforcement of exclusion rights. If the criteria that were suggested by Sellers (1988), as discussed in Chapter 2, were used to define communities then it can be argued that multiple communities exist in Mufurudzi. In the absence of a clear definition of the beneficiary community, community rights over geographic space and natural resources, as well as clearly defined inter-community benefit sharing schemes, CBNRM remains elusive in Mufurudzi.

One major recognizable segment of the beneficiary community that is found in Mufurudzi consists of people who originated from the adjacent communal areas. This group maintains strong social ties with the residents of the communal areas. Such ties include those resulting from kinships and marriages between families that are found on either side of the communal-resettlement divide, and are the basis for the negotiation and complementarity that often exists between people who live on either side of this divide. Land reform beneficiaries and the dwellers of the adjacent communal areas often exchange implements such as wheelbarrows, ox-drawn carts, cultivators, ploughs and other requirements and at times they also help each other with cash loans and farming inputs like draught power. Excluding those with whom one has social ties from harvesting ‘wild’ natural forest and woodland resources, which are perceived to belong to

God or ancestral spirits, is not only considered as folly but morally irresponsible, in cultural terms.

Being 'open access' resources, the legitimacy of the exclusion of people who live in the surrounding communal areas from using forest and woodland resources in Mufurudzi is being challenged by potential users (Bruce, 1999). Furthermore, there is lack of a firm legal framework that allows local communities in Mufurudzi to exclude other users, a situation that is not unique to resettlement schemes in Zimbabwe. As noted by Bruce (1999: 7):

> Indeed, in many cases there has been little apparent attention to providing a firm legal basis for common property. Communities and their advocates often fail to perceive that a strong legal foundation and security of tenure are as important to the community as to the individual property owner.

Bruce (1999) has explained this lack of a firm legal basis in a way that is applicable to Zimbabwean resettlement schemes in general, and Mufurudzi in particular. There is lack of solid legal provisions for common property resources (CPRs), including 'open access' resources in national law, relating both to organizational form and property rights.

Consequently, the resettled communities end up incorporating those from the communal areas into their community membership, and thus increasing the number of people who depend on the available forest and woodland resources. There is also flourishing trade in forest and woodland products between Mufurudzi resettlement area and the adjacent CAs. Firewood dominates this trade, though other products such as building materials (especially poles), fruit and wooden artifacts are also traded. When hydrocarbon fuels

were readily available in the country some of the firewood that was harvested from Mufurudzi resettlement scheme would be transported by trucks to Shamva Gold Mine, Chakonda Business Centre (Bushu communal area), Nyamaropa Communal area and even distant places such as Bindura town where ready firewood markets exist. Occasionally, legal permits to sale firewood are granted by the Forestry Commission, in terms of the Forest Act (CAP 19:05) of 1948 (amended in 1982) or by the Department of Natural Resources, to individuals who are proven to have cleared new fields they have been allocated.

It appears the problem of the resettlement-communal continuum is one of overlapping jurisdictions, both at local level and national level. At the local level neither the land reform beneficiaries in Mufurudzi nor the residents of the communal areas, including headmen, chiefs and spirit mediums have full exclusive control of the resources in Mufurudzi. This situation is replicated at national level where central government institutions such as the Forestry Commission and the Department of Natural Resources or local government, that is RDCs, cannot totally account for the management of forest and woodland resources within resettlement schemes.

- **Internal strife**

Due to the existence of different categories of CBNRM stakeholders, as shown in table 5.6, communities in Mufurudzi resettlement scheme are bedeviled by power gaps and internal strife. Power gaps refer to political 'vacuums' that different strata of stakeholders within the broader spectrum of the community vie to fill. Where negotiations fail, power gaps often cause conflict and strife among the different categories of stakeholders.

However, such conflicts undermine prospects for collaborative management (co-management) and CBNRM.

There are two main categories of power gap related factors that militate against prospects for co-management and sustainable utilization of forest and woodland resources in Mufurudzi. The first category comprises perceptions about ownership of forest and woodland resources, while the second define the ensuing limited scope of the co-management itself. Table 5.3 provides a summary of the perceptions of settler farmers regarding ownership of forest and woodland resources.

Table 5.3: Perceptions About Ownership of Forest and Woodland Resources in Mufurudzi

Perception:	**% of Respondents who hold perception**
Resources are owned by:	
Government	35
Local community	55
Traditional institutions	5
Local leadership (largely political)	30
Local government (Rural district council)	10
Others	15

By inference, as demonstrated in table 5.3 above, it can be argued that there is little likelihood that a resource can be managed sustainably in an environment where 45% of the household heads do not feel they own the resource. How can people be expected to use a 'free for all' resource wisely in an environment where terms of use are not defined? The consequences are similar to those described in the 'Tragedy of the Commons' since there is no incentive for managing the resource. Under such circumstances the chances of sustainable resource utilization or successful CBNRM are slim, if at all they exist.

Another reason why power gaps and conflicts limit prospects for cooperation among stakeholders, and subsequently the scope for co-management, is that such prospects are malleable to the influence of the perceptions that are held by the local community regarding the legitimacy of the other stakeholders. Land reform beneficiaries in Mufurudzi expressed different opinions about the legitimacy of different categories of important CBNRM stakeholders who could contribute towards the management of indigenous forests and woodlands in their scheme.

In Mufurudzi the local community regards central government, local political leadership and the local community itself as the key stakeholders who should be involved in the management of forest and woodland resources. However, the conspicuous aspiration of the local community to be the dominant stakeholder, as revealed in the questionnaire survey, is a potential source of additional conflict. About 95% of the respondents acknowledged that the local community has the dominant role in CBNRM, including the control of deforestation, while 90% felt that the community must be consulted whenever projects related to the conservation of forest and woodland projects are implemented in their scheme.

However, conflicts emanate from the fact that central government has not yet truly relinquished control over forest and woodland resource management projects and has no known history of devolving power on matters related to the conservation of these resources. In practice government departments such as the Department of Natural Resources and Forestry Commission are still the key decision makers in forestry project selection and implementation, yet in principle the responsibility of managing indigenous

forest and woodland resources has been devolved to local communities and RDCs. Only 20% of the interviewed villagers agreed that the Rural District Council (RDC), the lowest level of local government in Zimbabwe (Campbell, *et al*, 2000), has a role to play in conserving these resources.

In an environment where the RDC is viewed as a peripheral player by the local community, the effectiveness of any by-laws promulgated by this statutory body for purposes of conserving natural resources is questionable, yet it is this body that has the legal mandate to enforce natural resource conservation in rural areas on behalf of central government. This creates contradictions about how power, authority and responsibility are shared in natural resource management. The central government's devolution of power and authority over the management of natural resources to local authorities (RDCs) may not benefit natural resource conservation efforts under conditions where the implementing authority, the Chaminuka RDC, is viewed as an illegitimate actor by resource users. Consequently, Chaminuka RDC has been reduced to a stakeholder without a constituency, even though it holds the legal jurisdiction over forest and woodland resources.

The above situation is compounded by the fact that village heads in Mufurudzi, who were only appointed after January 2000 following the realization by the government that 'power gaps' exist within resettled communities, are not sufficiently backed by legislation to deliver their mandate, as discussed below. Power gaps undermine social cohesion within the local community. This explains why Forestry Commission initiated

village or community woodlot projects have been less successful compared to home based individual household woodlot projects. In some villages such as Chidumbwe I and Chidumbwe II, for example, social cohesion has been weakened by ethnicity and in many cases it is even threatened by the mistrust and resentment that still lingers between former freedom fighters and former members of the Rhodesian army. As recounted by Masango, a former member of the Rhodesian army who is now a member of Chidumbwe II village's grazing committee:

> Some people dismiss your views simply because you were their enemy in the past. This hostility has to stop in order for people co-operate and work together, especially when dealing with critical problems such as deforestation (Masango, 2003 pers.com).

Masango is an example of a land reform beneficiary who has successfully established a household *Eucalyptus* woodlot and an orchard at his homestead, after realizing that forest and woodland resources in his village are under threat. He, like a few other environmentally conscious villagers who have taken similar measures, is aware of the impending shortages of forest and woodland products and also the failure of the current CBNRM initiatives to avert these shortages in future.

Conflicts have also arisen between villagers over disputed village boundaries. Outstanding disputes are currently raging between communities in Zvataida village (Darien farm), and those in Rataplan in the east and the state land in the north, over the location of village boundaries. Zvataida itself straddles the boundary between Darien and Rataplan farms. Proximity to the only borehole that was sunk in the area was the major siting factor that was considered while village geopolitics was completely overlooked in

the process. Other disputes that have been reported in this area revolve around access to grazing land between the land reform beneficiaries in Zvataida and those who were recently resettled on the adjacent former state land in the north. Villagers in Zvataida argued that the 'new comers' were resettled on their grazing land. Similar conflicts have also emerged in Principe where repeated politically motivated waves of spontaneous settlement have alternated with village led evictions since 2001. In each cycle of 'resettlement' villagers in Principe teamed up on a number of occasions and forced the 'resettled' households to leave their homesteads only to find the evictees resurfacing with the backing of local politicians.

Documentary evidence indicates that spontaneous resettlement has always been a problem in Zimbabwean resettlement schemes. Chimhowu and Hulme (2006: 732) note that:

> Officially resettlement areas were not spared from spontaneous settlement. By late 1998 some 6,847 families, or 70, 000 people, had "illegally" self-allocated themselves plots of land in planned schemes.

However, in some villages, differences have emerged between differently politically affiliated households. In some cases these differences create serious conflicts and power struggles within villages. For instance, on 12 July 2005 a new village head was appointed in Zvataida, in place of Kaimba, (also known as Chifamba) who was largely perceived to be sympathetic to Zimbabwe's main opposition political party, the Movement for Democratic Change (MDC). Thus, politically motivated struggles have emerged in Zimbabwe's oldest resettlement schemes, though these schemes have remained the political stronghold of the ruling party, the Zimbabwe African National Union (Patriotic

Front), ZANU-PF. In Kaimba's place Chief Nyamaropa appointed Mavhiya, a female village head of the Shava lineage, the same lineage to which both Kaimba and Chief Nyamaropa belong. With their newly found empowerment and 'vein' of government support, especially extended through the legal mandate derived from the Traditional Leaders Act (TLA) of 1998, chiefs now wield enormous power over areas under their jurisdiction, including resettlement areas, where their influence used to be minimal in the past.

Conflict and power struggles also exist between villagers due to leadership wrangles, especially following the promulgation of the TLA. Whereas village heads are now the *de facto* chairmen of the VIDCO, in terms of the TLA, the abolition of the system of elected VIDCO chairman has led to the 'dethronement' of some popular and politically powerful village leaders, and created mistrust and resentment within community leadership.

However, communities in Mufurudzi are also stratified along cultural lines. There is co-existence of people of different ethnic backgrounds, including Shona ethnic groups such as *Zezurus, Kore-kores, Manyikas,* and *Karangas*, as well as people of Malawian or Mozambican descent, all with different customs, traditions, norms and religious values and practices. These ethnic groups exert different demands upon tree resources, and accordingly influencing which trees are selected for use by different households. In this case cultural stratification creates a situation where taboos are no longer universally accepted norms among all resource users. The cutting down of trees at gravesites, harvesting of unripe fruit for sale, as well as use of fruit trees for firewood are examples

of Shona taboos that are now being widely broken throughout Mufurudzi. The conditions described above are the major threat to both social cohesion and CBNRM in the scheme.

5.5 CONCLUSION

This chapter has made two main arguments. The first argument is that livelihoods in Mufurudzi have become more diverse since the founding of the resettlement scheme. The second argument is that there is no single model for livelihood diversification within the scheme. In support of these arguments the chapter demonstrated that resettlement in Mufurudzi has induced livelihood diversification. The chapter also demonstrated that since the 1990s changes in Zimbabwe's macro-economy have been responsible for intensification livelihood diversification in Mufurudzi. However, livelihoods have been changing, both geographically and through time. Whereas geographical changes have been shaped by variations in type of farming systems, time related variations largely owe their origin to the changing political climate and macro-economic environmental conditions.

Nevertheless, even though socio-economic and political changes have led to livelihood diversification in Mufurudzi, especially after the implementation of ESAP in 1990, forest and woodland resources have remained important to the livelihoods of all resource users, both within and outside the scheme, though they are used differently by different categories of people within the resettled community, depending upon how livelihood options are selected. However, the chapter demonstrated also that in Mufurudzi the productive systems of the economy provide limited livelihood options, rendering forest and woodland resources the 'safety net' of vulnerable households in both resettled and

non-resettled communities that are found in the surrounding communal areas. It has also been noted that some land reform beneficiaries have actually diversified their livelihoods by using resources from forests and woodlands, an issue that has been largely ignored by previous studies on Zimbabwean resettlement areas.

In Mufurudzi patterns of forest and woodland resource utilization are complex and variable due to a combination of socio-economic, political and cultural factors, as well as variations in demographic phenomena such as age and sex, thereby creating an 'eclectic mix' of irreconcilable resource users. Such diversity subsumes differential resource control and utilization. The maze of variable needs and wants that now typifies the community in Mufurudzi creates a stratified or a heterogeneous plural community, with a multiplicity of livelihood portfolios, each exerting different demands upon forest and woodland resources, and in the process making CBNRM difficult to implement.

Finally, one critical challenge that CBNRM faces today, which it will continue to face in future, is the delineation of the community. In order to deal with the complexity of community membership, resource use rights and benefit sharing schemes must be carefully worked out, especially along the resettlement-communal continuum. Nonetheless, as shall be demonstrated in the next chapter, if formal CBNRM is to be successfully implemented, appropriate robust institutional arrangements that are capable of synchronizing the diverse and conflicting interest groups that have emerged in resettlement schemes need to be established.

CHAPTER 6

FOREST AND WOODLAND RESOURCE USE, ENVIRONMENTAL CHANGE AND INSTITUTIONAL ARRANGEMENTS

6.1 INTRODUCTION

This chapter argues that the future of successful community forest and woodland resource management in resettlement areas does not rely on technocracy or autocracy, but rather on real devolution of power and authority to genuine and legitimate community-based institutions whose roles are properly defined. Such institutions must have the capacity to enhance CBNRM within resettlement areas. Presently, there are a number of challenges to CBNRM in resettlement areas. In Mufurudzi, such challenges range from the diversity of institutions involved in natural resource management to the flaws in the legal regime that supports resource management. These challenges continue to undermine the capacity of existing institutions and in the process stifle CBNRM. There are several reasons for this. First, land resettlement, and subsequent environmental changes in Mufurudzi have led to the co-evolution of natural resource management institutions in the scheme. These institutions include both formal (mainly government) and informal community-based institutions and harmonizing their roles in CBNRM has proved to be difficult.

Second, faced with environmental uncertainty, resettled communities in Mufurudzi do not have the capacity to completely halt forest and woodland resources from being overutilized, since livelihood vulnerability and household needs outweigh the need to preserve these resources. Third, though the land reform beneficiaries in Mufurudzi face common threats and challenges that have the potential to galvanize them into a single community, the community in Mufurudzi is highly stratified or segmented because of the

varying and sometimes irreconcilable interests that are exhibited by its key players (Chapter 5), while the existing institutions are too weak to broker any meaningful form of conciliation.

Confronted with the above challenges, CBNRM institutions in Mufurudzi face a situation whereby they need to cope with a complex adverse environment on one hand, while on the other hand they need to bolster the management of open access natural resources (including forest and woodland resources) on which a plethora of interest groups depends, some of which have interests that seem to be irreconcilable. This catch-22 situation makes *ex situ* communities in Mufurudzi vulnerable, since it creates difficulties in establishing strong institutions in the resettlement scheme.

Both the historical context of government policy and the role of institutions in CBNRM have been widely documented throughout Africa. In Zimbabwe, for instance, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is the most widely and successfully documented form of institution driven CBNRM, with most literature showing that CBNRM has been of considerable success in wildlife resource management. In recent years CAMPFIRE has emerged as an important model and indeed an alternative source of income for the communities that are found in marginal environments where prospects for subsistence agriculture are limited (Moyo, *et al,* 1993).

Even though efforts have been made throughout southern Africa to introduce CBNRM within the wildlife sector (Campbell and Shackleton, 2002), along the same lines with CAMPFIRE, these efforts have yet to gain conspicuous recognition in the management of indigenous forest and woodland resources, especially in resettled communities.

Key questions that are dealt with in this chapter are: what kind of institutional arrangements have been responsible for managing forest and woodland resources in Mufurudzi in the past? Which institutions are presently involved in managing these resources and what difficulties do they face? To what extent does national legislation support the management of forest and woodland resources by the local community? Answers to these questions reveal a complex relationship between institutions, CBNRM and natural resources.

The objective of this chapter is to examine the institutional arrangements that exist in Mufurudzi, and how they have directly or indirectly shaped patterns of environmental change and natural resource conservation at different stages in the history of the scheme. Institutional arrangements in this context refer to the systems, procedures, organizations and legal frameworks that influence the way natural resources are used and managed in the scheme. Whereas some of the institutional arrangements that are found in Mufurudzi are formal others are purely informal. The chapter is divided into four main sections. Section 6.2 deals with the history of natural resource management in Mufurudzi. Section 6.3 examines the role of the main government based institutions in the management of

forests and woodlands during the post settlement period. In sections 6.4 and 6.5 the ways in which local institutions and national legislation are linked to CBNRM are discussed.

6.2 CONTINUITY AND CHANGE: THE INFLUENCE OF TECHNOCRACY IN FOREST AND WOODLAND RESOURCE MANAGEMENT IN MUFURUDZI

During the colonial era Mufurudzi was an extensive large-scale white owned commercial farming 'free enterprise' venture in which cattle ranching was the main economic activity. Cultivation was largely confined to the more humid southwestern parts of the area, which falls in agro-ecological region II. Being a commercial farming area, Mufurudzi was in an Intensive Conservation Area (ICA), then called the Shamva ICA, where environmentally disruptive practices such as large-scale deforestation and soil erosion were closely monitored and controlled by white farm owners, with assistance from the Natural Resources Board (NRB). The NRB was empowered by the Natural Resources Act of 1941 to set up ICAs throughout the country and one of its roles was to recommend government support for farmers whose ICAs were involved in sound conservation projects.

Government support included subsidies for implementing conservation works and for purchases of ICA equipment, as well as price incentives on crops. Government incentives were meant to encourage sound environmental conservation (Whitlow, 1980). The NRB's conservation efforts received adequate logistical and technical support from relevant government departments, particularly the Forestry Commission, which provided farmers with extension services on tree growing and care. Thus, before 1980 the model of

forest and woodland resource conservation was largely government centred and technocratic in nature.

This model was only effective because of the incentives that were provided, as well as the restrictive nature of colonial conservation policies, which prohibited black peasants from the surrounding communal lands from using forest and woodland resources on appropriated commercial and state land. The colonial government imposed land husbandry policies and practices that alienated both land and land-based resources such as forest and woodland products from black Zimbabweans. Peasants from predominantly black former Tribal Trust Lands (TTLs) like Bushu and Madziwa were denied access to forest and woodland resources in Mufurudzi, while the same resources became over-utilized and degraded in these communal areas.

An additional mechanism that was used by the colonial government to bolster natural resource conservation on LSCFs, including those found in Mufurudzi, was to link land ownership to conservation. As noted by Mohamed-Katerere and Chenje (2002: 13)

> In considering applications for land, the administrative authorities were required to take into account, *inter alia*, whether the applicant possessed the qualifications and the capital necessary to ensure the beneficial or proper use and occupation of the property. The relevant criteria included the practice of sound methods of husbandry and the observance of other laws relating to farming practice and land management. Compliance with these conditions was essential to enable the landholder to acquire title deeds to the property after the prescribed leasehold period.

Similar repressive colonial land related policies have been widely reported in other parts of Africa. In South Africa, for example, conservation policies have been criticized for

being too restrictive (Cross *et al*, 1996; Beinart, 2003). For instance, Cross *et al* (1996) observed that in KwaZulu-Natal the management of natural resources was largely technicist and dominated by a conservationist agenda, with management rules imposed by an outside force that undermined local land management institutions. In the case of Mufurudzi evidence suggests that the restrictive conservation policies generally benefited the LSCF sector rather than the surrounding communal areas. With both effective ICAs and low population densities in the large-scale commercial farms (LSCFs), natural resources, including forest and woodland products, were much more effectively managed in these areas than in neighbouring overcrowded TTLs. Whitlow (1980: 6) noted that:

> The ICA committees proved to be a powerful force for promoting conservation methods in the commercial farming areas.

Consequently, forest and woodland resource decline occurred more rapidly in the latter than the former. Chapter 3 shows the disparities in vegetation cover that existed between LSCFs and Madziwa communal area in 1981 when resettlement started.

As noted by Davies (1984), resettlement in Zimbabwe has led to the conversion of commercial farms into areas that are characterized by 'peasant' farming communities, village dwellings, small arable plots, communal grazing and new patterns of access roads and tracks. This description corresponds closely to Mufurudzi resettlement scheme, where rapid environmental changes have occurred since 1981, when the new democratic black government started to experiment with a new socio-economic and political model dubbed 'scientific socialism'. The model was largely based on the doctrine of egalitarianism and demanded the setting up of a new political order that involved the

founding of a more just society in which land was more equitably distributed between different ethnic groups. The change of government in 1980 did not necessarily lead to new conservation policies, however. Instead there was continuity of colonial conservation policies and legislation.

In line with the ideology of 'scientific socialism' new institutions were established to administer resettlement schemes. One such institution was the resident resettlement officer, whose functions were under the auspices of the now dissolved Department of Rural Development (DERUDE). The government also introduced local offices for any of its other departments that were expected to provide special services and extension to the resettled peasants. These included the Agricultural Research and Extension Services (AGRITEX), Forestry Commission (FC) and Department of Natural Resources (DNR). In Mufurudzi, this development was in line with the demands of the newly established command economy and policy of centralized planning, which brought considerable infrastructural development during the early stages of resettlement.

Apart from the homesteads that were built at the behest of resettlement and the previously existing buildings which were taken over from the former commercial farmers, a range of infrastructure was also established in resettlement areas. This included schools, clinics, fences, boreholes, power lines, roads, dip tanks, telephones and water supply dams, all of which had an impact on forest and woodland resources. Despite the new social order the process of decision-making in the management of natural resources, including forest and woodland resources, remained technocratic, as was the case prior to independence.

The introduction of new infrastructure, opening of new arable land, use of forest and woodland products, as well as livestock rearing, all of which are central to the development of the rural economy, have altered both the environmental landscape and land use patterns within the scheme, thus presenting new challenges for CBNRM. While the technocratic institutions that were involved in setting up this infrastructure did not undertake environmental impact assessments (EIAs) to ascertain and mitigate any negative impacts that would result from the infrastructure, local institutions neither had the capacity to deal with the outcome of this oversight nor were they involved in any meaningful planning process. Thus, the involvement of local communities in decision-making in all aspects of the rural economy, including the management of forest and woodland resources, remained minimal. Systems and procedures related to forest and woodland resource management remained as they were prior to independence, as did the legal entities and organizations that were used for this purpose, revealing that there was a continuity of colonial institutional arrangements rather than real transformation. This situation was exacerbated by loss of skilled manpower from government institutions such as NRB, FC and AGRITEX, which were riddled by 'brain drain', as emigration took its toll.

Furthermore, the designation of Mufurudzi LSCFs into a resettlement area was the death knell for the local ICA, which was dismantled after the transfer of usufruct rights to settler farmers by central government. Most of the white commercial farmers who were members of the local ICA were displaced during the process of resettlement, as were their

conservation skills. Unfortunately, none of the newly established institutions have yet developed the same level of technical capacity to effect natural resource conservation as the disbanded ICA had. Furthermore, more democratic alternative ways of managing natural resources have taken time to evolve within the scheme. With both the loss of technical conservation skills and absence of strong grassroots conservation community based conservation institutions, doubts have been expressed about the sustainability of forest and woodland resources in Mufurudzi in the future.

6.3 POST SETTLEMENT TECHNOCRACY AND NATURAL RESOURCE MANAGEMENT IN MUFURUDZI

Mufurudzi resettlement scheme has been under the influence of a wide range of socio-political forces throughout its history of existence, some of which have had a considerable bearing on the state of the scheme's natural resources in general and forest and woodland resources in particular. Technocracy within the operations of government institutions and policies continues to drive these forces. The most important technocratic institutions that have been involved in the management of forest and woodland resources in Mufurudzi include the Ministry of Local Government, the Department of Natural Resources, the Forestry Commission and the Chaminuka Rural District Council, all of which are discussed in turn below.

6.3.1 Ministry of Local Government

When the policy of land redistribution was first conceived in 1980 all activities related to resettlement were dealt with under the auspices of the Department of Rural Development (DERUDE), which was effectively the technical arm of the Ministry of Local Government. In each province there was a Provincial Rural Development Officer, whose functions included the co-ordination of all resettlement activities in the province. The rest

of the personnel in the province comprised a senior resettlement officer, two resettlement planners and two cartographers, the role of which was to provide technical expertise to the resettlement schemes in those districts found in their province. Each scheme was presided over by a resettlement officer, whose duties included:

a) Selection of settler farmers
b) Monitoring of agricultural inputs and productivity
c) Controlling of stocking levels and recommending depasturing and culling of livestock whenever pastures were under threat from overgrazing
d) Co-ordination of the activities of other government departments within the resettlement scheme, covering those related to health, education, construction of roads and buildings, farming and forest and woodland resource management, and
e) Monitoring of residents to ensure that the scheme was administered according to the intended plan

In Mufurudzi resettlement scheme a resident resettlement officer was available to perform these duties. According to the original plan for the scheme, each household was allocated 6 hectares for cultivation if it was resettled in a dry-land farming area, and 40 hectares of communal grazing land for eight livestock units or twelve heads of cattle. Each livestock unit, with the equivalence of 500 kgs of live animal weight, was allocated 5 hectares. Where irrigation was practiced each household was entitled to 1 hectare of arable land only rather than 6 hectares. In addition, each household was also allocated 0.25 hectares for a residential stand and another 0.8 hectares for communal woodlots and communal graveyards. Revocable resettlement permits were issued to support land

allocations and restrictions. Within the dryland sections of the scheme the resettlement permits that were awarded were specific to households and were also non-inheritable. The children of any resettled family were expected to apply for their own resettlement permits rather than inherit the land that was allocated to the family. The case of Mufurudzi is an example of a situation where extensive farming, largely based on cattle ranching, was replaced by a resettlement scheme based on an intensive model of farming, in an environment that prone to drought. Government resettlement plans were 'straight jacket plans' in which the resettled peasants were never seriously consulted about serious matters on environmental issues that are connected to their livelihoods. The only decisions that the peasants were allowed to make related to the siting of villages or dip tanks, and occasionally schools and roads.

In line with their duties, resettlement officers were expected to oversee all matters related to conservation and were responsible for the day to day monitoring of forest and woodland resources and the protection of these resources was one of their primary functions. However, resettlement officers were not trained conservationists. They relied instead on technical expertise from government departments such as the Forestry Commission and Department of Natural Resources for guidance on matters related to environmental conservation.

Nevertheless, the resettlement officer had powers to revoke resettlement permits or evict settler farmers who failed to meet production targets or those who failed to comply with environmental and conservation laws. Conservation resulted from fear of eviction rather

than from environmental ethics. Under these conditions, in the majority of cases, coercion yielded compliance among land reform beneficiaries, who had no choice but to conserve forest and woodland resources in line with the demands and dictates of government policy. This state of affairs was perpetuated even after the dissolution of DERUDE in 1987, when resettlement officers were transferred to the District Development Fund (DDF), though they still remained within the Ministry of Local Government.

This top-down approach to environmental management disenfranchised and dis-empowered settler communities and did not help to instill any sense of resource ownership among resource users. About 45.5% of the household heads that were interviewed stated that the forest and woodland resources that are found in their villages are not owned by the local community. The restrictive technocratic top-down model of natural resource management that was inherited from colonial times has not provided the space for meaningful public consultation or popular participation. Nevertheless, it is encouraging that 95.3% of the household heads maintained that the local community has a role to play in forest and woodland resource conservation while 97.6% argued that the local community must be consulted whenever forest and woodland resource management projects are implemented in their villages.

Following the further restructuring of the Ministry of Local Government, the post of resettlement officer was eventually abolished in 1997, when DDF was moved to the Ministry of Rural Resources and Water Development, renamed Ministry of Water Resources and Infrastructure Development in February 2004. In the process of

restructuring the functions of resettlement officers, including those related to environmental monitoring, were handed over to rural district councils (RDCs). In the case of Mufurudzi resettlement scheme the authority to administer the scheme was handed over to Chaminuka Rural District Council, which is now responsible for all affairs and activities related to resettlement in Shamva district, including natural resource conservation. The abolition of the post created a political vacuum in Mufurudzi resettlement scheme. In the absence of any sense of ownership or threat from government authority, villagers, both from within Mufurudzi resettlement scheme and from adjacent communal areas, started to engage in unauthorized practices such as opening up of new fields and overstocking, as well as widespread cutting of trees. Local chiefs from the adjacent communal areas and political heavy weights also seized this as the opportunity to boost their popularity by 'resettling more landless villagers' in the scheme, without considering the restrictive planning parameters on which the resettlement scheme was designed, thus exacerbating loss of forest and woodland cover.

It can be concluded, therefore, that both the recent *ad hoc* 'secondary resettlement' of people by politicians and uncontrolled exploitation of forest and woodland products have transformed the environment in Mufurudzi resettlement scheme, as shown in Chapter 4. This clearly demonstrates the unsustainability and hence the folly of technocracy. One major weakness of the technocracy that characterized the post-colonial resource governance in Mufurudzi is that, unlike in the ICA approach that existed during the colonial period, there were very few government incentives to encourage the resettled communities to conserve natural resources. Government institutions relied more heavily

on law enforcement and coercion than on the good will and capacity of local CBNRM institutions. Mufurudzi resettlement scheme is a clear example of a situation where local communities failed to cope with the demands of natural resources conservation following the withdrawal of technocratic controls. The earlier gains that had been achieved through coercion were quickly eroded when the environmental conservation function was transferred to an incapacitated local authority, that is Chaminuka Rural District Council. Thus, failure to enforce the restrictive post-colonial conservation policies and lack devolution of resource governance to the local community was one of the principal factors that undermined prospects for formal CBNRM in Mufurudzi.

6.3.2 Other Central Government Institutions

Within the current local government structures there are two main government departments whose role is to provide Rural District Councils (RDCs) with technical assistance in natural resource conservation. These are the Department of Natural Resources (DNR) and Forestry Commission (FC). In the case of Mufurudzi the two departments are failing to fulfill their statutory mandates due to a number of constraints that are identified below

Apart from the meagre financial resources that the department relies on, DNR is generally understaffed. At district level the department is suppose to be manned by a District Natural Resources Officer (DNRO) and two Natural Resources Assistants (NRAs). For instance, in Shamva district, where Mufurudzi resettlement scheme is located, the post of DNRO, which had been vacant since 1980, was only filled in September 2002. Before 2002 the DNR's district office was manned only by one NRA.

Another constraint that affects DNR is that the department also relies on under qualified staff. Most NRAs have no professional qualifications in natural resource conservation, yet they are expected to guide local communities and play an advisory role in natural resource conservation. Shortage of qualified staff explains why Chaminuka Rural District Council has lagged behind in promulgating environmental and conservation by-laws. Similar shortcomings were reported in the Kwizu Forest Reserve in Tanzania where enforcement of law was generally constrained by lack of adequate personnel and funds (Kajembe, *et al,* 2005). In Mufurudzi these constraints are exacerbated by a critical shortage of transport facilities in the department, making it extremely difficult for officers to execute their field duties, especially environmental monitoring and extension. This problem has been compounded by the intermittent fuel shortages that the Zimbabwe has been facing since 2000.

The majority of the constraints that affect DNR also affect the Forestry Commission (FC). The FC is generally under funded such that it cannot carry out most of its critical operations unaided. In this regard the FC has been working closely with NGOs in the implementation of a number of 'community related projects', including nursery, agroforestry, tree planting, woodland management and forest utilization projects. A total of 234 small projects are scattered around Shamva district as a whole, most of which belong to individual households. The major NGOs that the FC has formed partnerships with are the Southern Alliance for Indigenous Forest Resources (SAFIRE) and Danish Development Agency (DANIDA). The former has led local initiatives in developing

value added NTFPs while the latter, which has since left the country for political reasons, has been an important source of fencing materials for woodlots.

Perhaps the major constraint that the FC is currently facing is community apathy. The main cause of apathy is lack of social cohesion and sense of collective proprietorship within the community. This is largely reflected by the low turnout of villagers at 'community workshops' and the low number of people who are embracing FC initiated community projects. The majority of the 234 FC initiated projects that occur in Shamva are owned by 'enlightened individual households' and schools. Apathy has since derailed the FC's Rural Afforestation Programme which was discussed earlier.

The constraints that have been discussed above clearly highlight the weaknesses inherent to technocratic approaches to natural resource conservation. In Mufurudzi resettlement scheme, the redundancy of the post of resettlement officer has created a void that other government departments have failed to fill due to lack of both technical and financial capacity. The local community, which until recently has been 'trained' to follow commands and instructions within the top-down structures of bureaucratic administration and governance, has yet to fully develop the means of governing natural resources by itself, a problem that partly stems from their weakening by technocracy. Such a situation has not helped to halt the inevitable transformation of the environment and the over utilization of forest and woodland resources. Thus technocracy and ineffective decentralization have undermined the role of central government in the management of natural resources in Mufurudzi.

6.3.3 Quasi-Government Institutions

The Chaminuka Rural District Council is the main quasi-government institution that has the responsibility of conserving natural resources in Mufurudzi resettlement scheme. However, in Mufurudzi, there are two main factors that have contributed to the over utilization of forest and woodland resources following the devolution of the responsibility of managing these resources from central government to the council.

First, Chaminuka Rural District Council, lacks the technical capacity to manage the resources. Even as recently as 2004 the council did not have environmental and conservation by-laws that can be used to curb deforestation within the resettlement areas that fall within its jurisdiction, even though these are provided for in national statutes, including the Environment Management Act (EMA) of 2002. EMA provides for the setting up of environmental conservation committees and subcommittees within the structures of RDCs and allows local authorities to fine those who destroy vegetation and other transgressors who carry out practices that are environmentally destructive. In terms of EMA, whereas conservation committees function at district level their subcommittees deal with conservation issues at ward level, where they constitute an integral part of Ward Development Committees (WADCOs).

As stated by the Acting Provincial Natural Resources Officer for Mashonaland Central:

> The functions of environmental conservation subcommittees relate to the construction of conservation works (contour ridges) by farmers, undertaking of rehabilitation projects for degraded land, conducting of field days for successful conservation projects such as gully reclamation and agroforestry projects, and proper conservation of all natural resources, including forest and woodland

> resources. Membership of these subcommittees is derived from village representatives and each village in the ward is represented in the subcommittee. The activities of subcommittees are funded through grants from DNR (R. Mavhondo, Acting Provincial Natural Resources Officer: 30 March, 2004: pers.com.).

In Shamva district, however, whereas the local communities appear to be well represented in the environmental conservation committees, the representation has been flawed by technocracy. This is due to the fact that representatives are 'hand picked' by the councillor and are thus not necessarily always the true representatives of the community.

Second, conservation projects lack adequate funding. The grants that are issued towards conservation projects by DNR are a pittance, while little if any financial resources, are channeled towards these projects by Chaminuka Rural District Council. In 2003 DNR disbursed only $1 million (about US$192, at the exchange rate of Zimbabwe $5200 per US$, of 31 March 2004), for conservation projects in the whole of Shamva district, while only $3 million (about US$577) was earmarked for such projects in 2004.

6.3.4 Other Constraints Resulting From Technocracy

There are some environmental constraints that both central government and quasi-government institutions have failed to address, some of which have a bearing on the conservation of forest and woodland resources. Even though economic, cultural and socio-political conditions have left an indelible mark in Mufurudzi's natural resource base and landscape, as noted above, the sensitivity of the bio-physical environment of Mufurudzi is one factor that was largely ignored by technocrats in the planning stages of

the scheme. In 1981, all land, including that used for resettlement in Mufurudzi, was acquired through the 'willing buyer willing seller' agreement that was enshrined in the 1979 Lancaster House constitution (Chaumba *et al* 2003a). Since most commercial farmers were only prepared to dispose low quality rather than prime agricultural land, the government ended up resettling people on poor quality or marginal land. Mufurudzi is a typical example of a poorly designed resettlement scheme where environmental sensitivity was not put into full consideration. The resettlement scheme, whose terrain is generally rugged, is also prone to drought while its soils are thin and fragile, particularly in the northern part of the scheme. Prior to resettlement the greater part of Mufurudzi was used for ranching, a form of extensive farming, while arable farming was only restricted to the more moist areas or to those areas where irrigation was possible.

The political expediency to resettle landless peasants and the need to meet the constitutional demands of the Lancaster House agreement overshadowed the need to carry out sound land capability analyses and other necessary and precautionary environmental procedures prior to resettlement. This has created a situation whereby the resettled households have to rely on forest and woodland resources in order to cope with adverse environmental conditions rather than to depend on the productive systems of their economy alone. In some cases this situation has translated into loss of wildlife habitats, silting of rivers and sacred pools as well as shortage of forest and woodland products.

The constraints that have been highlighted above have rendered both government and quasi-government institutions ineffective as instruments of forest and woodland resource conservation, making informal CBNRM the only viable option. Thus technocracy, lack of institutional capacity and the inability to fully relate the state of the natural environment to the needs of the resettled community have caused disillusionment about how resource over utilization can be balanced with resource conservation within an environment that is naturally hostile to livelihoods.

6.4 ROLE OF LOCAL INSTITUTIONS IN FOREST AND WOODLAND RESOURCE CONSERVATION IN MUFURUDZI

Local institutions are the mainstay of both formal and informal CBNRM. The role of local institutions in natural resource conservation is widely documented throughout southern Africa. Traditionally, local institutions played a critical role in natural resource management in pre-colonial South Africa (Von Maltitz and Shackleton, 2004) and pre-colonial Zimbabwe (Murphree and Cumming, 1993; Mukamuri, 1995; Ranger, 2003). Two types of local institutions exist in Mufurudzi resettlement scheme. These include traditional institutions such as spirit mediums (*svikiros* or *mhondoros*), traditional herbalists or ethno pharmacists (*n'angas*) and village heads, as well as contemporary local institutions like VIDCOs, WADCOs and councillors. The co-existence of local institutions was described by Nemaruwande (2004) as a complex interface between traditional and modern authority, with both complimentary and conflicting jurisdictions. However, village heads may also be considered as a contemporary local institution by virtue of the fact that they are *de facto* chairmen of VIDCOs in terms of the Traditional Leaders Act of 1998. Legally, however, the mandate of VIDCOs and WADCOs as institutions of natural resource management is unclear, as explained later in this chapter.

6.4.1 The Role of Chiefs, Spirit Mediums and Ecological Religion in Conservation of Forest and Woodland Resources in Mufurudzi

Due to the historical links that exist between pre-colonial chiefdoms and the areas that they were displaced from during colonization, natural resources in Mufurudzi resettlement scheme are generally considered as the jurisdiction of the displaced lineage leaders that are now based in the communal areas. These include chiefs such as Nyamaropa in the north, Madziwa in the west and Bushu in the south, and village heads as well as spirit mediums. In general, lineage leadership regards chiefs as the spiritually designated custodians of all land reform beneficiaries in the scheme. Most village heads that were interviewed conceded that their ancestors owned the land in Mufurudzi. One villager, an ex-combatant, argued that the land in Mufurudzi traditionally belong to the ancestral spirits but was annexed by the colonial state and used as fief to reward its Second World War heroes. Some of the land was annexed as recently as 1951 when the colonial government promulgated the Native Land Husbandry Act (NLHA).

The view that is widely held by villagers is that all natural resources in Mufurudzi, including forest and woodland resources, belong to God and their ancestral spirits, and are under the custodianship of spirit mediums. Such beliefs indicate that ecological religion, which has been reported elsewhere in Zimbabwe (Ranger 2003), still exists in Mufurudzi. This is further supported by the existence of traditional shrines and sacred places where traditional ceremonies are still conducted within the scheme, though most of them are considered to have been desecrated through vegetation clearing, modernization

and the introduction of Christianity. These shrines include burial grounds and sites where rainmaking ceremonies are performed.

In Mufurudzi eco-religion influences agricultural calendars, fertility rituals, rainmaking ceremonies (*mukwerera)*, rest days (c*hisi*) and times of harvests. These activities are regarded as sacred and have remained the main way through which the local community appeases ancestral spirits, as discussed in Chapter 2. Traditionally, spirit mediums, locally known as *svikiros* or *mhondoros* (lion spirits), were supposed to be consulted before these activities are carried out. However, different villages expressed different views about *bona fide* spirit mediums and the strength of their influence in natural resource conservation.

The mediums who were generally regarded as authentic and respectable include Nyamaropa, Nyadumbu and Reza (all dead) (Mudzinge), Mutambavhu, who died in 1999 (Zvataida), Mhurumbe (Mufurudzi II village, Principe A), Nyashava (Principe A, Principe B), Chitengu (Chidumbwe I, Chidumbwe II), Million (Chidumbwe II) and Nyashava (Principe B). Nyashava was the only living spirit medium when the survey was conducted. Most mediums were renowned for the enforcement of traditional forest and woodland conservation practices. Also, most of the mediums regarded forests and woodlands as ancestral resting places and discouraged wanton tree destruction. Recounting Chitengu's contribution, Ruwengwa Kazuru, Chidumbwe I village head said:

> Though there is no living spirit medium in our village at the moment, we used to have Chitengu, who forbade wanton destruction of trees. He warned that people who destroy trees would face the calamity of pest outbreaks and crop destruction by wild animals, which will be unleashed upon them by the living dead. Trees

> which received special protection from him include mukute (*Syzygium spp*.), muhacha (*Parinari curatellifolia*), and muzhanje (*Uapacca kirkii*), keystone species that cushion people from hunger during times of drought (Ruwengwa Kazuru, 2003: pers.com.).

Another medium that is well remembered for his stance on conservation is Mhurumbe. Mhurumbe regarded forests as routes and resting places for the ancestral spirits, which can only be destroyed at one's peril as this could invoke anger and calamity from these spirits, including drought and attacks by wild animals such as jackals and lions.

> The medium's conservation stance on deforestation was meant to promote habitat protection, sustainable supply and provision of food during famine. The current generation, who call themselves modern, who in fact are the generation of the pill, have little respect for our traditions or values. They don't have respect for our ancestral spirits and mediums. This is why the destruction of forests has reached unprecedented levels (chided Musona, the village head of Mufurudzi village II).

However, Nyashava, the surviving spirit medium has not yet given any special instructions about the conservation of forests and woodlands, although it has been reported that he forbids the killing of pangolin and python. In Mufurudzi, the system of values and beliefs espoused by the eco-religion that has hitherto prevailed is consistent with those of deep ecology and Lovelock's Gaia hypothesis, which regards the earth as one gigantic living organism whose preservation is the only means through which human survival can be ensured.

6.4.2 Constraints Affecting Eco-Religion as a Strategy for Natural Resource Conservation

The breakdown of local CBNRM institutions that are involved in common property resource (CPR) management has been the principal cause of the degradation of woodlands in the communal areas of Zimbabwe, where there has been a general lack of

alternative institutions for CPR management (Campbell, *et al*, 2002). This situation is clearly evident in Mufurudzi where the institutions that drive eco-religion are facing oblivion while alternative institutions that have the capacity to implement CBNRM seem to be taking time to evolve.

As noted in Musona's account, it can be argued that in Mufurudzi the role of eco-religion in natural resource conservation is under threat from modernization. One form the modernization that has taken root is the emergence of a plethora of traditional churches and Christian sects within the scheme. A considerable number of African independent churches and 'Christian' sects have sprouted in different parts of the scheme. The western beliefs and values that are propagated by these churches have generally undermined and weakened the influence of traditional institutions, including spirit mediums (Kayambazinthu *et al*, 2003), the overall effect being the crumbling of eco-religion as a conservation strategy in the scheme.

The role of eco-religion has been further threatened by the fact that land reform beneficiaries who originated from different parts of the country have to harmoniously co-exist. Co-existence would be impossible if each household had to strictly adhere to the customs, traditions, norms and values of the eco-religion of the place from which it originated. This situation arises from the fact that the people who were resettled in Mufurudzi are from different ethnic backgrounds, including the *Zezurus, Kore-kores, Manyikas,* and *Karangas*, while others are of Malawian or Mozambican descent. Though the legitimacy of contemporary and traditional institutions, by-laws, taboos, rules and

regulations is largely derived from eco-religion, it has not escaped questioning. The effectiveness of these controls has been eroded, partly by modernization and partly by lack of social cohesion, though their importance is still acknowledged by local communities.

The build-up of population in the scheme has stretched the supply of some forest and woodland resources, rendering Mukamuri's (1995) management by taboo and religious sanction inapplicable in some cases. For example, the destruction of *Uapacca kirkiana* fruit trees in Chidumbwe I and Chidumbwe II, and the over-exploitation of tree sources of herbal medicines in Mufurudzi as a whole strongly suggest that where resources are open access and scarce, there can be considerable competition to harvest the resources, especially if supply is limited (Gumbo *et al*, 1990). Throughout Mufurudzi there is strong evidence suggesting the overlapping and conflicting use of forest and woodland resources by different categories of people within the community.

Since different categories of households hold different sets of religious customs, traditions, taboos, norms and values about different species of trees or resources derived from them, harmonizing the practices of these groups is no mean task. Thus, social stratification and lack of homogeneity make resettlement areas susceptible to loss of social cohesion. Campbell and Shackleton (2002) posit that highly stratified and differentiated communities are normally characterized by intra-community power struggles and conflicts.

Consequently, only a few villagers took Mutambavhu's warning seriously when he declared:

> Musafugure nyika yamakawana yakapfirirwa nemiti. (You should not uncover the land which you found clothed with trees (as recalled by Kaimba Chifamba, the former village head of Zvataida, pers.com., 2003).

However, the literature that exists on CBNRM suggests that the imposition of land husbandry was designed to displace both traditional institutions and practices (Cross *et al*, 1996; Mohamed-Katerere and Chenje, 2002). For instance, Mohamed-Katerere and Chenje (2002: 13) argue that:

> The imposition of land husbandry was designed to displace traditional practices, which were seen as backward, and to give the state full control over land and its use. It was, therefore, a key aspect of the overall land strategy.

In the process spirit mediums were 'dethroned' by the colonial government and confined to the communal areas during the process of land appropriation. Mataya, *et al* (2002: 24) argue that:

> Right from the colonial era, the effect of alienation of land was loss of control and ownership of traditional land rights, which translated into erosion of institutional capacity to manage natural resources, including forests. Appropriation of indigenous land, whether for commercial or public amenities such as national parks and forest reserves also reduced the geographical jurisdiction and powers of the traditional authorities.

Presently, there are no spirit mediums that reside within Mufurudzi resettlement scheme itself. All of the spirit mediums within the living memory of the resettled peasants have operated from the surrounding communal areas. It could be argued that the process of colonization attenuated the influence of traditional institutions, directly through displacement and indirectly through modernization and propagation of western value

systems, especially those associated with 'proselytization', Christianity and the monetization of the local economy. This conclusion is supported by evidence from research undertaken elsewhere, which attributes the weakening of traditional institutions to repeated empowerment and disempowerment by government, modernizing and economic forces that undermine traditional values, rapid expansion of modern religions and immigration (Campbell *et al,* 2002; Mataya *et al*, 2002).

Villagers throughout Mufurudzi resettlement scheme reported that the local community no longer respects traditional authority nor traditional conservation values, rules and regulations.

As one village elder from Mupedzanhamo recalls:

> While advising a fellow villager against wanton tree destruction, I was asked whether I was pregnant with trees when I was resettled here. By asking this question the arrogant individual was arguing that the trees that he was destroying did not belong to me, therefore I had no right to control the way he was using them.

The above citation brings to the fore the background against which the over utilization of forest and woodland resources has occurred in some parts of Mufurudzi resettlement scheme, that is erosion of traditional cultural values, loss of social cohesion and loss of the sense of collective social responsibility. Individual values now precede and supersede collective values, yet it is on the latter that principles of CBNRM are premised on. In CBNRM constructive advice from peers is normally readily accepted since it serves the common good, particularly where the advice is meant to protect the environment through collective proprietorship. Under conditions where individual goals threaten those of collective responsibility the success of societal controls as a measure of promoting forest

and woodland resource conservation is doubtful, more so when they are exacerbated by the weakening of local institutions. There are widespread reports of groves that used to be considered as sacred which have been desecrated through vegetation clearing and also pools that have dried from siltation. Tree cutting and burning as well as collection of firewood are now common in places that used to be regarded as sacred holy shrines.

Contrary to the generally widely held view that local institutions, community by-laws, rules, taboos and regulations control the use and management of tree resources (Nhira and Fortmann, 1993; Gumbo, 1993; Forsyth and Leach, 1998) in some parts of Mufurudzi continued reliance on a declining tree resource base is largely necessitated by the unavailability of alternative resources. This is particularly the case in older villages where over utilization of forest and woodland resources is more conspicuous. In these villages resource use is a product of a matrix of choices that are weighed against both the short-term and long-term benefits derived from meeting immediate needs and conservation, respectively.

Nevertheless, despite their weakened state, traditional institutions such as chiefs and spirit mediums still play a recognized role in CBNRM. Though the roles of these institutions are no longer as conspicuous as they used to be in the past they still constitute a formidable undercurrent that sustains informal CBNRM within Mufurudzi.

6.4.3 Traditional Ethno pharmacists and Herbalists (*N'angas*) and Forest and Woodland Resource Conservation

The historical events recorded in Mudzinge (Appendix XI) are not unique to this village. Interviews conducted with traditional ethno pharmacists and herbalists (*n'angas*) in different villages found in Mufurudzi exhibited similar patterns. The over use of forest and woodland resources has been widely cited by the *n'angas* that were interviewed. Vimbikani Kadziche, the traditional healer-cum-herbalist from Chidumbwe I, who is also a member of the village grazing committee, reminisced:

> When we first settled here in 1982 there was dense woodland cover and one could hardly see things a few metres away. By 1994 we started noticing that trees were getting depleted, especially due to brick burning and the repeated construction and repair of non durable structures such as rakes, granaries and livestock pens, which constantly need to be replaced…. Tobacco is a real environmental witch. Though tobacco is a profitable crop it requires so much firewood to cure it and this causes deforestation. I have been noticing these changes because besides being a *n'anga* I am also the chairman of the grazing committee and I am responsible for the conservation and monitoring of resources such as trees and soil. The trees that I require for my work as a traditional healer are now too few and it takes me far much more time to collect herbal medicines than I used to when we first arrived in this scheme. In many places the soil has been eroded and we now have gullies, especially in vleis (Vimbikani Kadziche, 2004: pers. com.).

Most villagers, including Vimbikani Kadziche argue that the sustainability of forest and woodland resources as well as that of the livelihoods of local communities in their resettlement scheme is questionable. First, these resources serve purposes that are critical to the livelihoods of local communities, some of which are social, psychological (spiritual) and economic. The most critical needs include food supply from fruits and other edible NTFPs as well as traditional medicines, while perhaps one of the most important psychological needs that are met by forests and woodlands in Mufurudzi, is the provision of sacred groves and species from which traditional rituals and ceremonies are conducted. As already noted, forests and woodland in Mufurudzi have an economic

value, as exemplified by their role in the tobacco industry cited in Kadziche's narrative account.

Second, local communities in Mufurudzi believe that the destruction of trees invokes bad omen and calamity from ancestral spirits. Similarly, the manner in which medicinal trees are exploited is regulated by similar beliefs. One widely held belief is that *n'angas* are normally expected to consider conservation measures that are spiritually acceptable. Ethno pharmacists and herbalists are required to follow an unwritten code of conduct that governs the way they collect their medicines. In order to protect the plant species from which medicines are collected herbalists are required to collect bark from the eastern and western sides of trees only, obviously avoiding ring barking. The generally held belief is that medicines that are extracted from a tree will be ineffectual unless due care is exercised to collect it from the eastern and western sides of the tree, a practice that is obviously meant to prevent ring barking and the subsequent death of medicinal trees. There are also certain practices that must be observed when digging roots for medicinal purposes. When asked to explain pits left around some trees whose roots had been dug out for medicinal use, traditional healer Vimbikani Kadziche said:

> If we fill up the pits completely the medicines that we collect will not work, because the spirits of the forests will not approve. Similarly if you dig out a plant in such a way that you completely destroy it the medicine derived from it will not work because you will have angered the spirits. However, some people don't observe these rules anymore because they want to make money from herbs.

It can only be inferred that the traditional practice of leaving half filled pits around trees after root extraction is meant to promote infiltration and percolation of water around the damaged trees to ensure their recovery and survival. However, extensively debarked trees

and tree root extraction were evident in some parts of Mufurudzi. This serves as evidence to support the view that judicious use of woodland resources is often ignored where the resources are commercialized.

Even though *n'angas* blame loss of forest and woodland resources to tobacco curing and other 'injudicious uses' they themselves are widely blamed for contributing to the over use of these resources in Mufurudzi. This situation can be explained in terms of the changes that are taking place within the prevailing macro-economic environment. Villagers in Mufurudzi resettlement scheme have reported that they have not been spared by Zimbabwe's crumbling health delivery system, which is often characterized by shortage of clinical drugs and personnel. Coupled with the high prevalence of the Acquired Immunity Deficiency Syndrome (AIDS) pandemic and low household incomes, this situation has heightened the demand for herbal medicines, thus leading to the increase in the number of people who rely on *n'angas* for treatment, consequently leading to the over-exploitation and destruction of medicinal trees. Local communities in Mufurudzi generally perceive herbal medicines as more affordable compared to clinical drugs. Such a situation is understandable in an environment where 57% of the households live on monthly incomes that are less than $10 000 (US$1.92, at the exchange rate of Zimbabwean $5200 per US$, which prevailed in March 2004), and also where the health delivery institutions are not adequately funded. This situation is exacerbated by the fact that health centres are sparsely located in Mufurudzi.

6.4.4 Confused Locus of Responsibility and the Role of Contemporary Local Institutions in Forest and Woodland Conservation

In Mufurudzi and other resettlement areas found in Zimbabwe, village heads were only appointed in 2000 with the view to improve the administrative efficiency and capacity of local government. As shown in figure 6.1 above, the lowest level within the hierarchy of local contemporary leadership that is found in the scheme is the village head, the *de facto* chairman of the VIDCO.

Figure 6.1: Hierarchy of Leadership in Zimbabwean Rural District Councils

	Status of Leadership			
Lowest level				**Highest level**
Tier I:	Village Head →	Headman →	Chief →	District Administrator
Tier II:	VIDCO[1] →	WADCO[2] →		RDC[3]

[1]The Village Development Committee (VIDCO), traditionally chaired by an elected chairman, but now chaired by the village head, following the promulgation of the Traditional Leaders Act in 1998.

[2]The Ward Development Committee (WADCO) consists of all VIDCO chairmen (that is village heads) and headmen that are found in a ward and is chaired by an elected member of their own.

[3]The Rural District Council (RDC) is headed by an appointed chief executive officer.

Whereas traditionally, the VIDCO was headed by an elected chairman, in terms of the Rural District Councils Act of 1988, the promulgation of the Traditional Leaders Act

(TLA) in 1998 has abolished this democratic system, and once village heads are appointed they automatically become designate chairmen for their VIDCOs.

The promulgation of the TLA has left a number of political challenges in its wake. First, by discarding the system of 'elected VIDCO chairmen', new frontiers and arenas for power struggle have been opened. Those opposed to strict control on natural resource use have now formed alliances against strict village heads, whom they accuse of lack of patriotism and of supporting opposition political parties in some cases. Second, conflicts also result from how transgressors should be treated. Lineage leaders such as chiefs and headmen, whose authority is in the process of being extended into the resettlement area (following the enactment of the TLA) prefer a situation whereby all culprits reported for natural resource abuse are dealt with by traditional courts, a practice that obviously generates revenue for them, since restitution is demanded from all culprits that are 'found guilty'. On the other hand the Chaminuka Rural District Council expects offenders to be prosecuted in terms of EMA and the Forestry Act, or its own by-laws (when they eventually come into effect), with proceeds accruing either to central government or to its own resources. Under these circumstances village heads find it difficult to deal with the jurisdiction of cases related to resource abuse.

Third, the replacement of 'elected VIDCO chairmen' by appointed ones is widely viewed by some critics and conscious villagers as the 'death of democracy' at grassroots level. In terms of the TLA, village heads are mere appointees of headmen. In reality most of the village heads are proxies of those who appoint them and are not necessarily always able

to articulate the real aspirations and concerns of the communities they purport to represent. Fourth, the legitimacy of those village heads who are not of the same lineage as the chiefs who have jurisdiction over different parts of Mufurudzi, including chiefs from Madziwa, Nyamaropa and Bushu communal areas, is being challenged by some villagers. Consequently, the authority of some village heads has been usurped and compromised, rendering them ineffectual institutions and powerless custodians of natural resources. This development is similar to that which has been reported in South Africa where the new political dispensation that emerged with the abolition of apartheid in 1994 is argued to have been responsible for undermining the effectiveness traditional authority in CBNRM (Lawes *et al* 2004). This observation, however, seems to differ from the view presented by earlier researchers such as Murphree and Cumming (1993) who argued that it was colonization that was responsible for undermining the role of traditional institutions in natural resource management. Such contradictions certainly constitute fertile ground for future research and debate. Regarding this issue, future debate is likely to revolve around whether traditional institutions (or their roles) have changed between pre-colonial and post-colonial times and also whether pro-western type of democracy (or its absence) is a pre-condition for effective natural resource governance in *ex situ* communities.

Fifth, in Mufurudzi, when village heads were first appointed they had to contend with new structures of governance and legislation and harmonizing their traditional roles with new roles within modern governance RDC structures has been cumbersome. This observation supports what Matose and Wily (1996: 201) noted about the harmonization

of the roles of traditional institutions within local communities with those which they play within new local government structures, "as proscribed and prescribed by the dictates of national policy", a phenomenon that has become a hallmark of confusion throughout Africa. In the case of Mufurudzi, apart from their recent appointment and poorly legally defined roles, village heads also have to contend with a two-tier system of local government (figure 6.1). This system makes it difficult for local authorities to monitor and control the use of natural resources since there are no clearly defined functions and responsibilities for those actors that are purported to be responsible for managing natural resources within the organs that constitute the two tiers.

Overall, the responsibility to manage forest and woodland resources at village level rests with the first tier while the mandate to license the exploitation and use of these resources rests with the second, a situation that does not only promote duplication of responsibility and redundancy but also potential conflict between the players from the two tiers in some cases. Under these circumstances, neither the village assembly nor VIDCO has the ultimate authority or legitimacy and mandate to control the way forest and woodland resources are used in the lowest possible administratively defined unit of local government, that is the village. This situation is worsened by the fact that most VIDCOs in Mufurudzi still rely on their older structures such as grazing committees, which existed before the TLA was enacted, for monitoring forest and woodland resources, and which are not yet familiar with the newly prescribed roles of VIDCOs.

Interviews held with some village heads revealed that many village heads do not have adequate authority to prevent people from destroying forests. The village heads indicated that they are not receiving sufficient backing from relevant government departments. A number of village heads related to incidents where the culprits they had reported to authorities from both the Department of Natural Resources and Forestry Commission, for 'wanton' tree cutting, were never prosecuted, while nearly all village heads noted that they are vulnerable to victimization and ostracism if they strictly enforce government regulations or community by-laws.

> It would be difficult for us to strictly bar people who dwell in the surrounding communal areas from cutting down trees in our village without permission and still carry out any business in the communal areas without being victimized. For example, the nearest main business centre to us, Chakonda, is in Bushu communal area. It would be very difficult to visit such a place if you bar people from there from accessing forest and woodland products in our village (reported Munyoro, Chidumbwe II village head, pers. com., 2003).

Without effective village heads, village assemblies and VIDCOs, it is *fait accompli* that the capacity of WADCOs and RDCs to manage forest and woodland resources effectively within local communities is immeasurably limited, since both WADCOs and RDCs rely on these institutions for their management and administrative duties, in terms of both the Rural District Councils Act and the Traditional Leaders Act. Compared to other contemporary local institutions, VIDCOs are better positioned to oversee forest and woodland resource conservation by virtue of their geographical proximity to the place where resources are exploited and used. However, their ineffectiveness renders the entire chain of contemporary local institutions, including WADCOs and the RDC, ineffective as formal CBNRM agents for forest and woodland resource conservation. Such a situation

has promoted both environmental change and loss of some forest and woodland products in parts of Mufurudzi.

6.5 ROLE OF NATIONAL LEGISLATION IN CBNRM

In Zimbabwe, there is an ambit of legal provisions that attempt to regulate forest and woodland resource use and management in the country. Unfortunately, the legal regime that is meant to safeguard natural resources is replete with shortcomings, some of which undermine prospects for CBNRM in resettlement areas. Some of the legal instruments that relate to the protection of forest and woodland resources are highlighted below.

6.5.1 The Traditional Leaders Act [TLA] (Chapter 29:17) Number 25 of 1998

One of the duties of the traditional leaders (village heads, headmen and chiefs) provided for by the TLA is conservation of natural resources in areas that fall under their jurisdiction. In terms of this Act one of the primary functions of the village head is to preside over the village assembly (section 12(f)), whose responsibility, in terms of section 15 (c), is:

> to consider and resolve all issues relating to land, water and other natural resources within the area and to make appropriate recommendations in accordance with approved layout or development plan of the village or ward. (CAP 29: 17 pp 371).

The village assembly is a body that consists of all villagers who have attained the age of majority, which in Zimbabwean law is the age of eighteen. However, the TLA defines the duty of the village head as that of 'assisting' the headman and chief to conserve natural resources that fall within their jurisdiction. Besides chairing the village assembly the village head also chairs the Village Development Committee (VIDCO).

The TLA does not give traditional leaders the mandate or power to prosecute or to seek restitution from transgressors or to fine offenders, as the power to do so rests with the Minister of Environment and Tourism who can exercise it through the National Environmental Council, Environmental Management Agency and Environmental Management Board, in terms of sections 7, 9 and 11 of the Environmental Management Act [EMA] (CAP: 20:27, Number 13 of 2002). It is not clear what procedures should be followed by traditional leaders when dealing with cases of wanton destruction of trees and where the enforcement of the EMA is considered the procedures are extremely onerous.

Furthermore, village heads and other traditional leaders are restricted by section 12 (2) of the TLA which states that:

> No village head shall purport to exercise power or authority, whether by himself or through a village assembly or ward assembly or other local institution, except in accordance with this Act.

This further undermines the authority of the village head. It also means that traditional leaders are only left with the option of relying on legally unenforceable community by-laws, rules, regulations, sanctions and taboos as a means of controlling natural resource use. Enforcement of restitution is considered as *ultra vires* and beyond the jurisdiction provided for by the Act. As a result the transition brought by the TLA has created a legacy of political uncertainty at the micro-level. Village heads who were interviewed in Mufurudzi indicated that their authority and power over the enforcement of legislation was limited. Many village heads indicated that none of the people they had reported to

the police for abusing tree resources were prosecuted, suggesting that the TLA is difficult to enforce.

6.5.2 Environmental Management Act [EMA](Chapter 20:27) Number 13 of 2002

Section 4(1) (c) (ii) of the EMA declares that:

> Every person shall have a right to protect the environment for the benefit of present and future generations and to participate in the implementation of the promulgation of reasonable legislative, policy and other measures that secure ecologically sustainable management and use of natural resources while promoting justifiable economic and social development (CAP 20:27 p 359).

Section 4(2) of this Act outlines a wide range of far reaching, but high-sounding, principles of environmental management that should be observed by all persons and government agencies whose actions affect the environment in Zimbabwe. Sub-sections 4(2) (b) and (c) state the principles which maintain that as environmental management takes place people and their needs must be brought to the forefront, and also that:

> the participation of all interested and affected parties in environmental governance must be promoted and all people must be given an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation (CAP 20:27 p 360).

However, the good intentions spelt out in the EMA are overshadowed by lack of clarity in some of its provisions. In its first schedule, the Act specifies that the conversion of forest or woodland to any other use is a prescribed activity requiring the undertaking of an Environmental Impact Assessment (EIA). Assuming that land resettlement is one way through which this conversion takes place, one would expect that an EIA would be undertaken before the exercise is carried out, a procedure that has never been followed in any resettlement initiative in Zimbabwe, including the setting up of Mufurudzi

resettlement scheme. Under these circumstances, therefore, the weakness of the legislation is that an EIA is not mandatory for resettlement. Consequently, negative environmental impacts are not adequately planned for or mitigated. In Mufurudzi none of the land reform beneficiaries have ever been involved in any serious consultation about how they can mitigate the impacts of those of their activities that can be considered as environmentally destructive. Thus, without the actual enforcement of the provisions of the Act the value of the above cited pronouncements, declarations and principles comes to naught. Traditional leaders in Mufurudzi are not familiar with the provisions of EMA or the national EIA policy, yet they are the grassroots leaders who are expected to oversee the management of all natural resources that fall under their jurisdiction.

6.5.3 Natural Resources Act (NRA) of 1941

Even though this pre-independence Act was repealed it had the greatest influence on the manner in which forest and woodland resources were managed in Mufurudzi resettlement scheme, during its history of existence, up until 2002 when EMA was promulgated. The NRA was described by Scoones and Matose (1993) as a highly interventionist piece of legislation because of its failure to provide incentives for natural resource conservation. The Act provided a set of draconian rules and regulations which could hardly be fully implemented. The Act prohibited local communities from using certain tree and animal species, especially those that were considered as rare, for example *Afzelia quansensis*. In Mufurudzi, due to lack of effective law enforcement these trees continued to be subjected to exploitation. For instance, *Afzelia quansensis*, a hard wood, is widely exploited for its high quality durable timber which many find suitable for making door frames and furniture.

6.5.4 The Communal Land Act of 1982 and the Rural District Councils Act of 1988

The two Acts assigned power to local authorities:

> rather than chiefs and other lineage leaders, for all control over land and natural resources (Matose and Wily, 1996: 207).

In Zimbabwe, the control of forest resources is still centralized and no meaningful devolution has been realized by local communities. The questionnaire survey that was conducted in Mufurudzi revealed that 45% of the households in that scheme feel they are not the owners of the tree resources that are found in their environment. Shackleton and Campbell (2001) have argued that the Rural District Councils (RDCs) Act ensured that the control of natural resources at local level was given to RDCs rather than lineage leaders. This development has undermined the authority of traditional institutions. The outcome was the creation of a situation that neither fosters any sense of resource ownership nor helps to create the opportunity to empower traditional institutions to manage the resources which their communities depend on for survival. Thus, in the absence of devolution traditional institutions in Mufurudzi have remained incapacitated and disenfranchised from meaningful community based natural resource management. This also applies elsewhere in Zimbabwe. In more recent years authoritarian practices and socio-economic challenges in Zimbabwe have tended to stifle opportunities for devolution and CBNRM.

Devolution involves the transfer of authority over natural resources from state control to the local community (Shackleton *et al*, 2002), and it is regarded as critical in the sustainable use of forest and woodland resources where the local community perceives

and manages the resources as their own (Brown *et al*, 2002). Thus devolution entails decentralization of power and responsibility from state organs to the local community. Devolution of natural resource governance has generally been difficult to achieve in Zimbabwe. Whereas some form of devolution has been evident with CAMPFIRE projects the same cannot be said about the management of forest and woodland resources. In southern Africa as a whole only a few countries have begun to devolve rights over forest resources to local institutions. These are Malawi, Mozambique, Namibia, South Africa and Tanzania. However, even in these countries high value timber resources have remained under direct state control. Whereas it is generally acknowledged that devolving and decentralizing natural resource management to local government could be politically and economically expedient many newly independent states in Africa consider relinquishing real power to local authorities to be outside state interest (Murphree 2000). Jones (2004) maintains that CBNRM in the form of focused interventions rests on the hypothesis that if a resource is valuable and landholders have the exclusive rights to use and benefit from the resource then the resource is likely to be used sustainably. As Jones (2004: 4) aptly puts it:

> From this hypothesis has emerged a focus on devolving to local communities rights over natural resources that had been centralized by colonial governments and providing economic incentives for the sustainable use of resources

Evidence from Tanzania reveals that misuse of forest resources was prevalent where people perceived them as government property (Kajembe *et al,* 2005). In Mufurudzi 30% of the household heads who were included in the questionnaire survey believe the forest resources they depend on for survival are owned by government (Chapter 5). About

devolution in Zimbabwe, Jones (2004) notes that there has been some progress in the devolution of management responsibilities from district to lower level institutions and:

> Despite its centralizing tendency, the present government has been willing to devolve authority over water management to institutions other than RDCs and to local level institutions. At the local level, there is a strong demand for more rights and authority over natural resources (Jones, 2004: 28).

Neither the Communal Land Act nor the Rural District Councils Act provides adequate legal backing for devolving rights and authority to local communities so as to enable these communities to direct their own destiny and manage forest and woodland resources sustainably.

6.5.5 Forest Act of 1948 (amended in 1982)

The Forest Act empowers the Forestry Commission, an arm of central government responsible for governing forest and woodland resources, to monitor the state of vegetation in every part of the country, including resettlement schemes. Part IV of the Act mostly applies to the conservation of timber resources in commercial farming and large old resettlement areas, and Part VII regulates trade in forest produce, while Part VII controls use of fire and burning of vegetation. However, the Commission lacks the technical capacity to fully discharge its functions, as already discussed above. Land reform beneficiaries in Mufurudzi confirmed that visits by officials from the Forestry Commission are extremely rare and also that they have hardly had any meaningful access to government officials that they can consult on issues related to forest and woodland management. When the survey was conducted there was only one Forest Extension Officer in the whole of Shamva district. Staffing levels in the department are far too low to be effective. Moreover, the fines that transgressors are charged are not prohibitive enough to prevent wanton destruction of trees, as culprits are only charged as little as

Zimbabwean $5 for each tree they cut. However, the Zimbabwe Republic Police could not cite any recent cases of villagers who were charged for causing deforestation during the last two years.

6.5.6 Communal Land Forest Produce Act of 1928 (amended in 1987)

This Act forbids unlicensed trade in forest products that emanate from the communal areas but just like the repealed Natural Resources Act, the Communal Land Forest Produce Act does not give any incentives for local communities to manage and sustainably utilize forest and woodland resources. However, the major weakness of this Act is that it omits the management of forest and woodland resources in resettlement areas. Though the Act is also applicable to resettlement areas its relevance in these areas seems to have been superceded by the TLA, which village heads in Mufurudzi cited whenever they referred to legislation matters related to natural resource management. Land reform beneficiaries in Mufurudzi are not familiar with the provisions of the Communal Land Forest Produce Act.

6.5.7 National Parks and Wildlife Management Act of 1975

This Act was also repealed with the introduction of the Environmental Management Act. Prior to its repeal, forest and woodland resources, as well as other wildlife resources, could only be accessed by local communities, through their Rural District Councils to whom 'appropriate authority' to do so is granted by the Minister of Environment and Tourism. However, there are a number of plant species whose use was controlled by the Act, none of which featured in this survey which was conducetd in Mufurudzi. The range of plant species that are accorded legal protection is too narrow. There are many other

species, including species that can be considered as keystone species by local communities in Mufurudzi, that should be accorded the same protection. Keystone species in Mufurudzi include those species that cushion people from hunger during times of drought, including *Syzygium spp*., *Parinari curatellifolia, Uapacca kirkii, Diospyros kirkii* and *Strychnos spp.*. Like most related government Acts the National Parks and Wildlife Management Act does not offer any incentives that encourage sustainable utilization and management of forest and woodland resources by local communities.

The flaws within the legislation have weakened the position of both traditional leaders in Mufurudzi, as well as local government structures, and thus rendering them ineffective co-managers in CBNRM. It is probably for this reason that the two are regarded as peripheral stakeholders by the local community (Chapter 5). Evidence from Mufurudzi therefore indicates that in Zimbabwe, national legislation does not fully support CBNRM.

6.6 CONCLUSION

Forest and woodland resources provide a wide range of livelihood inputs, as well as a safety net against environmental 'stresses and shocks' to these *ex situ* communities. In Mufurudzi the transfer of forest and woodland resources from the management of an ICA to *ex situ* communities created a gap in the way these resources are managed. It has always been anticipated that post-independence Zimbabwean resettlement schemes would be characterized by widespread deforestation unless deliberate measures were taken to plan and clearly define institutional roles in resettlement areas (Mataya, *et al*, 2002).

The key finding of this research is that despite the use of forest and woodland resources during the past 25 years wholesale deforestation has not yet occurred in Mufurudzi. In this scheme, even though CPRs such as forest and woodland resources are overused in some areas due to institutional failure, they have only declined in these areas and degradation *per se* has not taken place. The weaknesses of both technocratic and local institutions have undermined prospects for successful and effective formal CBNRM. These weaknesses have been responsible for the over utilization of forest and woodland resources in some areas.

Nevertheless, despite these weaknesses local traditional institutions still contribute immensely to the success of informal CBNRM and resource sustainability in Mufurudzi. Though their influence is waning, traditional institutions, particularly chiefs, spirit mediums and *ngangas* still wield enormous influence on how forest and woodland resources are used, rendering informal CBNRM considerably important. Thus the success of CBNRM in Mufurudzi, particularly with respect to the management of forest and woodland resources, is largely derived from an informal and unwritten ethos of societal controls rather than from formal CBNRM. These are the sacred controls, pragmatic controls, civil contract, which Nhira and Fortmann (1993) alluded to. Though these controls are facing threat from modernization they still constitute a formidable undercurrent within the existing indigenous knowledge systems (IKS), and have successfully managed to prevent outright degradation of forest and woodland resources in Mufurudzi. Recognition of the role of IKS and the legal empowerment of traditional institutions, especially chiefs, *svikiros* and *mhondoros*, constitutes the bedrock on which

formal CBNRM could be founded in future. However, reliance on IKS to drive formal CBNRM will not be enough on its own.

As demonstrated in the foregoing discussion, individually or separately, neither local institutions nor technocrats have the capacity to sustain formal CBNRM and the conservation of forest and woodland resources in the *ex situ* community. Apart from general lack of institutional capacity to direct resource use and conservation, what is also apparent is that the failure of local and technocratic institutions to effectively manage forest and woodland resources in Mufurudzi has been caused by social stratification and community heterogeneity. Redefining the roles of institutions in *ex situ* communities could reverse this situation. Evidence from earlier research in Zimbabwe suggests that deforestation in resettlement areas could be curbed by defining institutional roles and by incorporating woodlands in the landuse plan of each resettlement and farm unit (Mataya, *et al*, 2002).

However, evidence from this research suggests further that the role of local institutions, both traditional and contemporary, in natural resource conservation must be more clearly defined in legal terms and given precedence over those of technocratic and government institutions. Both categories of institutions must be strengthened while more robust 'hybrid' institutions should be created by blending formal and informal institutions, as well as their various respective forms of CBNRM controls. Because of its sectoral nature, the legislation that currently governs natural resource management in Zimbabwe does not provide for these blended institutions.

In conclusion it is argued in this chapter that institutional blending would be required for successful co-management of natural resources in resettlement areas. In Mufurudzi, the success of both technocratic and local institutions in implementing a formal CBNRM for sustainable management of forest and woodland resources depends also on the capacity and legitimacy of the institutions involved, both of which are currently lacking. Finally, it is also concluded that the future of successful formal CBNRM in managing forest and woodland resources does not rely on technocracy or autocracy but rather on real devolution of power and authority to a new breed of genuine and legitimate community-based 'hybrid' institutions whose roles are legally prescribed in national conservation laws.

CHAPTER 7

SCALES OF VULNERABILITY: IMPACT OF SHOCKS AND MULTIPLE STRESSORS IN AN UNSTABLE MACRO-ECONOMIC ENVIRONMENT

7.1 INTRODUCTION

> What matters is that due to the sanctions Zimbabweans have to wait for hours to get fuel. What matters is that Zimbabweans have to hunt for foreign currency on the unreliable black market. What matters is that Zimbabweans have to endure the ever increasing prices of basic commodities and what matters is that Zimbabweans can't afford to seek medical treatment (Nothing Smart About 'Smart Sanctions': Opinion Section of the Sunday Mail, Dated 28 August 2005: pp 6).

The excerpt above highlights some of the major socio-economic challenges that average Zimbabweans are currently facing. Within the resettled communities of Mufurudzi these challenges have also been felt, but with different implications for different socio-economic categories of land reform beneficiaries. In addition to the worsening macroeconomic environment, this situation has been exacerbated by drought. One way or the other, all land reform beneficiaries in Mufurudzi have been negatively affected by these shocks and stresses, depending on their position on the vulnerability scale.

When land reform beneficiaries in Mufurudzi were selected for resettlement in 1981 the intention was to reduce poverty, as well as to reduce their vulnerability to shocks and stresses by enhancing their adaptive capacity to cope with natural hazards. Under 'normal circumstances' poor people try to diversify their portfolio of assets, including investments, stores and claims so that they are better able to deal with contingencies and difficult times and minimize irreversible loss (Chambers, 1989; Swift, 1989). The central question addressed in this chapter is about the extent to which resettled communities have the capacity to cope with 'abnormal circumstances' characterized by human induced

multiple stressors such as a deepening economic crisis, in an environment bedeviled by recurrence of natural hazards like drought. Put differently: Do resettled communities have the means of coping with extreme stressors? Within the resettled community who is able to cope better with these stressors and why? In the context of Zimbabwe, multiple stressors include the various socio-political and economic pressures that Zimbabweans have been grappling with since 2000, encompassing the shrinking of the economy, high inflation, high interest rates, the burden of a failed structural adjustment, increasing HIV/ AIDS infections and drought, as well as a persistent political crisis, all of which present an extraordinary challenge characterized by the worsening of the vulnerability of the poor. This chapter contributes to a growing body of literature on livelihood diversification by arguing that community differentiation is a function of varying household vulnerability to multiple stressors as well as differences in the adaptive capacity of the households to cope with the stressors. As Chambers (1989: 1) argues:

> Vulnerability has…two sides, an external side of risks, shocks, and stress to which an individual or household is subject: and an internal side which is defenselessness, meaning a lack of means to cope without damaging loss. Loss can take many forms – becoming or being physically weaker, economically impoverished, socially dependent, humiliated or physically harmed.

Vulnerability is often the result of interacting stressors (Vogel and O'Brien, 2004) and is a function of exposure and sensitivity to stressors, as well as the adaptive capacity and coping strategies manifested by those exposed to the stressors (Luers, *et al,* 2003). Exposure to multiple stressors "is a real concern in developing countries where food security is influenced by political, economic and social conditions in addition to climatic factors." (O'Brien, *et al* 2004 a: 1). Vulnerability denotes a potential for loss (Cutter, 1996) and is defined by three key processes, namely entitlement (economic capability),

empowerment (political/ social power) and political economy (historical/ structural class based patterns of social reproduction) (Watts and Bohle, 1993). In this chapter adaptive capacity is understood to mean the ability of people to cope with perceived risk and its determinants include:

> The range of available technological options for adaptation; the availability of resources and their distribution across the population; the structure of critical institutions and decision-making; human capital, including education and personal security; social capital, including property rights;…access to risk spreading processes; the ability of decision-makers to manage information; and public's attribution of the source of stress (O'Brien *et al*, 2004 b: 3-4).

As argued in previous chapters, both the socio-economic and physical landscapes in Mufurudzi have transformed during the last two decades the scheme has been in existence. The above analysis by O' Brien *et al* (2004 b) raises questions about how resettled land reform beneficiaries in a transforming environment depend on access to forests and woodlands (availability of resources), within the framework of the existing institutional arrangements (critical institutions and decision-making) through environmental information and indigenous knowledge systems (human capital and information management) as a means of coping with multiple stressors (adaptive capacity). Forest resources provide the resettled communities with the necessary mechanism for diversifying their livelihoods through off-farm activities and also for developing the adaptive capacity that is required to cope with risks brought by environmental shocks and stressors.

A key finding of this research is that for the majority of land reform beneficiaries the availability of land and forest and woodland resources in resettlement areas is a necessary but not a sufficient condition for livelihood improvement or for coping with shocks and

stressors. Another important finding of the research is that the most vulnerable groups of land reform beneficiaries such as the 'poor households', as well as child headed and female headed households, depend more directly on forest and woodland resources than the less vulnerable households like 'rich' households. Interviews were conducted with five categories of households, the successful 'rich' households, the 'poor', the middle income earners, and deprived households such as female headed and child headed households in order to establish the extent of their vulnerability. A total of forty households were selected to represent the above categories of households and five households were selected from each village. Prior to the interviews wealth ranking had been conducted in each village, by the villagers themselves.

The results from the ranking exercise were corroborated with longitudinal data collected through a questionnaire survey that had been conducted earlier. Secondary data sources were also used. The results reveal that different categories of households adopt different strategies of coping in a context of harsh macro-economic conditions. However, unlike in previous drought periods, the 2004-2005 drought caused widespread shortage of wild edible products and reliance on these products was significantly reduced. This suggests that although forest and woodland resources provide resettled communities with the means of coping with environmental hazards there is a point at which these resources fail to sustain the livelihoods of these communities. In other words, forest and woodland resources are not always adequate to cushion resettled communities from natural hazards. Thus the availability of these resources is a necessary but not a sufficient condition for constructing rural livelihoods. Under these circumstances vulnerable poor households

diversify their livelihoods by incorporating wage labour, sale of traditional beer, livestock sales and gold panning into their livelihood portfolios, and sometimes even resort to other coping strategies such as leasing of land to wealthier households.

7.2 THE ZIMBABWEAN MACRO-ECONOMIC AND POLITICAL LANDSCAPE

Several changes have affected Zimbabwe's macroeconomic environment since independence (Davis and Rattso, 1999; Tekere 2001). Davis and Rattso (1999) noted that the first few years of Zimbabwe's independence witnessed an economic boom. Tekere (2001) provides an outline of the major policies and programmes that have been adopted by government since that boom, some of which have had serious implications on the national economy, and in some cases triggering multiple stressors. The major programmes that were launched by government include the Economic Structural Adjustment Programme (ESAP), Zimbabwe Programme for Economic and Social Transformation (ZIMPREST), Millennium Economic Recovery Programme (MERP) and National Economic Development Priority Programme (NEDPP).

Both the reverberations of the failed Bretton Woods institutions' masterminded policies of ESAP, which the country adopted between 1991 and 1995, and the current isolation of Zimbabwe by the international community have taken their toll on the economy. Some of the key changes that took place during ESAP included trade liberalization, economic deregulation, as well as fiscal and tax reforms. A number of other macro-economic reforms have since been instituted in the wake of ESAP. Following the failure of ESAP the government embarked on its Zimbabwe Programme for Economic and Social Transformation (ZIMPREST) which lasted between 1996 and 2000. In its endeavour to

correct the ills of ESAP the government took measures to reform public sector enterprises through their commercialization and subsequent privatization. This too has largely failed.

An important measure that was adopted during this period was black empowerment through economic indigenization and land reform. ZIMPREST was an attempt by government to adopt a more socially orientated form of economic development than ESAP. The awarding of unbudgeted gratuities to war veterans by government in 1997 was in line with this new line of social thinking. It was also at this time that the country started to plunge into the severe economic and political crisis it is in today (OECD, 2003). While in the middle of implementing ZIMPREST a war that proved to be costly to the country broke out in the Democratic Republic of the Congo (DRC). The amount of money that Zimbabwe spent to sustain its troops in the DRC is still subject to speculation. However, the war derailed this social development process. Realizing that ZIMPREST had not yielded the desired results the government launched its less well known Millennium Economic Recovery Programme (MERP) that only lasted between 2000 and 2002. Coupled with the involvement in two wars within the sub-region, one in Mozambique and the other in the DRC, the occurrence of multiple droughts and widespread corruption within its financial services sector, Zimbabwe's economy started to collapse, causing paralysis to its once robust social security and health delivery systems, with imprints of vulnerability showing everywhere, including Mufurudzi.

Despite the launching of the above far reaching economic programmes there has been continual economic decline in the country, with the Gross Domestic Product (GDP)

falling from - 0.2 per cent in 1995 to – 4.8 and – 11.9 per cent in 2000 and 2002, respectively (Mumvuma *et al,* 2003). High unemployment rates, hyperinflation, high budget deficit, lack of foreign investment, a staggering foreign debt, shortage of foreign currency, unfavourable exchange rates and shortage of basic services and goods are gradually chocking the national economy. Foreign debt stood at US$4.5 billion in 2001, six times its 1980 level and the country has not been able to service its debts with the International Monetary Fund, World Bank, Africa Development Bank and other lending multilateral institutions, while 36.6% of the population is living on less than US$1 per day (AFRODAD, 2006). By 2004 the foreign debt had reached US$6 billion, even though the country is not classified as a Heavily Indebted Poor Country (HIPC) (ICG, 2004). The debt is expected to rise due to increased food imports in 2005 and 2006. The Zimbabwe Vulnerability Assessment Committee (ZVAC) has estimated that 2.9 million Zimbabweans require food assistance during this period. As the World Food Programme (WFP) prepares to assist about 4 million people with food the Zimbabwean government is planning to import 1.2 million tones of maize (FEWS, 2005).

ESAP triggered inflation and propelled it to unprecedented levels and raised the costs of farming inputs, some of which are imported, and forced some farmers to scale down their operations. Inflation has also led to the increase of the price of coal and other fuels, food, as well as essential farming inputs such as electricity, water and seed. The devaluation of the local currency at the end of July 2005 has raised inflation further, pushing food prices beyond the reach of many urban and rural households. The ensuing economic crisis was exacerbated by the land invasions of 2000 which led to the disruption of commercial

agriculture and reduced the country's foreign currency earnings. The negative publicity that the country has experienced since then has further eroded investors' confidence in the country and has ruined Zimbabwe's status as a destination for international tourists.

The shunning of the country by both tourists and investors, particularly from western countries, has led to the dwindling of the country's foreign currency reserves. Power jockeying between the Movement for Democratic Change (MDC) and the ruling Zimbabwe National Union Patriotic Front (ZANU PF) in the 2000 parliamentary and 2002 presidential elections, which were generally marred by violence, and the more peaceful 2005 parliamentary elections worsened the country's image by creating a political impasse. The MDC petitioned against the outcome of all the elections it took part in, while the ruling party claimed victory. After its founding in 1999 the MDC, comprising a loose coalition (alliance, according to Lahiff, 2003), of trade unionists, academics, leading businessmen, captains of industry, civic organizations, unemployed youths (mostly from urban areas) and white commercial farmers, became a formidable challenge to the ruling party which had enjoyed power since independence in 1980.

Following its defeat in the elections the MDC, which enjoys the support of most western countries, notably Britain and the United States (US), lobbied the international community to impose sanctions on Zimbabwe. Part of the outcome was the passing of the Zimbabwe Democracy and Economic Act (ZDERA) in 2003 by the US which prohibited Zimbabwean government officials and other persons who overtly support them from traveling to the US. Similar barns were imposed by Britain and its allies in the European

Union. The outcome of these measures was two-fold. The first outcome was that investors' confidence was further eroded as many investors became reluctant to invest in a country which was now largely perceived as a pariah state. Similarly, multilateral institutions and international donors withdrew their support from the beleaguered country.

The second outcome was a backlash on the MDC. Many ordinary people, especially in the countryside where the MDC has limited political support, believed the sanctions that the MDC was campaign for were worsening the economic hardships they were experiencing. Some actually believed that the MDC was a puppet party that was part of Britain's neo-colonial project to overtly control Zimbabwe. Others even believed the formation of the MDC was an attempt to reverse the process of land reform and land redistribution. Those opposed to the MDC, especially in ZANU-PF perceived it as an instrument of a much larger western imperialistic machinery and political hegemony (Lahiff, 2003). The support which the MDC enjoyed from the white farming community fomented these suspicions. The exclusion of Zimbabwe from the beneficiary list of countries that were granted debt relief and threats of expulsion from the IMF did not allay these suspicions but instead deepened them. In Mufurudzi the dethroning of a village head who was perceived to be sympathetic to the MDC serves to demonstrate the magnitude of the political tension that the political impasse created in resettled communities.

To the land reform beneficiaries in the resettlement areas the ascendancy of the MDC to power was viewed as an inevitable forfeiture of their main means of livelihood and quest for a better life through access to productive land. In turn, the MDC has argued that the land allocation exercise was designed to hoodwink people into voting for ZANU-PF in the 2002 presidential election (Chaumba, *et al*, 2003). In urban areas, however, the economic hardships that the country is grappling with are blamed on corruption, poor planning and economic mismanagement by the ZANU PF government. The jostling for power between ZANU PF and the MDC since 2000 has led to the evolution of a highly polarized and politically charged environment characterized by an impasse, a situation which is a stressor on its own.

After the passing of the ZDERA the Zimbabwean government responded by adopting the 'Look East Policy', where it sought to form development partnerships with its long-term friends in the former communist block and the Non-Aligned Movement, including Malaysia, Iran and China. China awarded Zimbabwe the approved destination status in 2003 which allows its nationals to visit Zimbabwe as tourists. However, the impact of the new policy on the national economy is yet to be felt, as the economic meltdown continues to gain ground. More recent government efforts to revive the crumbling economy led to the launch of the National Economic Development Priority Programme (NEDPP) whose main objectives are to increase investor confidence in the national economy and to reduce inflation (Herald, 20 April, 2006).

7.3 MULTIPLE STRESSORS AND THEIR IMPACT ON COMMUNITIES IN MUFURUDZI

The economic and political crisis described above has created multiple stressors that many ordinary Zimbabweans have found difficult to cope with. Basic commodities such as mealie meal, salt, bread, wheat flour, soap, cooking oil and sugar, as well as agricultural inputs like fertilizers, seed and pesticides are in short supply and are also beyond the reach of many average land reform beneficiaries in Mufurudzi. Lack of fuel has undermined the transport sector, making it difficult for the sick to seek treatment.

In Mufurudzi, clinics are sparsely located and in some places non-existent, while the only referral hospitals that are available are located in distant urban centers such as Shamva, Mt. Darwin and Bindura. For example, the nearest clinic in Section III of Mufurudzi is situated at Chakonda Business Centre (in Bushu Communal Area), about 10 km away, while the only road from which buses can be boarded to the provincial hospital in Bindura is more than 20 km away. To people living with AIDS and other ailments the task of seeking medication is daunting, especially for those that are already too weak and incapable of walking long distances. Specialized health personnel and drugs are also in short supply, rendering the once robust health delivery system both inefficient and ineffective.

Both unavailability of food and fuel shortages have become a setback to government food aid programme. Zimbabwe used to rely on its highly developed infrastructure to supply food in grain deficit areas, especially those in the semi-arid drought prone areas and other marginal areas. Apart from the crumbling of the infrastructure due to shortage of capital

for maintaining it, there is shortage of fuel for transporting grain to vulnerable communities. Between early July 2005 and the end of August 2005 there were no government deliveries of grain to Mufurudzi. In some areas roads have become impassable (The Herald: 8 October, 2005). Similarly, unlike in previous years, food aid from donors has been limited. This clearly demonstrates that famine and other forms of human catastrophes can be the act of man as much as they are an act of God (Swift, 1989). Cuts to the government's budget towards extension, donor fatigue and withdrawal reduced the once robust agricultural extension service to a rudimentary service as travel and subsistence budgets for extension workers in Department of Agricultural Research and Extension Services (AREX), formerly known as AGRITEX, became insignificant.

It is therefore clear that the economic meltdown that bedevils Zimbabwe is the culmination of prolonged exposure of the economy to both the impacts of natural phenomena and the human catastrophe that emanated from both within the country, as well as the international community, especially those related to the failure of IMF prescribed economic reforms. However, whereas some land reform beneficiary households are extremely vulnerable to the economic hardships experienced in the country others are relatively more resilient.

7.4 VULNERABLE LAND REFORM BENEFICIARIES

Ellis (2001: 4) has made the observation that in Sub-Saharan Africa (SSA) livelihood diversification occurs when "natural resource-based livelihoods are no longer able to provide a secure long-term livelihood on their own for a variety of reasons." According to Ellis (2001) these reasons include:

a) land subdivision at inheritance causing plots to be less viable for household food security
b) adverse environmental change or trends that increase risks associated with natural resource based livelihood activities
c) decline in agricultural markets due to rise in input costs as a result of the removal of subsidies under structural adjustment programmes (SAPs)
d) deterioration in access to rural public services such as health or education due to poor economic performance, civil war or cost recovery policies under SAPs, and
e) generic reasons for diversification such as: "mitigating seasonality and spreading risk in order to reduce individual and family vulnerability to adverse events and trends" (Ellis, 2001: 4).

While Ellis' analysis could provide insights about causes of livelihood diversification in many parts of SSA the case of Mufurudzi presents a much more complex picture in the sense that whereas some of the conditions outlined by Ellis apply to Mufurudzi others are at complete variance. For instance, land shortage is not a problem in Mufurudzi. In fact availability of excess land to some poor households, rather than lack of it, has been a source of livelihood diversification. Poor land reform beneficiaries who cannot farm all their land due to lack of inputs and labour frequently loan part of it to their richer neighbours in exchange for agricultural inputs, household consumables and in some cases money, and by so doing diversifying their livelihood portfolios. Also, rather than being the primary cause of livelihood diversification, adverse environmental change and cyclic trends such as drought have only exacerbated an already existing economic decline that

had been precipitated earlier by civil strife, involvement in wars and the legacy of a failed SAP.

Degrees of household vulnerability vary within the Mufurudzi community. The most vulnerable households include 'poor' households, child headed households, female and headed households. These households own only a few physical assets and lack any meaningful economic assets. The majority of these households comprise needy individuals who depend more on village charity and assistance rendered by relatives and neighbours (social networks) for survival rather than on income earned through farming. For example, Margaret Tatemu, a 16 year old (in 2005 when this survey was conducted) from Principe B village is the eldest child in a household of five children. She became the head of her household at the age of 13, following the death of both her parents in 2002 and since then she has assumed the responsibility of raising her siblings. She suspects that her parents died of AIDS, one of the major stressors affecting Zimbabwe. Margaret's household owns three rondavels, a small radio, a one hectare irrigable plot and a plough, as well as a few rabbits and chickens, all inherited from her parents.

The household rents part of its plot in order to raise income to meet its requirements such as school fees and basic commodities like food. Occasionally, she works on her neighbours' plots to supplement household income or in exchange for draught power since her household does not own any cattle. The village head and a few of her other neighbours occasionally render Magaret's household some assistance in kind, through food donations. Yet, Margaret still claims life in Mufurudzi is a lot better than what it

would have been if her family had remained in Madziwa where it originated from. Though Margaret's household is a typical example of a household whose poverty has worsened following the death of both parents, the household still has better acces to land and forest and woodland resources than many households that are found in the nearby communal areas. Furthermore, assistance is more readily available from 'affluent' neighbours, who can also afford to rent part of the household's plot. To Margaret's household livelihood is derived more from social assets, in the form of social connections and networks within the village, than from physical, human, financial and natural forms of capital, even though these assets are important for livelihood. Thus access to land and more abundant forest and woodland resources (physical and natural capital) have not directly translated into adequate livelihood inputs for Margaret's household.

Widowhood has equally undermined the household portfolios of several households which were previously well endowed. An example of such a household is Egna Musona's household. The household rose from humble beginnings where it only owned 2 cattle, a plough and a few rondavels, without any arable land of their own to a fairly affluent household which owned 12 cattle, 6 goats, 1 scotch cart, 1 wheel barrow, 1 gun, 1 radio, 1 television set, 2 ploughs, 1 motor cycle and a car. The household also managed to build a brick and mortar house in Mudzinge village where it was resettled and allocated a 4.8 hectare plot. Egna is the oldest of five women who were in a polygamous marriage which has created a household of 28 children and dependants. The death of her husband has left the large household that is failing to raise money for school fees and household food requirements. In 2005 when this survey was conducted Egna's household only managed

to produce 3900 kgs of maize, compared to about 5400 kgs they normally harvest, and thus faced a huge food deficit that year. The household also managed to harvest 1500 kgs of cotton in 2005, instead of the 4250 kgs that the household normally harvest. Drought has deprived Egna's household of both adequate food supply and source of income. In order to supplement their income and food requirements the household had already sold one head of cattle by August 2005 and were also practicing market gardening, as a way of diversifying sources of income in order to cope with the worsening macroeconomic environment in the country.

Unfortunately, the Mudzinge river, the only source of water that can be relied upon for gardening had completely dried up as the drought continued to worsen. The current economic hardships that the country is facing have exacerbated the plight of the household as the prices of all basic commodities continue to soar. At Madziwa shopping centre, where Egna's household normally buys these commodities, stocks have since dwindled while supplies are erratic, either due to lack of the fuel for transporting them from Shamva and Bindura towns where they are normally sourced or due to their unavailability in these towns. Bereavement in both of the cases cited above is noted as the major cause of increased household vulnerability, but the underlying cause is the worsening of poverty due to a failing macroeconomic environment.

There are numerous cases where the vulnerability of households can be traced to continual deprivation following resettlement. Without any assets to use or dispose during times of drought and economic hardship, poor households have fewer options for

survival. Unfortunately, the same conditions also limit the extent to which forest and woodland resources can be incorporated into their livelihood strategies. There are many reasons for this. First, Madziwa mine (a former Anglo-American mine), their main market for forest and woodland products such as wild fruits, game and firewood (natural capital), has closed because the amount of nickel ore available is too low for mining to be economically viable under the present macro-economic environmental conditions. The premises of the former mine are now the 'home' of Madziwa Teachers College. Over a thousand workers were either laid off or transferred to other former Anglo-American mines, especially Bindura Nickel Corporation and Shangani mines. The closure of the mine destroyed the market for forest and woodland products as well as the livelihoods of those who depended on them. This demonstrates that the macroeconomic crisis gripping Zimbabwe has created multiple and complex impacts, with serious implications for both industry and individual households. While some of these impacts are direct, such as soaring prices for agricultural inputs as a result of inflation, others are indirect, for example loss of market for forest and woodland products as a result of the closure of a local mine.

Second, unavailability of fuel in the country makes it difficult to transport these products, as well as farm produce to more distant markets in Mt. Darwin, Bindura and Shamva towns. This problem also affects the transportation of farming inputs such as pesticides and fertilizers which many of those who have been resettled are finding difficult to procure.

However, it is not only the child headed and female-headed households that are vulnerable to the stresses and shocks that currently prevail in Zimbabwe. Most low income and middle income land reform beneficiaries are finding it difficult to eke a living as their livelihood portfolios continue to deteriorate as a result of increasing inflation and shortages of basic commodities and unavailability of farming inputs. Ruji Gwashure, a physically handicapped widow has become dependent on the generosity of her son's family for basic needs. Her household that now owns 5 cattle, 8 chickens, 1 wheelbarrow, 1 plough, 1 cultivator, 2 brick and mortar houses (one of which was built with the aid of a government loan) and 2 rondavels (one of which she sleeps in). Before resettlement the household had no meaningful assets to talk of. However, the household is still poor and unable to meet most of its needs. In 2005, because of drought, the household only managed to harvest 2 bales of cotton and 150 kgs of maize, compared to the usual 6 bales and 400 kgs that are normally harvested in good years, respectively. The household produces neither food surpluses nor enough cash crops to meet Ruji's medical requirements. In her state Ruji cannot walk to the clinic and relies on ethnophramacists (herbalists) for medication, revealing not only the depth of the crisis in Zimbabwe but also the extent to which stressed people can incorporate the available technological options (O'Brien *et al*, 2004 b), including indigenous knowledge systems into their adaptive capacity to cope with crisis.

Most vulnerable households that fall in the same predicament, as well as Egna and Ruji's households, have been forced to restructure their household portfolios by natural and anthropogenic forces that are beyond their control. Many who fall into this category of

vulnerability have no meaningful financial assets such as bank savings or income from remittances or pensions. However, those who are more fortunate to have human capital in the form of abundant labour supply and or rare and specialized skills, and have fewer dependents have adopted better means of coping with the prevailing shocks and stresses. As noted by Chambers (1989: 5) "The main asset of most of the poor people is their bodies." Households that have an abundant supply of labour get piece jobs in the Principe irrigation scheme. These jobs involve menial tasks such as ploughing, weeding and harvesting of crops or spreading of manure in the fields. With their rare skills and knowledge ethnopharmacists capitalize on the failure of the country's health delivery system to earn a living. Those poor households that cannot afford formal means of medication consult their local ethnopharmacists, the majority of which charge a fee. A few other poor households resort to the sell of wooden artifacts and scarce basic commodities or gold panning. In some cases poor households sell livestock and use the proceeds to buy food and other necessities. In Zimbabwe, selling of livestock is normally taken as a key coping strategy to minimize risk during drought (Mombeshora and Wolmer, 2000).

There are cases where vulnerable households consist of children only, where both parents have died. In Mufurudzi II village, for example, the village head initiated a village social security project which was meant to assist one such household. Villagers took turns to donate food to the household. All of the children in the household were below the age of thirteen and had since dropped out of school. In this case lack of both physical assets and meaningful social connections have undermined the resilience of the household. For

many vulnerable resettled households the problem does not end with the need to cope with the current crisis, but the need to cope with the demands of the next planting season. The current crisis has eroded their capacity to acquire farming inputs for the coming season and the fear is that the crisis might continue to deepen even if both the macro-economic conditions and the physical environment improve, thus sucking them into absolute abject poverty.

The above noted problems have severely undermined the livelihoods of many vulnerable households. Shortage of water along river courses has also exacerbated the vulnerability of these households by undermining another potential source of food and household income, that is gardening. In Mudzinge and Zvataida villages shortage of water now compels some villagers to work on irrigable plots in Principe A and Principe B in exchange for vegetables and other foodstuffs. In Mudzinge this situation is worsened by the fact that the only borehole in the village is currently out of order. In most villages where dry-land farming is undertaken the preparation of tobacco seedbeds has been delayed due to shortage of water. In Chidumbwe I, for example, some farmers are planning to set up their tobacco seedbeds at Eben dam, which is about 15 kilometres away, a process that is not only expensive but time wasting as well.

7.5 LEAST VULNERABLE LAND REFORM BENEFICIARIES

For the richer households the livelihood strategies that are adopted in order to cope with the natural hazards such as drought and economic hardships are often considerably different from those adopted by most vulnerable land reform beneficiaries. To G. Mutaiki, one of the most successful beneficiaries of resettlement in Mufurudzi, there are

many ways of dealing with the current drought and prevailing economic hardships. Having been allocated a one hectare plot in a Department of Rural Development (DERUDE) funded irrigation scheme and a half hectare plot for dry-land farming in Principe A where he was resettled in 1982, Mutaiki has managed to amass a considerable amount of 'wealth' since his arrival from nearby Bushu Communal Area.

When he first arrived he had 3 cattle, 4 sheep, 1 scotch cart, 1 field harrow, 1 cultivator and 1 wheelbarrow. Compared to the majority of land reform beneficiaries in his village Mutaiki was already fairly successful when he was resettled. Today Mutaiki now owns a car, 43 cattle, 32 sheep, 18 goats, 2 harrows, 3 brick and mortar houses, 2 rondavels and 1 blair toilet. Mutaiki also rents an additional 4 hectares of irrigable land from his neighbours. His household has grown from 1 wife and three children in 1982 to three wives and eight children in 2005. Mutaiki attributes his success to the Master Farmer training which he completed in 1984. Farmer training programmes include the Master Farmer Training Programme (MFTP) and Commodity-Based Training Programmes (CBTPs). The MFTP is a government funded programme that was set up well before independence (Chipika, 1985; Pazvakavambwa, 1994). It was founded in the 1930s by the Department of Agricultural Development (ADVAG), which was responsible for giving extension services to 'native' smallholder farming communities that were found in the then African reserves. A parallel structure was the Department of Conservation and Extension (CONEX), which gave advisory services to white commercial farmers in the large commercial farming sector. The main objective of the programme was to spread modern scientific farming techniques in the reserves. Irrigation and the sale of livestock

have enabled Mutaiki to withstand the hardships associated with drought and a failing economy. He also has an abundant supply of livestock manure to cushion him from shortage of fertilizers. He keeps stocks of dry beans which he releases for sale during times of scarcity. This strategy helps to reduce competition from other farmers who normally sell their produce soon after harvest. He also stockpiles maize stubble and stover which he uses as stock feed during times of drought.

When compared to the majority of land reform beneficiaries in Mufurudzi, Mutaiki's household falls within the least vulnerable category of households. The household can afford substitutes for some basic commodities such as wheat flour and cooking oil. Through irrigation the household produces a variety of foodstuffs, including potatoes, sweet potatoes, green maize, butternut, beans, okra, and a wide range of leaf vegetables. These products are either consumed by the household or sold to urban markets, thus cushioning the household from both malnutrition and poverty. Vegetable dealers and vendors from urban markets hire their own transport to ferry produce and in the process the household worries less about the difficulties of sourcing transport in an environment where fuel supply is erratic. Most of the income that is earned by the household is kept in a bank account.

There are a few other relatively affluent households that compare with Mutaiki's household. Their livelihood strategies vary considerably from those that are adopted by poor households. The large number of livestock they own provide both social security and inputs for the next farming season. When the macro-economic environment worsens

they can raise the prices of some the basic commodities, which they often sell to other villagers. The 2004-2005 drought and prevailing economic hardships have actually created a rare opportunity for them to rent more land from poor households which cannot fully utilize their plots. Instead of purchasing fertilizers they apply manure to their fields using easily available cheap labour, which they are assured of harnessing every farming season. As they continue to become richer the poor are expected to become poorer, thus undermining the philosophy of egalitarianism that the whole process of resettlement was founded on.

The foregoing discussion raises the question whether land reform beneficiaries can cope on their own in an environment where multiple stressors such as economic decline, increase in morbidity due to spread of HIV/AIDS and political instability, and if so what is the role of forest and woodland resources in their coping strategies.

7.6 IMPORTANCE OF FOREST AND WOODLAND RESOURCES AS A STRATEGY FOR COMBATING PURTUBATIONS WITHIN THE MACRO-ECONOMIC ENVIRONMENT

The foregoing discussion clearly reveals that different households occupy different positions on the vulnerability scale. Under 'normal circumstances', where extreme multiple stressors are non-existent, 'rich' and 'poor' households would incorporate forest and woodland resources into their livelihood strategies differently, especially when their livelihoods are threatened by drought and harsh macro-economic environmental conditions. In the past, when confronted with drought, for instance, 'poor' households in Mufurudzi would forage for wild foods, including wild fruits, mushroom, fish and

venison and would also diversify their household income sources by selling these wild products to richer households.

Under the current crisis of recurrent drought and prevailing economic hardships the dependence of communities in Mufurudzi on forest and woodland resources presents a completely different picture from what is normally expected. The extent to which households in these communities depend on forest and woodland resources is variable and in some cases reliance on some forest and woodland products has actually decreased. This is due to a number of factors. First, for reasons that still need to be established, unavailability of wild foods during the 2004-2005 drought, especially fruits, made woodlands an unreliable source of food, making life very difficult for most poor households who were threatened with famine. *Chenje* and *hwakwa*, fruit from *Diospyros kirkii* and *Strychnos pungens*, respectively, which are generally regarded as stomach fillers were scarce during this drought. Second, salable forest and woodland products such as firewood no longer have a reliable local market. Madziwa mine, which used to be the major market for firewood has now closed following the exhaustion of ore. A teacher's training college, Madziwa Teachers College, now occupies the premises of the former mine. Third, liquid hydrocarbon fuels are in short supply, making it difficult to transport firewood or any other salable forest products to more distant markets in urban areas such as Shamva, Mt. Darwin and Bindura. Fourth, game has emigrated as recurrence of drought continues to reduce the main sources of water for wild animals, such as Mufurudzi and its tributaries like Mudzinge and Zvirungurira, to bare stretches of sand.

Drought has not only led to widespread crop failure but also to the drying of most perennial streams. Shortage of water has reduced the quality of pasture for both livestock and wildlife. Most wild animals that normally threaten crops in the resettlement scheme have since emigrated, making off-farm coping activities such as fishing and hunting impossible. Both fish and game have varnished from most parts of the resettlement scheme. Wild animals such as warthog, wild pig, duiker and other small antelope no longer exist in the area due to change of habitat, thus consequently reducing the supply of venison within the local community.

Despite the limitations that forests and woodlands have as a source of livelihood under the current crisis, forest resources are still an important source of many useful products for the poor. In fact there is an increase in reliance on some forest and woodland products, especially herbal medicines, biopesticides and baking products, some of which are shown in Appendix IX. For instance, different parts of tree species such as *Lonchocarpus capassa; Gymnosporia buxifolia; Cassia spp.; Zanha africana; Syzygium spp.*, are used to treat different types of human ailments, including headaches, toothaches, stomach aches, sore eyes, impotence and sexually transmitted infections, while *Aloes* and *Solunum pundarifome* are used to produce antihelmenthic products and pesticides. These natural products are increasingly becoming important substitutes for expensive pharmaceuticals and livestock medicines, most of which have since run out of supply in Zimbabwe. NTFPs such as insects, oil extracts, cosmetics and herbal teas are becoming increasingly important to the poor majority. In this regard the macroeconomic crisis has

created an opportunity for local communities to unlock their indigenous knowledge systems as well as their natural capital to cope with multiple stressors.

7.7 CONCLUSION

Within the context of resettled communities in Mufurudzi, the crisis that currently threatens livelihoods within the scheme is the outcome of long-term processes which have resulted from factors that are largely beyond the control of these communities. These factors stem from a deepening economic crisis that is gripping Zimbabwe as a whole, as well as the occurrence of inadvertent environmental shocks like drought. Though useful, the anticipatory adaptive interventions that were provided by the government, the private sector and the donor community have not benefited all land reform beneficiaries in the same way. Evidence from Mufurudzi suggests that adaptive interventions have triggered social differentiation, creating classes of both 'affluent households' and 'pauper households', characterized by varying degrees of livelihood vulnerability and resilience.

Though consensus may never be reached about what precipitated the current macroeconomic crisis in Zimbabwe, what is certain is that the shocks and multiple stressors associated with the crisis have undermined the livelihoods of land reform beneficiaries in Mufurudzi, especially the 'poor' who are vulnerable and less resilient. This applies most when the poor are faced with extraordinary crises that have the capacity to undermine the way land and forest and woodland resources are incorporated into those strategies meant to cope with the crises. It can therefore be concluded that even though land and forest and woodland resources remain absolutely vital to the survival of

resettled communities there is a limit on the vulnerability scale beyond which these resources can be a sufficient buffer for coping with crises, and that limit depends on the household's position on the vulnerability scale, its adaptive capacity and the gravity of the crisis it is trying to cope with.

In summary, there are three key issues that emerged from this research. First, poor households rely on natural capital as a means of coping with environmental shocks and multiple stressors. This capital includes land and forest and woodland resources, which are the basis for a number of important livelihood activities. These activities include on-farm activities, as well as off-farm activities such as craft making, and to a small extent sale of bush meat and fish, as well as the practice of traditional medicine. Despite the challenges that they face in their daily struggle to eke a living the poor are better off than they would have been had they not been resettled. Second, access to forest and woodland resources does not on its own provide a sufficient mechanism for building sustainable livelihood profiles. Often times these resources are not available in enough quantities to sustain a living. Moreover, in many places these resources are under immense pressure. As a result many poor households resort to other livelihood strategies, including gold panning, wage labour, sale of traditional beer and the leasing of land to wealthier households. Third, wealthier households have benefited more from resettlement. Even though some of them were already reasonably well off prior to resettlement, resettlement has improved their situation and made them more able to adapt to the current microeconomic crisis. Besides greater access to land, resettlement has also provided them with a source of labour, as well as markets for their products.

CHAPTER 8

CONCLUSION

8.1 INTRODUCTION

This thesis has examined the relationship between resettlement, livelihoods and environmental resources. The purpose of this concluding chapter is to highlight those critical issues that underlie this relationship and provide a framework of how they could be analyzed. In this chapter key issues relating to rural livelihood systems and their dependence on forest and woodland resources are revisited and examined within local, national and global contexts. In this context, the chapter first provides a summary of the key findings of the thesis. Section 8.2 explores the scope for integrative approaches in the management of forest and woodland resources in resettlement areas, while section 8.3 examines the critical factors that influence the relationship between the state of forest and woodland resources and their sustainability within the context of an integrated framework. Lastly, section 8.4 deals with how co-management can be incorporated into CBNRM initiatives for forest and woodland resource conservation.

The chapter is based on the key arguments that were presented in this thesis. First, the thesis argues that there are many theoretical ways of analyzing the relationship between people, resettlement and environmental resources, including forests and woodlands. These include orthodox ecological theories, environmental transformation theories, CBNRM and sustainable livelihood theories. These theories are not completely independent of each other. There are certain cross-cutting issues that act as common reference points to all of them. Second, resettlement does not necessarily lead to environmental destruction, but instead it provides the mechanism for unlocking the

natural capital that local communities require for livelihood. Third, forests and woodlands are an important form of natural capital. These resources play a pivotal role in both resettlement areas and the abutting communal areas. Apart from providing important products, forest and woodland resources provide a mechanism through which land reform beneficiary communities can diversify their livelihoods. Fourth, the sustainability of forest and woodland resources rests on devolution and the involvement of legally defined legitimate institutions rather than technocracy or autocracy. In Zimbabwe, such a situation is only possible if the existing policy and legal regimes are reformed. Fifth, although forest and woodland resources are an important buffer against environmental shocks and multiple stressors the availability of these resources is only a necessary, but not a sufficient condition for coping with extraordinary shocks and stressors associated with serious macroeconomic crises. Sixth, the micro-processes that are linked to the extraction and use of resources from forests and woodlands by individual households, some of which are a threat to these resources, are entwined with the macro-processes that operate at national and global levels. This makes resource use extremely complicated. Seventh, in conclusion the thesis argues that due to the complexity of the relationship between people, resettlement and environmental resources an integrated analytical framework must be employed when examining this relationship. In this regard, the chapter highlights and forewarns of the dangers of applying inappropriate or simplistic solutions. The chapter concludes by defining the role that co-management could play in the management of forest and woodland resources within that framework.

The purpose of this research was to address the questions raised in Chapter 1, about the state of forest and woodland resources and their sustainability under the governance of co-evolving local and technocratic institutions within a planned resettlement environment. In older planned Zimbabwean resettlement schemes 'grafted communities' are involved in the management of environmental resources under complex land administration and institutional arrangements. As shown in Chapter 2, debate still lingers on how the human - environment nexus should be conceptualized. Using the battery of methods discussed in Chapter 3 it has been possible to demonstrate in subsequent chapters that environmental change in Mufurudzi has led to complex spatial patterns in tree resource distribution. This change is more akin to environmental transformation than environmental degradation. Complexity is evident at both macro and micro levels, as noted in Chapter 4, and clearly exhibits the imprints of anthropogenic influence.

Though environmental transformation is not always easily identifiable at the macro-level it is conspicuous at the micro-level. Consequently, as demonstrated in this study, on its own aerial photo interpretation (API) does not yield results that truly reflect the status of forest and woodland resources in Mufurudzi, nor does it sufficiently reveal the nature of pressure to which these resources are subjected. This study shows that deforestation is a subtle process whose intricacies may not be wholly understood through aerial surveys. In Chapter 5 and Chapter 6 it was further demonstrated that forest and woodland resources constitute livelihood inputs that are of critical importance to the productive and extractive systems of the economy of resettled communities. As argued in Chapter 5 and Chapter 7,

the sustainability and robustness of rural livelihoods depend on how rural communities connect with natural capital, including forests and woodlands.

One way or the other, all land reform beneficiaries in Mufurudzi rely on forest and woodland resources in their daily struggle to eke a living. The livelihoods of many land reform beneficiaries in Mufurudzi resettlement scheme and residents of the surrounding communal areas abutting this scheme are dependent on forest and woodland resources that are found in the scheme. In some cases forest and woodland resources have enabled some households to cope with environmental stressors and shocks such as drought while in other cases some households have even used these resources as a basis for diversifying their livelihoods. When subjected to the onslaught of multiple stressors and shocks, vulnerable poor households in Mufurudzi incorporate natural capital in their strategies for coping with inadvertent risk. This confirms the conclusion from earlier research that miombo woodlands offer a number of opportunities to local communities (Nhantumbo and Kowero 2001).

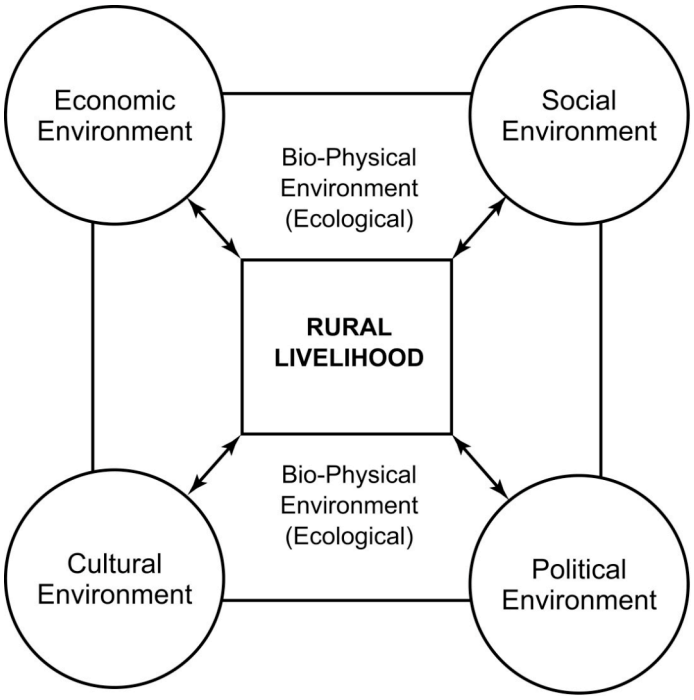
In Mufurudzi, forest and woodland resources, can be viewed as an integral component of the rural economy because they provide a wide range of essential inputs for their livelihood systems and survival, including food, fodder, energy, shelter and raw materials for craftwork. Due to the importance of forest and woodland resources as a source of food for resettled communities in Mufurudzi, the conclusion that: “wild species that were outstandingly important food sources developed a special place at the culture-nature interface across southern Africa” (Cunningham and Davis, 1997: 447) is irrefutable.

However, extreme and extraordinary stressors create constraints that undermine the relationship between people and natural capital, and in the process subdue livelihood sustainability. This is especially the case with shocks such as severe droughts and the multiple stressors associated with Zimbabwe's worsening macroeconomic environment. Livelihoods are sustainable when they are resilient and capable of being maintained or even enhanced without undermining the natural resource base (Chambers and Conway, 1992). In this context, a key issue that emerges from this research is that the complex relationship that evolves between resettlement and natural capital entails that we employ an integrated approach for us to fully understand it.

8.2 SCOPE FOR INTEGRATIVE APPROACHES IN THE MANAGEMENT OF FOREST AND WOODLAND RESOURCES IN RESETTLEMENT AREAS

As shown in figure 8.1, rural livelihoods are closely connected to the prevailing biophysical, social, economic, cultural and political dimensions of environment. This also calls for the adoption of a 'multi-spectral approach' in which different theoretical frameworks are analyzed collectively so that the relationship between people and environmental resources is more fully understood. Such an approach would integrate the various theoretical schools of thought (discussed in Chapter 2) in any scientific enquiry that attempts to explore the relationship between resettlement, rural livelihoods and environmental resources.

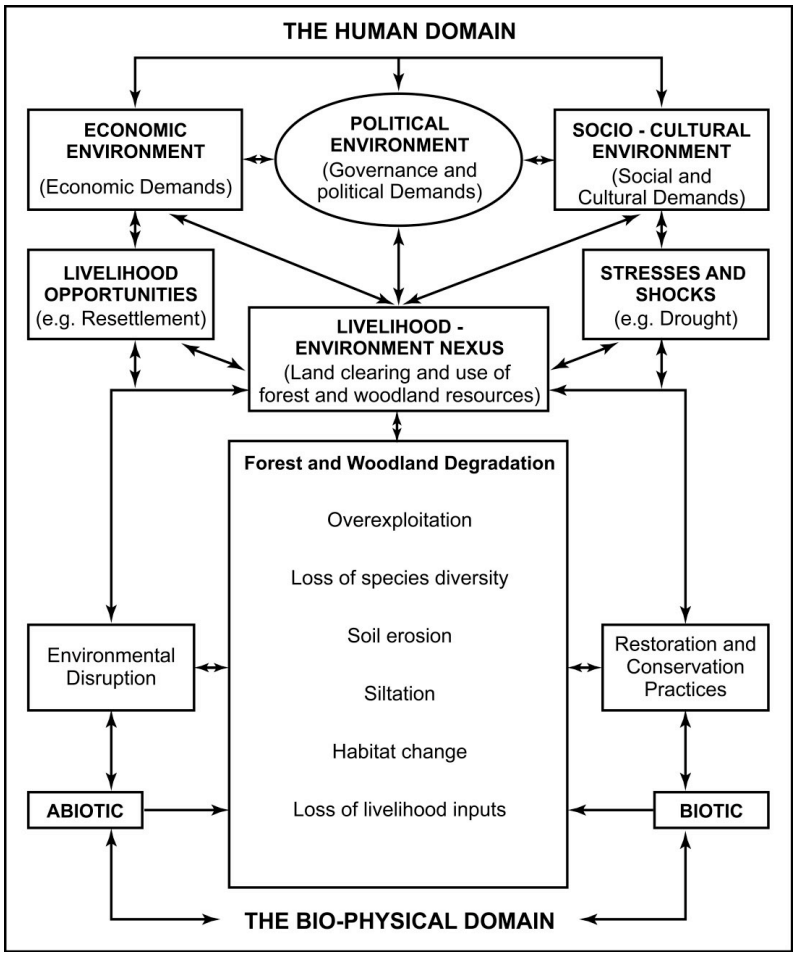
Figure 8.1: Relationship Between Rural Livelihood and the Environment



The livelihoods of rural communities are beset in a changing ecological environment and engendered by a set of cultural, political and socio-economic phenomena that define which natural resources can be used and how these resources are used for livelihood. However, the way natural resources are used is an interplay of the economic environment (physical and human capital, financial resources), political environment (local, national and international institutions) and socio-cultural milieu (social networks, indigenous knowledge systems, technology and institutions), that prevail within and beyond these communities. This makes natural resource use (or abuse) a complex process. Consequently, solutions to the problem of resource abuse and depletion can not be solely sought within the confines of the geographical region, least of all the geographical boundary defining the community.

Figures 8.1 and 8.2 demonstrate the complexities that underlie the relationships between livelihoods and forest and woodland resources in Mufurudzi.

Figure 8.2: Relationship Between People and Forests and Woodlands Mufurudzi



The model in figure 8.2 provides an integrated framework showing how resources are connected to people. While it should be understood that forests and woodlands are prone to degrading micro-processes linked to overexploitation, loss of species, erosion, and siltation, the restorative and conservation practices that local communities undertake through CBNRM as well as the involvement of local institutions should not be underestimated. Furthermore, as shown in both figures 8.1 and 8.2, the physical environment and human related phenomena are intricately interlocked into one cascading system whereby an impact on one part of the system will have a domino effect on the

entire environment. The occurrence of shocks and multi stressors or livelihood opportunities within the environment transforms both the human and biophysical domains of the environment to create a new set of relationships between people and natural resources. Changes in the biophysical environmental can have the same consequences on livelihood vulnerability as changes in the economic and socio-political environment. For example, recurrence of drought and the worsening of the macroeconomic crisis in Zimbabwe have had the same effects on vulnerable resettled households in Mufurudzi. Since the relationship between rural livelihoods and forest and woodland resources is a complex one, simplistic solutions to the problem of resource management should be avoided. Which combination of solutions will reduce loss of forest and woodland cover in Mufurudzi, however, depends largely on the validity of the premises on which the solutions are based.

In the past erroneous simplistic solutions, usually revolving around tree planting, stricter enforcement of conservation laws, adoption of better government policies and other technocratic sectoral solutions that are in line with the Neo-Malthusian doctrine, were implemented but with little success. Such solutions have already failed in some villages in Mufurudzi. In general, as noted in Chapter 6, the doubts that are being expressed over forest and woodland resources sustainability in resettlement areas can be traced from the technocratic nature of the implemented solutions, the majority of which were simply imposed by national governments and NGOs without sufficiently consulting the intended beneficiaries, that is the resettled community. Where sufficient consultations have never been done, participation in decision-making is hardly ensured, thus yielding projects that

were not only considered as onerous by local communities but also inappropriate. Previous experiences reveal that there was little synergy between suggested solutions, while in some cases compatibility with the prevailing local biophysical conditions, as well as the political, economic and socio-cultural milieus was ignored.

It has since emerged that most of these simplistic and inappropriate solutions were wrong prescriptions based on wrong diagnosis. Many solutions that have been suggested to ameliorate the problem were simplistic interventions that were intended to reverse those environmental conditions that were perceived as undesirable, while others required the manipulation of underlying factors such as government policy and stricter law enforcement. The 'village woodlot fallacy' is a typical example of an inappropriate prescription as it ignores other fundamental issues such as ownership, security of tenure and the role of stakeholders, and other issues that regulate use and conservation of forest and woodland resources. The failure of community woodlots which were set up in the Mufurudzi following the launch of the Rural Afforestation Programme by the Forestry Commission in the early 1980s is an example that highlights the flaws of the 'village woodlot fallacy'.

From the foregoing discussion it has been noted that pressure on forest and woodland resource results from a wide range of conditions which threaten the sustainability of rural livelihoods. The successful implementation of these solutions would be impossible unless an integrated approach in forest and woodland resource management is adopted. Such an approach is necessary because of the complex relationships that exist between natural

resources (including forest and woodland resources) and macro-economic policies, food production, agriculture and people (Nhantumbo and Kowero, 2001). Furthermore, causes of deforestation are synergistically linked, and thus cannot be dealt with in isolation. As noted by Nhantumbo and Kowero (2001: 4):

> There are strong linkages between macro-economic policies (such as monetary, fiscal, exchange rate, trade and employment) and sectoral policies (such as agriculture, forestry, population and the environment).

Many underlying causes of deforestation that affect Mufurudzi and other resettlement schemes in Zimbabwe stem from macro-economic and sectoral policies, which are normally drawn independent of one another, yet in reality their effects are cumulative and interdependent. To deal with these causes an integrated and more holistic approach would therefore be required. In Zimbabwe as a whole there would be need to fully consider and harmonize the strategies and objectives of resettlement with those of the government departments and ministries that deal with livestock farming, arable farming, water supply, rural resources and forest and woodland resources, as well as general macro-economic conditions. Alluding to this view, McNamara (1993: 1) maintains that:

> The future of forests, trees and woodlands in Zimbabwe will depend, in part, on how more general problems in the agricultural sector are addressed. Core issues affecting the agriculture sector that have implications for forest conservation and management include issues of land distribution and use, government resettlement polices; the productivity of farmers in communal and resettlement areas; and agricultural pricing and marketing.

Another flaw that the integrated approach addresses is the misconception that forest degradation is the consequence of poverty, when in fact the problem can be precipitated by rising incomes (Arnold, 2001). In Mufurudzi, for instance, it is the more enterprising affluent villagers who can afford to grow tobacco, who are responsible for most of the

deforestation that is taking place. The poorest members of the community can hardly afford tobacco inputs. However, at a macro-level the argument that deforestation is partly the outcome of poverty is quite valid in the case of Mufurudzi, where virtually every villager depends on firewood for heating, cooking and at times lighting, because they cannot afford to use electricity.

Ironically, in Mufurudzi, failure to adopt an integrated approach has created two extremes. One extreme is a case in which the settlers regard conservation as the purview of government authorities, requiring stricter enforcement of legislation. The other extreme is the pursuance of abrogation in the name of devolution, whereby the responsibility of managing forest and woodland resources has been completely surrendered to local communities under the stewardship of the Chaminuka RDC, even though these communities do not have the capacity to manage them. Furthermore, it is erroneously assumed that local communities are willing to work towards sustainable forest management, yet in reality they are not always willing to do so (Watts, 2003). Under these two extremes the governance of forest and woodland resources lies beyond the scope of both the local community and the government, thus creating a gap of ill managed natural capital.

Another key issue that emerged from this research is the question of resource sustainability. The integrated framework helps us to contextualize resource sustainability. Forest and woodland resources in Mufurudzi are under pressure, especially in older villages where livelihoods are based on dry-land farming. However, evidence in

Mufurudzi supports the view that the local environment has undergone transformation, rather than outright degradation. Leach and Mearns (1996) have warned that when analyzing linkages between human activity and the environment, much of what might be considered to be degradation by foresters and ecologists or depletion of forest and woodland resources might actually be mere transformation of the resources or even an improvement of the resources by those depending upon them for livelihood systems' inputs.

Nevertheless, if incessant pressure on natural capital persists unabated the environmental rights of land reform beneficiaries will eventually be undermined. The World Charter of Nature of 1982 declares that all human beings have the fundamental right to an environment adequate to their health and well-being (Kiss, 1992). With respect to the conservation of forest and woodland resources, Mufurudzi resettlement scheme may in time fail to satisfy this condition, since pressure on forest and woodland resources has the capacity to erode the livelihood options of the communities resettled there. Loss of forest and woodland resources undermines both resource sustainability and the fundamental right of the local community to a healthful environment, and reflects the community's failure to uphold the responsibility to protect it. However, there are two main reasons for expressing optimism regarding the future of forest and woodland resources in Mufurudzi.

First, many ecological resources are still available even though they are under pressure. Loss of forest and woodland cover, soil erosion and river siltation have reduced fish catches and altered wildlife habitats, but these resources are still available. Second, forest

and woodland products still play a significant role in the livelihood portfolios of many households. In fact natural products from forests and woodlands, including herbal medicines, antihelmenthic products and bio-pesticides are increasingly becoming important substitutes for conventional market based products, particularly now when Zimbabwe is experiencing a worsening macroeconomic environment. The cornucopian view expressed by Scoones and Motose (1993), that wood resources are not yet in short supply in Zimbabwean resettlement areas is valid, at least for the case of Mufurudzi. However, the increasing distances travelled by villagers while sourcing forest and woodland products are enough evidence of future decline. Third, evidence from this research suggests that informal CBNRM still has an influence in the way forest and woodland resources are used and protected. Informal CBNRM has the potential to enhance livelihood sustainability in Mufurudzi if its role is adequately defined. However, this potential can only be useful if formal and informal CBNRM institutions are merged to create more robust institutions.

8.3 CRITICAL FACTORS INFLUENCING THE RELATIONSHIP BETWEEN THE STATE OF FOREST AND WOODLAND RESOURCES AND THEIR SUSTAINABILITY IN MUFURUDZI RESETTLEMENT SCHEME: THE CONTEXT OF THE INTEGRATED FRAMEWORK

8.3.1 Factors underlying resource threat

There are many reasons why forest and woodland resources are under pressure in Mufurudzi. At macro-level, the forest and woodland resources that are found in resettlement schemes can be considered as common property resources (CPRs), since their users are only regulated by a set of state permits that are granted upon one's resettlement. In the case of Mufurudzi, the resettled community has been granted usufruct

rights for forest and woodland resources through this system of permits. However, at a micro-level, that is at household level, it would appear forest and woodland resources are 'open access resources', free and open for use by everyone without subject to state control or community regulation, save for the societal controls that are applied opportunistically on an *ad hoc* basis. These controls take in the form of informal CBNRM. Previous research has generally shown that when a particular resource is plentiful there is hardly any need for property rights and the resource tends to be exploited as an open access resource without any social control (Bruce, 1999). The case of Mufurudzi definitely fits this scenario. In Mufurudzi, even though forest and woodland resources are under pressure, they are still considered as plentiful and are thus being treated as an open access resources.

Consequently, at the micro-level forest and woodland resources are prone to exploitation by individual households without sanction. This situation has resulted from numerous factors, including legal loopholes, lack of social cohesion, weak institutional arrangements, commercialization of forest products and lack of sufficient government support, especially through extension and funding of community projects. However, social stratification has had an influence on patterns of their use as well.

Micro processes regulate the decisions that are made by ordinary households about resource use, but in tandem with macro-level variables such as national institutions, policy, legislation, infrastructure, level of technology and market forces that prevail within the broader environment Kaimowitz and Angelsen (1998). Thus, in Mufurudzi,

macro processes constitute the underlying conditions that shape the decisions that are made by the users and 'managers' or principal stakeholders in forest and woodland resource management, that is individual households.

Furthermore, as already noted, there are many constraints that militate against conservation of forest and woodland resources in Mufurudzi resettlement scheme. These include pernicious biophysical environmental conditions such as drought and pests, as well as the prevalence of socio-economic factors like lack of social cohesion, high costs of the inputs required for tree cultivation, and the opportunity cost associated with tree growing, which make it difficult for local communities in Mufurudzi to replace used forest and woodland resources. Underlying these factors are economic, cultural, socio-political and bio-physical environmental conditions that define the controls of natural resource use and conservation (Chapters 6 and 7), (see figure 8.1). Such conditions have fundamental implications on resource governance since they regulate the state of the national legal and institutional frameworks, tenurial insecurity, population growth and the subtle forms that are often taken by deforestation.

8.3.2 Tenurial insecurity and weak legal and institutional framework,

Tenure insecurity introduces uncertainty and risk that in turn undermine the livelihood gains that extra land provides (Chimhowu and Hulme, 2006). In the absence of clear legally defined tenurial niches the issuing of permits to resource users in resettlement schemes will continue to foster a sense of insecurity among resettled peasants. Without title deeds to the land allocated to them, settler communities are indirectly subjected to perpetual threat of eviction. To the contrary, however, it has been argued that government

officials are able to sanction practices that are environmentally unfriendly by threatening transgressors with eviction, a situation that would not be possible if settlers had title deeds.

Nevertheless, under the present circumstances where settlers do not legally own the land, communities in resettlement areas are more inclined to deplete forest and woodland resources rather than conserve them. With restricted judicious use, the resultant over-exploitation of forest and woodland resources in some parts of Mufurudzi has heightened pressure on these resources. Tenure insecurity also restricts the range of trees that land reform beneficiaries plant in their woodlots. In Mufurudzi, villagers prefer to grow exotic trees (especially *Eucalypts* and fruit trees), species they are able to claim ownership of without contest.

Similarities exist between the way tenure security affects resource management in communal areas and the way it is done in resettlement areas. In Zimbabwean communal areas trees are more intensively managed within and around homesteads, where there is relatively high *de facto* tenurial security (Scoones and Matose, 1993) and where tenurial niches are sanctioned by customary controls (Nhira and Fortmann, 1993). This also applies to Mufurudzi resettlement scheme, where individual households give more protection to trees in their fields and homesteads than to those in common woodlands. In Mufurudzi less care is given to indigenous trees in all woodlands that are perceived as 'open access resources', a factor that has significantly contributed to deforestation. The findings of this study strongly suggest that the pressure to which forest and woodland

resources in Mufurudzi are subjected is consistent with Hardin's (1968), argument that people tend to compete in order to maximize individual utility from resources that are considered as common property.

The above situation has been exacerbated by poor integration of national systems of statutes and traditional customs. In Mufurudzi and other resettlement schemes in Zimbabwe as well, this weakness is accentuated by poorly defined roles and responsibilities within the provisions of the national legislation that govern the control, use and conservation of forest and woodland resources. The inability of the modern state to recognize the natural resource management roles of local communities and the widespread reconstruction of governance that typifies new local government institutions, which characterizes the entire sub-Saharan African region (Matose and Wily, 1996: 197), has led: "to conditions in which the locus of responsibility is confused." This form of dualism has also become evident in South Africa where traditional authorities now coexist with elected local authorities and new community based institutions in the former homelands (Ntshona and Lahiff, 2003), following the abolition of apartheid.

In Mufurudzi the coexistence of local institutions (both traditional and contemporary) and state institutions undermines CBNRM in those areas where they don't complement each other. In legal terms, CPRs in resettlement schemes, including those in Mufurudzi, are owned by the state while the settler communities enjoy usufruct rights. Thus, resettled communities in Mufurudzi have been granted the right to use forest and woodland resources but denied sufficient opportunity to manage the resources. What would be

expected when people are allowed to use resources they don't legally own? In the absence of title of ownership and tenurial security the sustainability of the resources over which the rights were granted cannot be guaranteed. This situation becomes worse under circumstances where: "local populations consider themselves the original owners of the woodlands that have been nationalized, and still depend upon them for elements of their livelihood" (Matose and Wily, 1996: 196), which is the case with Mufurudzi where there is general lack of a strong institutional framework for resource management.

The situation in Mufurudzi presents a microcosm of the plight of small-scale landholders in Zimbabwe, where the rights of this constituency remain vulnerable while the conditions for agricultural livelihoods are highly unfavourable (Lahiff, 2003). However, the granting of title deeds would lead to the privatization of land, as well as forest and woodland resources, which is currently not in line with government philosophy. Ironically, while the Zimbabwean government is discouraging land privatization, particularly in resettlement areas, this process is being encouraged in some countries within southern Africa. In Mozambique, for example, privatization is intended to stimulate the development of a market for land, boost revenue from untaxed informal market in peri-urban lands and identify areas that have potential for investment (Norfolk, *et al* 2003a).

8.3.3 Other critical factors

As has been reported elsewhere in Zimbabwe, the community in Mufurudzi comprises different natural resource user groups who are organized "into traditional social units, other individuals rallying behind the modern leadership structures, and traditional and

political elites maintaining power over the populace", (Shackleton and Campbell, 2001: 62), unfortunately at the expense of social cohesion. Consequently, communities in Mufurudzi are riddled by conflicts, both those emanating from within the communities themselves and those that occur between them and other contending resource users abutting communal areas.

Furthermore, in Mufurudzi, neither the contemporary nor traditional institutions have been sufficiently involved in formal CBNRM, while the role of government departments such as the Forestry Commission and Department of Natural Resources in formal CBNRM has remained elusive. Instead of forming partnerships with local institutions these government departments have adopted a condescending role and remained aloof. Their failure to adequately engage the local community results from lack of capacity on their part. This failure is exacerbated by the synergy between micro and macro processes emanating from within Mufurudzi itself as well as from the broader economic, cultural and socio-political environment.

In summary, both proximate and underlying conditions threaten the sustainability of forest and woodland resources and the livelihoods of land reform beneficiaries in Mufurudzi. Critical underlying conditions include the failure by some members of the local community to benefit from different adaptive anticipatory interventions in an environment where both the biophysical and macro-economic environments are unstable. As demonstrated in Chapter 7, since 1990 macro-economic instability in Zimbabwe has induced shocks and multiple stressors within the local environment, and in the process it

has altered the way land reform beneficiaries relate to environmental resources in many ways. In this respect the link between livelihoods and forest and woodland cover becomes a complicated one, especially in an environment where the majority of the people are resource poor and vulnerable. This confirms the observation that was made by Shackleton, *et al* (2000: 1) that:

> The livelihoods of the poor are complex and dynamic, typified by a diverse portfolio of activities that not only enhance household income but also food security, health, social networks and savings.

Indeed, to the communities in Mufurudzi, loss of forest and woodland resources can be equated to loss of income, savings, health, food and other basic needs, depending on the livelihood portfolio a household has or its position on the vulnerability scale. Under such circumstances, an integrated approach would be required to deal with the management of forest and woodland resources in a more holistic manner.

8.4 CO-MANAGEMENT

As argued in this chapter a viable solution to deforestation in Mufurudzi, and perhaps in other resettlement schemes as well, is an integrated approach in which collaborative management of natural resources plays a central role, as suggested by Ingles *et al* (1999). The multiple stakeholders that exist in this scheme can share decision-making about use and conservation of forest and woodland resources through formal CBNRM structures. Even though it is not a panacea to the problem of deforestation, collaborative management (co-management), also called joint-management (Arnold 2001), could ensure that all causes of the problem, whether direct or indirect, immediate or underlying, micro or macro, are addressed through synchronization of the complementary roles and

efforts of all meaningful stakeholders, including government, quasi-government, NGOs, villagers and others.

Bruce and Fortmann (1992) have, however, warned that communities seem to succeed in managing CPRs if they have clear-cut rules that are enforced by both CPR users and officials, internally adaptive institutional arrangements, the ability to nest into external organizations for dealing with the external environment, and different decision rules for different purposes. From this argument it can be concluded that CPRs, including communal forest and woodland resources in Mufurudzi, can only be sustainably managed by meaningfully engaging the roles of all important stakeholders.

Arnold (2001: 6) posits that:

> The arguments in favour of joint management have been more prominent as it has become apparent that often, user communities and institutions are unable to take on responsibility for control and manage unaided.

In Mufurudzi the challenge is to identify real community representatives who can truly articulate the interests of its members as co-managers in a resource sharing mechanism where all settlers are beneficiaries, without succumbing to proxies of outsiders or risking forfeiture of settler permits if such interests are not congruent with those of the state. In the case of Mufurudzi, this problem is compounded by the fact that the Shamva Rural District Council, to whom the authority and responsibility of managing forest and woodland resources in all areas under its jurisdiction have been devolved by central government, lacks the capacity to monitor the resources, or provide extension to the resettled farmers or fund community forestry projects. This problem is common to all

Rural District Councils (RDCs) in Zimbabwe. Against this background the efforts of local institutions in Mufurudzi and those of the state and its surrogate institutions such as the Chaminuka RDC, could be made complementary through co-management, a feat that would require the setting up of new formal CBNRM structures. However, for both local institutions and government institutions to be effective co-managers they need to be rid of their current weaknesses. This can be achieved by capacity building and strengthening through funding, extension, training, environmental awareness campaigns and policy reforms that favour good resource governance and accountability. Merging of institutions to create more robust hybrid formal CBNRM institutions can determine the viability of this option.

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APPENDICES

Appendix I

MUFURUDZI RESETTLEMENT SCHEME HOUSEHOLD QUESTIONNAIRE SURVEY (AUGUST-SEPTEMBER 2003)

This questionnaire is supposed to be completed by the household head and is meant to collect information about the availability of forest and woodland products and how they are used by the community in Mufurudzi resettlement scheme. When completing the questionnaire you are not required to give your name and any information that you will provide will be treated confidentially. The information will be used solely for academic purposes. When completing the questionnaire indicate your responses by ticking the appropriate boxes or by filling your responses in the blank spaces provided.

GENERAL INFORMATION

Name of Interviewer: ……

Name of Village:…….

Date of Interview:……

Time:……

QUESTIONS ON PERSONAL AND HOUSEHOLD INFORMATION
(Tick or fill in the appropriate box where applicable)

1. Sex of respondent

Male		Female	

2.State your age category

<20		21-30		31-40		41-50	
51-60		61+		Don't Know			

3. State the year when you were resettled: [ ]

4. Give details about the way the size of your household has changed since resettlement.

Size of household in at resettlement		Present size of household	

5. Give details about how the population of the livestock owned by your household has changed since resettlement.

Livestock	**Original number**	**Present population**
Goats		
Sheep		
Donkeys		
Cattle		

6. Please state your level of education in the space provided below:

	Level of education (tick the appropriate box)
< Grade 7/ Standard 6	
Grade 7/ Standard 6	
ZJC	
O-level	
A-level	
Tertiary (degree or professional qualification)	

7. Average cultivated acreage farmed by your household per year:

Hectares

HISTORICAL INFORMATION

8. When did you start farming in the scheme?

Before or during 1986		After 1986	

9. Which of the following forest and woodland products used to be readily available in your village but have declined in recent years? (Suggest reasons for their decline).

Products	**When were the products last available (**if they are no longer available**)**	**Reasons for the decline**
Fish		
Game		
Fruit/ berries		
Others (specify below)		

10. State the distances that you travel(led) to access the following timber and non-timber forest products (Give your answers in Km)

Products	**Distance travelled when you first arrived in the scheme**	**Present distance**
Construction timber		
Fuel wood		
Wood for carving/ artifacts		
General rope		
Fish		
Game		
Fruit/ berries		
Other (specify below)		

PERCEPTIONS, SPECIES USED, PREFERENCES, AND LIVELIHOOD ADAPTATIONS

11. For each of the following uses, state the most important species that are used in your village.

Browse/ Fodder	Construction	Fuel	Medicinal	Traditional/ religious	Supply of edible products	Any other use (specify)

12. Rank the following forest and woodland products in their order of scarcity and for each product specify both the main reason and effect of its scarcity. (Ensure that the most scarce product is accorded the highest rank)

Rank and reason(s)	Browse/ Fodder	Construction materials	Wood fuel	Herbal medicinal	Plants of traditional/ religious importance	Edible NTFPs products	Game and fish
Rank							
Reason(s) for scarcity							
Effect(s) of scarcity							

13. (a) In what way did your household rely on forest and woodland products as a strategy to cope with the droughts of 1992 and 2002 and the crop failure of 2001? (Give your answer by ticking the appropriate boxes below). KEY: SA-strongly agree; A-agree; D-disagree; SD-strongly disagree; I-indifferent/ don't remember.

Response	**SA**	**A**	**D**	**SD**	**I**
a) Collection of wood for sale					
b) Collection of fruits and other non-timber forest products for sale					
c) Collection of wild fruits and other non-timber forest products for household consumption					
d) Open virgin land for cultivation in the following year					
e) Snared wild animals for food					
f) Snared wild animals for sale					
g) Opened new gardens to supplement food supply or income					
h) Reduced acreage the following year					
i) Other reasons (specify)					

13. (b) Which plant and animal species have decreased, increased or remained unchanged in their availability since resettlement?

Species	**Increased**	**Decreased**	**Unchanged**	**Give your reason(s)**

14. Which forest products have decreased, increased or remained unchanged in their availability since resettlement?

Products	**Increased**	**Decreased**	**Unchanged**	**Give your reason(s)**
Browse				
Construction timber				
Wood fuel				
Fruits/ berries				
Mushrooms				
Game				
Fish				
Others (specify below)				

15*. Indicate the extent to which you agree with the following statements (Give your answer by ticking in the appropriate boxes below). KEY: SA-strongly agree; A-agree; D-disagree; SD-strongly disagree; I-indifferent.

Statement	**SA**	**A**	**D**	**SD**	**I**
a) There is more grass now because there are more cattle					
b) There is more grass now because there is more rain					
c) There is less grass now because there is less rain					
d) There is less grass now because there are more cattle					
e) Availability of grass fluctuates with rainfall					
f) Does not know if grass cover has changed through time					

(adapted from Dahlberg, 2000)

16. State the types of grasses that you use for thatching and is readily available in your village

Species	**Is it the most desirable type?**		**If not why do you use less suitable grass species?**		
	Yes	No	Overgrazing	Drought	Other reasons (specify)

17. Is deforestation taking place within the natural forest and woodland areas surrounding your village?

Yes		No	

18. If your answer is Yes (in question 17), do you consider the following as the main causes of deforestation in your village?

Reasons	**Yes**	**No**
a) Overgrazing resulting from livestock population increase		
b) Fuel wood collection		
c) Human population increase and rising demand for forest products		
d) Natural causes		
e) Poor management by villagers		
f) Poor policies (please specify):		
g) Poor monitoring		
h) Others (specify):		

19.If your answer is No (in question 17), state the main reasons why you think deforestation is not a serious problem

a)
b)
c)
d)
e)

INSTITUTIONAL ARRANGEMENTS, COMMUNITY PARTICIPATION AND CO-MANAGEMENT

20. How does the community in your village control deforestation?

Responses	**Tick the appropriate**
a) Use of government laws, including conditions of permits	
b) Use of community by-laws	
c) Reliance on traditional institutions (spirit mediums)	
d) Reliance on traditional or local political leadership (councilors, chiefs, headmen etc)	
e) Other means (specify)	

21. In your opinion what could best be done to prevent deforestation?

Best methods of controlling deforestation	**Tick the appropriate box**
a) Law enforcement by government	
b) Environmental education and awareness campaigns	
c) Planting trees to replace those cut	
d) Empowerment of the community to deal with the problem	
e) There is no solution	
f) Others (specify below)	

22. What would be the main constraint(s) in implementing the solution that you have suggested above?

Best methods of preventing deforestation	**Constraint(s)**
a) Law enforcement by government	
b) Environmental education, training and awareness campaigns	
c) Planting trees to replace those cut	
d) Empowerment of the community to deal with the problem	
e) There is no solution	
f) Others (specify below)	

23. In your opinion, who owns the forest and woodland products that are found in your village?

Responses	**Tick the appropriate**
a) Government	
b) Community/ villagers	
c) Traditional institutions (spirit mediums)	
d) Traditional and local political leadership (councilors, chiefs, headmen etc)	
e) Local government	
f) Other means (specify)	

24. Among the following, who should be involved in the management of the forest resources that occur in your village and why?

Responses	**Role (reason for involvement)**
a) Central government	
b) Community/ villagers	
c) Traditional institutions (spirit mediums)	
d) Traditional leadership (councilors, chiefs, headmen etc)	
e) Local government	
f) Other means (specify)	

25. Please indicate by ticking in the appropriate box the extent to which you agree with the following statements. KEY: SA-strongly agree; A-agree; D-disagree; SD-strongly disagree; I-indifferent.

Statement	**SA**	**A**	**D**	**SD**	**I**
a) The local community can play an important role in the conservation of forest and woodland resources					
b) There is need to consult the local community when seeking solutions to the problem of deforestation					
c) The problem of deforestation can only be solved by government departments and by nobody else					
d) The problem of deforestation should be left to the appropriate ministry					
e) The community has always been consulted when seeking solutions to environmental problems					
f) There are more serious issues that need to be addressed than worrying about deforestation					

26. Specify the quantities that you produce for each of the following agricultural products per year

Commodities	Quantities/ Yields
Cotton (bales)	
Tobacco (bales)	
Maize (50 kg bags)	
Livestock (No of cattle, donkeys, goats, sheep per year)	
Other products (specify)	

27. Give details about your average monthly income: (consider all possible sources of income) $

GENERAL COMMENTS ON RELEVANT RESPONSES NOT FULLY COVERED ON EACH QUESTION (SPECIFY THE QUESTIONS)

28. Comments (Research assistant must state place of respondent's origin and give a comparison between place of origin and Mufurudzi, in terms of availability of forest and woodland products. Other relevant information that could not be captured in detail in any section of the questionnaire must be noted and the appropriate section specified. Also give any other relevant comments resulting from observations made)

THE END: ***THANK YOU FOR YOUR CO-OPERATION***