Poverty and Changing Livelihoods of Migrant Maasai Pastoralists in Morogoro and Kilosa Districts, Tanzania

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ABBREVIATIONS

IDS	Institute of Development Studies
DFID	Department for International Development
IIED	International Institute for Environment and Development
NLUPC	National Land Use Planning Commission
PRA	Participatory Rural Appraisal
SLA	Sustainable Livelihoods Approach
URT	United Republic of Tanzania

ABSTRACT

This study documents the plight of the Maasai pastoralists who have moved to Morogoro and Kilosa districts as a result of the recent socio-economic developments and environmental changes in Maasailand. The objective of this study was to analyse how the Maasai migrants have adapted themselves to the new ecological conditions and the impact of such adaptations on their livelihoods.

Confronted with the loss of grazing land due to several geographical factors and political marginalisation, some Maasai have migrated to and/or taken up other economic preoccupations in addition to livestock keeping in different parts of Tanzania including Morogoro and Kilosa districts.

Data from the wealth ranking exercise demonstrates that while the group of well-off pastoralists has remained typically small, that of the poor has, on average, grown bigger with the worst cases occurring in the largely pastoral communities. The decline of pastoral resources and the rising profitability from agricultural pursuits have drawn more Maasai into agriculture thus widening the wealth gap between the well-off groups and the poor. With new assets like permanent houses, bicycles, and tractors becoming popular, access to such resources has also become individualized.

The data further shows that, although Maasai farmers apply the same cultivation methods as other non-pastoral communities, their farming practices are still rudimentary. Few other Maasai, however, cultivate their farms using modern machinery. Much pressure on agricultural lands could have increased as more and more Maasai keep taking up crop cultivation as a way of life, there is very little evidence that the integrity of the environment is under any threats as yet.

Genuine social change is taking place among migrant Maasai. These people are taking up several non-pastoral economic activities as alternative ways of earning their livelihoods. Since the development of agriculture and livestock keeping will be the mainstay of the migrant Maasai in the study area for a long time, policy interventions that aim at improving agriculture and livestock development sectors should follow so as to provide a base for the development of non-farm economic activities. The interventions should also improve human capital in the study area so as to enable the excess labour to access other profitable economic niches in the country.

Finally, land use conflicts between the pastoralists and crop cultivators should be averted by adoption of participatory land use and other natural resource use planning in the study area. This should be preceded by creating awareness on the importance of participatory planning in conflict resolution at both local and district levels.

1.0 INTRODUCTORY PART

1.1 Introduction

The two concepts **poverty** and **environmental degradation** have a cause-and-effect relationship. Kates and Chen (1993), for example, clearly show that while, on the one hand, environmental degradation leads to widespread poverty, poverty is alternately a cause of environmental degradation as it undermines people's capacity to manage resources wisely. Poverty in this case is defined as the failure of certain capacities that are important for an individual or a household to enforce their claim to resources that are necessary for their well-being. The failure can result from unfavourable socio-political or environmental conditions or both.

It is, however, noted elsewhere that poverty is not a given state of existence (Chambers, 1992) but rather a result of exploitative distributive mechanisms, of structural processes with internal and external dimensions, and of differentiation in environmental endowments (Krokfors, 1995; Mung'ong'o, 1995). Response to poverty should thus be expected to vary from one community to another, and between social groups within the given communities in relation to the prevailing socio-political conditions. It should also be expected to vary between localities according to differentiation in environmental endowments.

The dynamics of poverty resulting from environmental degradation among agriculturalists and urban dwellers in Tanzania have been well documented (cf. Collier *et al.*, 1986; Sender and Smith, 1990). However, comparatively little is known about how pastoralists have responded to and/or coped with poverty which has afflicted them as a result of recent structural and land use changes and how such responses and coping strategies have affected the environment they live in. Mbilinyi *et al.* (1999) shed some light on the plight of the Ngorongoro Maasai in relation to food security but fell short on the environmental effects of the coping strategies. This study analyses the situation among the pastoralists who have moved from Maasailand into the districts of Morogoro, Kilosa, Handeni and Bagamoyo as a result of the recent socio-economic developments and environmental change.

1.2 Statement of the Problem

Pastoralism plays an important role in the economy of Tanzania. Apart from the supply of meat and other animal products, pastoralism makes productive use of a large percentage of the available dry lands where the scarcity and variability of its natural resources has few alternative uses. Although not so openly acknowledged by western landscape history, the African pastoralist, including the Maasai, has widely been an active manager of their natural

resources. They have not simply used these resources, but they have also manipulated their stock and rangelands to sustain an adequate level of productivity in essentially marginal environments (Widgren, 2000; Niamir, 1990; Allan, 1965).

Until fairly recently the Maasai have practised transhumance which was made possible due to the abundance of land and low population levels of both human and livestock. Thus, this land use type made effective use of large tracts of land and at the same time maintained its productivity. Their transhumant herding patterns have been in tune with the ecological realities of dry land areas where rainfall and grazing are subject to high risk and seasonal variability. They have allowed vegetation to be renewed every year as they resorted to temporary migration. Such migration has essentially been a traditional drought-coping strategy and has had positive effects to the environment in that it allowed the affected area to recuperate (Potkanski, 1994; Ndagala, 1992; Homewood and Rogers, 1991).

The current movements by the Maasai are different in that they are largely a result of state policies per se. Such migrations of pastoralists are, by no means, without some effects on both the physical and socio-cultural environments of the receiving areas or destinations. The effects of migrations on the environment are profound and complex because the migrants often originate from very different socio-ecological zones and have to adapt to new land management systems in order to comply with the local environmental conditions (Cf. Niamir-Fuller *et al.*, 1995). Such effects are not only of immediate concern to the managers of natural resources and poverty alleviation efforts at the national level, but are also of crucial importance to resource use conflict resolution at the local level. As 'environmental refugees', these people deserve all the attention which is accorded to other refugees in other circumstances. The precise nature and extent of these effects on the receiving areas is, however, not well known. Since these migrations are geographic-specific, their effects on land management and the ensuing socio-cultural relations in the receiving areas need to be investigated case by case. This study documents the plight of the Maasai pastoralists who have moved into the districts of Morogoro and Kilosa as a result of the recent socio-economic developments and environmental change in Maasailand.

1.3 The Objective and Scope of the Study

The main objective of this study is to provide a fairly comprehensive analysis that would improve our understanding of how the Maasai migrants have adapted themselves to the new ecological conditions and the impact of such adaptations on their livelihoods and the socio-ecological environments of the new lands. Particular emphasis will be placed on the socio-ecological

relationships that have developed between the migrant Maasai pastoralists and the cultivating communities.

1.4 Research Questions

A set of questions was posed to guide this research work. The questions were as follows:

(1) To what extent has the sedentarisation of the Maasai contributed to their impoverishment?

(2) What has been the impact of sedentarisation on environmental resources of the new areas?

(3) To what extent have sedentarisation and diversification of livelihood strategies contributed to de-skill the Maasai as pastoralists?

(4) Is there a tendency among the migrant Maasai towards rebuilding their herds of cattle?

1.5 Literature Review and Rationale for the Study

This review of related literature focuses mainly on the linkages between poverty and environment and on how the Maasai pastoralists have been managing their resources (i.e. pastures) so as to regulate the environment and attain sustainable livelihoods. Forces leading to the out-migration of the Maasai are also briefly dealt with. The process of reviewing this section also identifies the knowledge gaps that this research sought to bridge.

1.5.1 Poverty and Environment

As already pointed out in the introductory section, poverty and environment are linked in a close but complex manner. Poor people live and suffer from degraded environments, and very often they create environmental degradation because of their poverty. Blaikie (1988) gives an example of the farmers in the highlands of Ethiopia and Nepal. He argues that they do not farm steep or eroded hillsides through perversity but they do so through necessity. It is further argued that impoverished people often must make short-term choices solely on their desperate need for food and that many farmers have no alternative to cutting trees for firewood or putting animals on overgrazed land – the very practices that harm the environment.

While pressures of poverty can mean that livestock grazing leads to overgrazing, it is incorrect to assume that this will necessarily happen. The long held view that poverty forces people to deplete and destroy environmental resources in order to meet their needs is increasingly being questioned.

On the other hand, degraded environments themselves create and deepen poverty, as they exacerbate the exposure of the poor to the ravages of nature, as did the droughts in the Sahel during the 1980's, and make them fail to attain

sustainable livelihoods. The reciprocal links between poverty and environmental degradation is described as the 'desperate ecocide' of the poor, small producers who 'cause soil erosion because they are poor and desperate, and for whom soil erosion in its turn exacerbates their condition' (Blaikie, 1988).

Obviously the environment is not neutral in its effects on the poor. Environmental quality is mediated by society, and society is not homogenous. Mabogunje (1980) points out that the 'development process' involves the transformation of social and economic relations. It relates to the ways in which individuals and groups within society experience their environment and the ways in which they use it. In other words, the intensity of a social group's resource extraction from the environment and the resource's use patterns is closely related to the concerned group's position in the social structure (Mung'ong'o, 1995).

The belief in a negative downward spiral of poverty and environmental degradation, a belief that is now widely challenged, has been taken as gospel in the resource use sectors. Yet there is now sufficient evidence to demonstrate that this reductionist generalisation does not hold true. Although cumulative human action affects national and international rates of deforestation, these actions take place in a diverse range of settings and macro-level studies have failed to show a common pattern in the relationship between poverty and forests. This is further echoed in Mascarenhas (2001) study of the Usambara Mountains where it is argued that poverty is not only linked to the environment but must consider social and historical dimensions of change. These studies further illustrate that poverty may result in a shortage of options forcing people to clear forest cover in order to gain access to land for cultivation or to use natural resources in an unsustainable manner, but they also demonstrate that poor people can and do invest considerable time and resources in forest management. Furthermore, the relationship between forests and livelihood development is a matter of perspective. What might be defined as deforestation or forest degradation by an ecologist can be improvement – through transformation of the resource into a more usable form – for local people, resulting in a resource form that is no less sustainable or stable than the original forest. Indeed, this is further qualified by Mascarenhas (2001) arguing that the linkages between poverty and environment are indirect and area-specific.

Very often it is assumed that the relationship between the poor and the environment is that of a "downward spiral" or vicious circle. Poor people contribute to environmental degradation because they cannot afford to preserve their natural environment. However, many empirical studies show that the relationship between poverty and environment is not just doom and gloom. In many areas poor farm families manage their soils, terrace their land, gather

manure, and harvest timber without depleting the forest. Farmers are innovative, they improve their knowledge systematically through trial and error.

1.5.2 Breakdown of the Traditional Resource Management Systems

The Maasai pastoralists have been the object of study for quite some time now. The earlier studies have mainly been colonial anthropological studies (Grant, 1954; Fosbrooke, 1948; Gower, 1948; Hollis, 1910; 1905). Recently, however, many studies that are relevant for this study were conducted in Maasailand. The works of Ndagala (1992; 1990), Eklo and Klein, Ole Kuney (1994), for example, outline the way in which politics and policies have compromised pastoral property in Tanzania and generally jeopardized the pastoral economy. These works also highlight the complexity of rights to resources and points to a growing gap between the rich and the poor among the Maasai and the latter's increasing dependence on the outside world.

In recent decades pastoralism has been in deep crisis and although the causes for the crisis are several, those that are related to loss of grazing lands and prolonged drought are most significant. An increasing number of agricultural populations have steadily encroached on rangeland areas in Kiteto district. In Loliondo district the Tanzania Breweries Ltd. introduced mechanised barley farming after acquiring 10,000 acres of Maasai grazing land triggering off a proliferation of medium scale barley farming around Loliondo town. This development alienated much of the dry season pastoralist grazing land. More pastoral land has also been taken over by smallholder farming of new drought resistant crops (e.g. serena) in the area.

A mapping exercise done by the National Environment Management Council (NEMC) to monitor desertification points out that in the Naberera part of Maasailand the loss of pastoralist grazing lands has further been aggravated by the colonisation of their pasture lands by sedentary agriculturalists and international seed producing companies (NEMC, 1993). Furthermore, Homewood and Rogers (1991) noted that the growing number of wildebeests and the problem of cattle rustling have also brought changes in the grazing patterns of the Ngorongoro pastoralists. Meanwhile, Niamir (1990) showed that the influence of wage labour, the market economy and modern education have resulted into the decrease of the manpower available on the range. The influx of Maasai morani into major urban centres such as Dar es Salaam to work as night watchmen is just an example. This has affected daily range management strategies such as splitting of the herd and frequent movement of livestock in search of forage and water.

Joekes and Pointing (1991) note that increasing sedentarisation and degradation of rangelands necessitate herds to be kept at cattle posts far away from the homesteads. This phenomenon adversely affects women's property rights in

livestock; as there appears to be an increasing tendency for men to appropriate the women's rights without negotiation or permission. Moreover, increased commercial transactions in livestock have made it possible for men to redefine or disregard traditional rights accruing to women and children; thus not only consolidating male control over livestock, but also effectively shifting dairy income from women's control to men's control. These developments have adverse effects on the capacity of women to meet homestead provisioning needs, as well as for wider issues relating to women's well being. Diminishing access to livestock curtails the exchange and reciprocal networks that traditionally facilitated the exchange of productive resources and food. Childless women and women from poor homesteads are particularly disadvantaged as a result of the breakdown of these traditional redistributive mechanisms.

Potkanski (1994) illustrates that a combination of these forces has led to the breakdown of the traditional resource management systems. In response to the changing face of pastoralism the Maasai have been forced to take up several adaptive strategies. Confronted with the loss of grazing land due to geographical factors and political marginalisation, some Maasai have taken up crop cultivation in addition to livestock keeping within their homelands. Yet others have migrated to other parts of the country but maintained livestock keeping as their main source of livelihood. Mbonile and Mwamfupe (1997) provide a good example of this for the Maasai pastoralists of the Usangu Plains. Timberlake (1988) described such migrants as 'environmental refugees'.

In recent times man-made disasters have provided the basis for the ecological imbalance taking place in Maasailand. Among them has been state intervention that has reduced the pastoralists' land by converting much of it into national parks. Conversion of pastoralist range lands into wildlife sanctuaries has had a very long history in Maasailand. Since the colonial period efforts were made to preserve wildlife through the establishment of forest reserves and national parks. Pastoralists living on the periphery of gazetted national parks such as the Serengeti, Ngorongoro, Manyara, etc., were evicted to protect the parks from poaching and encroachment. In the wake of independence such wildlife parks have been increased to cover almost 70 per cent of the grazing resources of Maasailand (IIED, 1994; Homewood and Rogers, 1991). Colonisation of pasture lands by sedentary agriculturalists such as the Ilarusai (Waarusha), the Wairaqw, the Wachagga and international seed breeding companies, like the Rotian Seed Farms of Naberera has been another major factor in the decrease of pastoralists' grazing lands (NEMC, 1993).

In the wake of these land alienations other factors have been at play to destabilize the pastoral economy, population densities have also increased putting extra pressure on the grazing system. Homewood and Rogers (1991) observed that

the Maasai population has been growing at the rate of between 2-3 per cent per annum in the last few decades. Much of this growth has been from natural increase. However, cattle diseases and drought which have frequently befallen the Maasai herds during the last few decades have made cattle numbers fail to keep pace with the growing number of human population; leading the Maasai pastoralist economy into an involution (Field, *et al.*, 1988). In addition, the growing population of wildebeests and the problem of cattle rustling have also brought changes in the grazing patterns of the Maasai livestock (Potkanski, 1994). What is of interest to know here is how the Maasai have responded to these natural and man-made ecological changes.

More Maasai have, increasingly, found themselves at the margins of existence as such land squeezes have forced them to adopt a sedentary mode of existence and new lifestyles within Maasailand itself or move out and invade new areas in search of alternative socio-economic resources and niches. The Maasai have consequently been migrating southwards into Iringa, Mbeya, Tanga, Morogoro and Coast Regions. There are indications that some may even have crossed into Rukwa Region and possibly into northern Zambia (Galaty, 1989).

The main option has been for pastoralists to migrate to other parts of the country and change occupation (e.g. crop cultivation or wage employment). Other strategies that have been adopted by some Maasai pastoralists against their risky environment have been livestock accumulation and diversification of livestock species within Maasailand itself. In general, however, the type of strategy a pastoralist group has opted to adopt seems to have largely depended on the access qualifications available to that group. The richer homesteads seem to have accumulated and diversified their livestock keeping activities while the poor have adopted crop cultivation and/or wage labour. The trend of such socio-economic differentiation in Maasailand has to our knowledge also not been adequately documented. Moreover, the socio-ecological predicament of migrant pastoralists who have been forced to move from their semi-arid environment and into an alien world of agriculturists and different geophysical environments has so far not been analysed in any great detail. This study attempts to bridge this knowledge gap.

1.6 Hypotheses

This study intended to test the following four major hypotheses:

Hypothesis 1

The sedentarisation of the pastoral Maasai and the change in their livelihood strategies has led to their impoverishment.

Hypothesis 2

Sedentarisation of the Maasai has contributed to the growing pressure on agricultural lands, thereby threatening the integrity of the environment in the expansion areas.

Hypothesis 3

Migration of the poor domestic groups among the Maasai out of Maasailand and into the expansion areas has allowed them to rebuild their herds.

Hypothesis 4

As they are forced to sedentarise and diversify their sources of livelihood the immigrant Maasai are gradually being de-skilled as pastoralists.

1.7 Theoretical Framework

This study has applied the Impoverishment-Degradation Spirals theoretical framework as developed by Kates and Chen (1993) and as adopted by Mung'ong'o (1995). According to this framework environmental degradation and the associated problems of hunger and poverty have a direct relationship to the loss of entitlement to environmental resources such as land, water, natural vegetation or wildlife. Individuals are said to lose their entitlement to these resources through three processes: displacement, division, and degradation.

Displacement occurs when activities like plantation agriculture, large dams, and wildlife preservations limit people's access to important resources through resettlement or migration. The poor are especially displaced by the rich and powerful who take the poor people's land by legal or extra-legal means. *Division* occurs when the poor have to share limited resources with their children or sell bits and pieces of their resources to cope with extreme losses due to crop failure, illness, death or social obligations. *Degradation* of resources then occurs through excessive use of the remaining land resources. It also occurs due to the inability of the poor to maintain or restore protective works, especially after damage and disruption due to excessive rainfall or other hazardous events. Movement of the poor into marginal areas is, however, the most common phenomenon resulting from population displacement in rural areas.

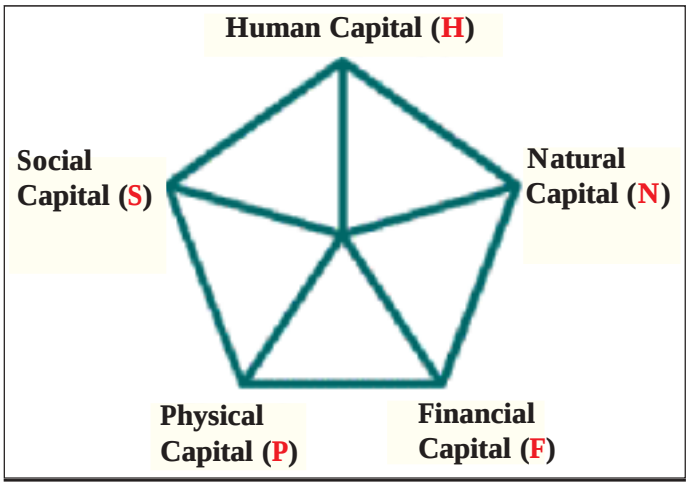
Provisionally, a combination of the processes of Displacement and Degradation seemed to apply to this study. The settlement of the Maasai in Kilosa district is an outcome of the Displacement from their traditional homes. This forced them to change their livelihoods upon entering new areas. What is taking place in Kilosa district is actually the sharing of the limited resources by many more people now than was the case before. As a result, the district is now facing the direct problem of land degradation.

1.8 Methods and Materials

The three processes of Displacement, Division and Degradation (identified in Theoretical Framework of this study) culminate in a change of livelihoods of the Maasai. This study applies the Department for International Development's (DFID) Sustainable Livelihoods Approach (SLA) (Department for International Development, 1997) livelihood methodological framework to understand the changes of livelihoods among the Maasai pastoralists in Kilosa and Morogoro districts. SLA can be used in three different ways: as a set of principles, as an analytical framework or as an overall developmental objective (Farrington, 2001).

The DFID's livelihoods framework is a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor. This approach uses the concept of capital assets as a central feature and considers how these are affected by 'vulnerability context' in which they are derived. This approach is founded on the assumption that people require a range of assets (usually five) to achieve positive livelihood outcomes and that no single category of assets on its own is sufficient to yield all the many and varied livelihood outcomes that people seek. The asset pentagon lies at the core of the livelihoods framework (Figure 1). According to the Livelihood framework the assets include: human capital, natural capital, physical capital, social capital and financial capital. The shape of the pentagon can be used to show schematically the variation in people's access to assets. The idea is that the centre point of the pentagon, where the lines meet, represents zero access to assets while the outer perimeter represents maximum access to assets. On this basis different shaped pentagons can be drawn for different communities or social groups within communities.

Figure 1: Asset Pentagon in a Livelihood Framework



The framework identifies human capital (H) as representing the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. At a household level H is a factor of the amount and quality of labour available; this varies according to household size, skill levels, leadership potential, health status, etc. The other asset is social capital (S), and in the SLA framework it is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives. These are developed through networks and connectedness, membership of more formalised groups; rules, norms and sanctions; and relationships of trust, reciprocity and exchanges.

Natural capital (N) is another form of capital representing the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived. These include a wide range of resources, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production (trees, land, etc.). The physical capital (P) is another form of asset and it comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. Lastly, financial capital (F) denotes the financial resources that people use to achieve their livelihood objectives. It includes flows as well as stocks that contribute to consumption as well as production. It also includes the availability of cash or equivalent, that enables people to adopt different livelihood strategies.

It has to be noted however, that the SLA as used by DFID has some shortfalls. For example, while there is agreement over the classification of assets (Financial, Physical, Natural, Social and Human) it is difficult to compare and measure capital assets (Fox, 1997). For this reason, this study will use a combination of methods to assess if there are changes in livelihoods of the Maasai migrants.

1.8.1 Data Sources

Data for this study have been obtained from both primary and secondary sources. Primary sources included the heads of households, village leaders, and key informants at the village level. Secondary data WAS obtained from such sources as government and research reports on and related to land management, migration and livelihood issues. Where available, village records have also been perused to get information on population dynamics and service provision at that level.

Data needed for village socio-economic profiling have included demographic characteristics such as growth rates, household sizes, sex ratios and migration patterns. The data WERE compared to the census data for the 1978 and 1988 population census to gauge trends in human population changes. Secondly, an assessment of cultural relationships between the immigrant Maasai people and their cultivating neighbours was also made. Thirdly, settlement patterns and housing conditions were also assessed, with particular reference to possible trends tof Maasai adoption to new technologies in construction and spread of settlements. And fourthly, the socio-political institutions were analysed at the micro level to get an understanding of their relation to resource use decision-making, especially existing land tenure regimes, grazing and watering rights, including conflicts and conflict resolutions. Social services infrastructure (i.e. water supply, health and education) and their effectiveness in delivery to the various ethnic groups were also assessed.

1.8.2 Sampling Procedure

Despite their sedentarisation the Maasai are still very mobile people - moving between villages, grazing points and urban centres. The villages were, therefore, selected according to the likelihood of meeting as many Maasai pastoralists as were needed for interview at any one particular moment. Since this study had intended to focus on villages with a high concentration of pastoral immigrants (16 villages), a sample of four villages and 160 households should suffice to draw conclusions from. The sample population in each village was farther categorised among the economically rich, moderate and the poor through wealth ranking to get a spectrum of the major socio-economic groupings.

Moreover, the Maasai are known to be notoriously stubborn in giving inside information to strangers when ultimate use of information is uncertain. A

Maasai is more often than not likely to give a lie rather than give out information about the community and unless authorised by a recognized local leader, an o*leiguanani* or an *ingopir*. In our case, however, wherever we went with a guide specifically chosen for us by the local *oleiguanani* often led us. The guide introduced us to the respondents and often acted as an interpreter whenever we talked to people who were not fluent enough in Kiswahili. Furthermore, whenever necessary we asked cross-checking questions to confirm previous answers. As such we are convinced that the bomas (*enkangite*) we talked to were representative enough, and that the data we got is accurate enough for the purpose of this study.

1.8.3 Data Collection Techniques

The data collection methods employed in the first phase of the study included library research, questionnaire interviews and Participatory Rural Appraisal (PRA). Most of the available literature on the Maasai and their economy was surveyed. Reports of various studies hitherto done on pastoralists' impoverishment and subsequent migration were collated. The relevant information has been incorporated in various sections of this report.

One day was spent in each sample village administering a structured questionnaire to selected households in the sample villages to gauge socio-economic trends at that level. The concept of the **household,** however, posed some methodological problems for this study. The simple husband-wife-children-relative household structure usually found among crop cultivators was not relevant to the pastoralist situation. A Maasai family (*olmarei*) is normally polygamous. The number of wives and children varies with the age of the husband/father. Each wife has a separate house (*engaji*) within a homestead/boma (*enkang*). Within the boma there are also separate houses for relatives and friends whose presence is in most cases fluid. Although a tendency towards having large single households in the modern sense was observed among the wealthier Maasai in the study area, possibly due to individualisation of social life, it was difficult to decide which of the units *engaji, olmarei* or *enkang* could be treated as a **household** unit of analysis.

Finally, the *enkang* was chosen as a useful unit of analysis for this study whereby a **household** was understood as comprising a person, or a group of persons, generally bound by ties of kinship, who may or may not live together under a single roof or within a single compound, but who share a community of life, in that they are answerable to the same head and share a common source of income and livelihood. A structured questionnaire was, therefore, administered to selected *enkangite* to gauge sedentarisation and migration patterns, land use and management of water sources, main economic activities undertaken, grazing land and range management. The questionnaire interviews were followed up

by focused interviews of a select smaller sample of *enkangite*. The aim was to fathom the *enkang* land and other natural resource use patterns and use rights.

Gender perception and differentiation with reference to natural resources and social services use rights were also assessed during the in-depth interviews. Women research assistants were used to interview the Maasai women and other women in the sample. Maasai women are difficult people to talk to due to their busy schedules. Not only are they responsible for maternal caring and provisioning in the household (*enkaji*), they are also responsible for milking of cows, selling of milk, herding and caring of young animals, and constant repairing of the house structures (especially, the *manyatta*). However, concerted efforts and persistence by our assistants and the Maasai guides enabled them to reach a big enough sample of Maasai women for the purpose of this study.

1.8.4 Data Analysis

Quantitative data was analysed into frequency and cross-tabulations using the *SSPS* statistical programme. On the other hand, qualitative data was analysed manually and used with the quantitative data to triangulate and enrich our understanding of the socio-economic trends analysed in this study.

1.9 The Study Area

This study was conducted in Kilosa and Morogoro (now Mvomero) districts. In each of these districts two sample villages were picked, and these were; Kambala and Dakawa in Morogoro district and Dumila and Milama in Kilosa district.

1.9.1 Kilosa District

Kilosa District has an area of 14,918 sq.km. and covers 20.5% of the total land area of Morogoro Region (**Map 1**). The climate of Kilosa district as described in detail by Kimaro (1989) is characterised by a dry tropical climate of the semi-arid type. The mean annual temperature of the district is 25° C. Annual rainfall range from 800 mm in low-lying areas to about 1300 mm in high altitude areas. The vegetation of Kilosa district is characterised by miombo woodland in the hilly areas and grassland occurs in the alluvial plains. Much of the vegetation however, is under pressure for wood, fuel arable and grazing land.

The district is divided into three physiogeographic units, which also constitute different agro-ecological zones (Gilland-Byers, 1984). With altitudes of up to 2200m, cultivation of temperate crops e.g. wheat, is possible in only small pockets of agricultural land which is available. The Plateau is another zone and is characterised by plains and dissected hills with moderately fertile and well-drained soils. The other zone is the flood plains which comprises both flat and undulating plains extending to the foothills in the west. This plain is subject

to seasonal flooding and is mainly occupied by the pastoralist Maasai.

According to the 1988 Population Census the district had a total of 346,526 people representing 28% of the Regional population. The population projections for 1996 and 2000 were 415,663 and 455,244 people, respectively.

The district has 536,590 hectares of arable land, but only 97,500 hectares are currently under crop production. The main crops are sisal and sugar cane. Other crops include beans, cowpeas, cassava, bananas, sweet potatoes and finger millet. The average farmed land per capital is 0.31 hectares.

Livestock keeping is an important economic activity in the district following the large influx of pastoralists including the Maasai. Most of the Maasai migrants live in the areas between Wami-Dakawa (Morogoro district) and Dumila (Kilosa district). The following villages have a particular concentration of pastoral migrants: - Wami, Mbigili, Mabana, Milama, Mandela, Mgudeni, Mkundi, Magole, Madudu, Mtulu, Kitete, Makuyu, Mbugani, Kambala, Luhindo, and Kwambe.

1.9.2 Morogoro Rural District

This district has a land area of 19,056 sq.km, accounting for 26.1% of the regional area. According to the 1988 Population Census the district had a total of 430,202 people with a density of 22.6 per sq.km. The population projections for 1996 and 2000 were 512,011 and 558,577, respectively.

Morogoro Rural District accounts for 23 per cent of the region's cattle population. Among the small-scale livestock keepers it is always problematic to be certain about the number of livestock, since the livestock-keepers hide the numbers in order to dodge the numerous taxes which are imposed on them by the government (Mtwale, 2002). Table 1 illustrates the number of cattle and goats kept in Morogoro region between the mid-1980s and early 1990s.

Table 1: Number of Livestock in Morogoro Region

Type	Actual Count by Year				
	1984	1989	1990	1991	1992
Cattle	332,683	374,100	382,400	390,000	397,700
Goats	139,948	176,100	184,100	192,200	204,500

Source: Planning Commission & RCO (1997).

The incidence of livestock diseases is high in Morogoro region. The high level of subsistence animal husbandry and animal movements make high vaccination coverage or economic bush clearing almost impossible. Dips are not sufficient

in number, long distances to dips, tick resistance to acaricides and lack of water for replenishment of dips hampers adequate tick-control coverage in the region. Cattle mortality is high, and, according to United Republic of Tanzania (URT) (1997) the mortality rate is between 25 and 30 per cent. The main causes of livestock mortality in the region are frequent occurrences of common cattle diseases, including anaplasmosis, East Coast Fever (ndigana), babesiosis, and foot and mouth disease.

1.9.3 Study Villages

Kambala village has a population of about 2,800 (2000 estimates). The original settlers in this village are livestock-keeping Maasai, but they welcomed other agricultural groups to settle in the village and cultivate; also to adopt livestock keeping. The river bank is an attractive area for dry season cultivation of vegetables to be sold in Morogoro town. The cultivators of these gardens sometimes clash with livestock keepers who want to send their animals to drink from the river, especially during the dry season. The swampy areas around the village also attract rice cultivators from the surrounding villages as well as Morogoro town. Villagers complained that non-resident farmers do not respect the village leadership and regulations, but rely more on their financial clout and their connections with powerful leaders based in Morogoro town to undertake their farming activities.

Table 2: Population Growth of the Study Villages (1978 –1988)

Year	**Dumila**	**Kambala**	**Milama**	**Dakawa**
1978	2606	1009	1248	1774
1988	4215	885	1436	2296
Percentage of Change	61.7	- 12	15	57.7

Source: Planning Commission and RCO (1997)

Dumila is a big a road-side village along the Morogoro – Dodoma Road. This is a fast growing settlement and it can best be described as growing into an urban centre. Due to its strategic location, Dumila is the hub of many of the surrounding villages as the centre of trading activities, provision of social services and a marketing point of rural produce. The availability of social services makes it more attractive for people from the surrounding villages. The area that surrounds the village centre is used mainly for crop cultivation ad livestock keeping. The population in this village has been growing rather rapidly from 2606 people in 1978 to 4215 in 1988, representing an increase by 61.7% (Table 2).

Wami Dakawa is another road-side village. This is a small settlement and it is inhabited both by crop cultivators and pastoralists although the latter are on rapid increase. For example, between 1978 and 1988 the population had increased by 57.7% from 1774 people to 2799 people (Table 2). This increase has been greatly contributed by Maasai pastoral immigrants. For the pastoralists, this village is located at a strategic point where they can easily sell their livestock products. Evidence of land degradation can be witnessed, especially around water points along the Morogoro – Dodoma Road. The soils in this village are fertile and support such crops as maize, sugar cane, millet sunflower and different types of vegetables. Wami River provides water for irrigation.

Milama village is another small settlement inhabited by both crop cultivators and pastoralists. The available population data suggests that it had 1248 people in 1978 and this increased to 1436 people in 1988 representing an increase of 15% (Table 2). Like many other villages in Morogoro district population change has been prompted by the Maasai migrants. Maize, groundnuts, millet and sunflower are the chief crops in the village with Wami River plain providing good agricultural land. Livestock keepers and crop cultivators are constantly fighting for land in this village and land use conflicts are quite acute in the village. The village has some pronounced scars of environmental degradation, particularly around watering points.

2.0 RESEARCH FINDINGS

2.1 Sedentarization and Changes in Livelihood Strategies

2.1.1 The Process of Sedentarisation

As already pointed out in Section 1.9.2 in recent decades the Maasai have been in deep crisis, particularly with regard to the management of their pastures and livestock. In general, their centuries-old occupation is coming under threat of existence. Although the causes for the crisis are several, those related to loss of grazing lands and prolonged drought are most significant. Nearly half (47.8%) of the Maasai in the study area identified the loss of grazing land as the main cause for their outmigration (Table 3).

The reduction of their grazing land has had an effect not only in terms of shortage of pastures but also has contributed to the spread of cattle diseases. It is no wonder that loss of livestock due to cattle diseases was identified as another reason for outmigration by 23.7 per cent of the respondents. Few other people (15.0%) decided to migrate in search of peace. Again this is another indication of the growing conflicts over resources, particularly pastures. Prolonged drought in Maasailand prompted others (8.5%) to outmigrate in search for pastures and water.

Confronted with the loss of grazing land due to geographical factors and political marginalisation, together with effects of prolonged drought, some Maasai have taken up crop cultivation in addition to livestock keeping in different parts of Tanzania, including Morogoro and Kilosa districts.

The settlement of Maasai in Kilosa District can be traced as far back as the late forties (Rigby, 1969). These were few in numbers and had less impact on the environment because of the abudance of natural resources to sustain their livelihoods. Today, these early immigrants reflect more diversified modes of livelihoods. However, a new wave of pastoral immigrants has been moving into Kilosa and Morogoro districts since the seventies.

Table 3: Reasons for Moving from Traditional Homes (%)

Reasons	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)	Average
Loss of grazing land	40.8	50.0	42.0	58.3	47.8
Loss of livestock due to diseases	18.5	33.3	26.3	16.7	23.7
Search for peace	22.2	16.7	21.1	0.0	15.0
Shortage of land for cultivation	3.7	0.0	5.3	25.0	8.5
Drought at home	14.8	0.0	5.3	0.0	5.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999.

Most of the immigrants in Dumila, Kambala and Dakawa seem to have moved as single families (Table 4). Only in Milama did they move in as groups of friends/*morani*. This suggests that the migrant cohort in Milama is younger than those of the other sample villages.

Table 4: Characteristics of Group Movements in the Sample Villages (%)

Moved as...	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)
Single /family	73.1	100.0	71.4	20.0
Groups/friends	26.9	0.0	28.6	80.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999.

Table 5 illustrates the reasons for the immigrants' choice of a particular village. More than half of the respondents (52.0%) in all villages considered availability

of pastures as the main criteria for choosing to settle in a village. This criteria was followed by availability of good arable land (17.8%) and less cattle diseases (17.5%). Surprisingly enough availability of water ranked quite low (7.1%) as criteria for choice of a village. It would seem that pastoralists solely dependent on cattle keeping are more inclined to move out in situation of scarcity of resources that are necessary to sustain their livelihoods. Otherwise, households which have more diversified livelihood strategies (e.g. trading, crop cultivation, etc.) tend to remain sedentary.

Table 5: Reasons for Choosing a Particular Village to Settle (%)

Reasons	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)	Average
Good land for agriculture	28.0	20.0	10.5	12.5	17.8
Availability of good pastures	28.0	70.0	47.4	62.5	52.0
Area has few cattle diseases	24.0	0.0	21.1	25.0	17.5
Availability of water	8.0	10.0	10.5	0.0	7.1
Availability of social services	12.0	0.0	10.5	0.0	5.6
Total %	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999.

2.1.2 Changes of Livelihoods

On average, about 27.2 per cent of the respondents argued that their incomes, and hence financial capital, had gone up since migrating to their new villages (Table 6). This increase is most notable among people in Dumila and Dakawa villages where 41.7 per cent and 41.2 per cent, respectively, said they were now getting more money. This can best be explained by the fact that these two villages are located along the Morogoro-Dodoma road, thus exposing these people to a variety of income generating activities. The best example of such activities is petty commodity trading. Furthermore, other respondents attributed this rise in income to the prices that they charge when they sell their cattle and goats. The prices of these livestock in the new areas are relatively higher than in their former homes. In addition, the sale of milk is on the increase compared to the situation in the former homes.

Table 6: Type of Change in Livelihoods (%)

Type of Change	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)	Average
More income/money	41.7	9.0	41.2	16.8	27.2
Less dependent on livestock	16.7	9.0	17.5	25.0	15.6
Herd size has gone down	0.0	27.5	5.9	16.6	12.5
Less income	0.0	18.5	0.0	16.4	8.6
More food in this place	16.7	9.0	0.0	0.0	7.9
More crop cultivation	5.6	4.5	11.8	8.4	7.6
More economic activities here	8.3	0.0	11.8	8.4	7.1
Own land in this place	0.0	13.5	0.0	8.4	6.9
Better social services	11.0	9.0	11.8	0.0	6.6
Total (%)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999

On the other hand, Kambala and Milama villages, that are located away from the main road, have fewer and limited economic opportunities. This explains why some respondents (18.5% in Kambala, and about 16.4% in Milama) had reported a fall in incomes. A decline in herd size was noted by some 12.5 per cent of the respondents. This change was more noted in Kambala (27.5%) and in Milama (16.6%). The decline in herd size was contributed by two factors. Initially, as the Maasai moved into the new places they tended to sell some of their stock to get cash for establishing themselves in the new villages. Some sold part of their stock to get financial capital for their trading business and others to buy land for crop cultivation. Another factor that may have contributed to the fall in herd size was diseases. Respondents in the study area noted that a considerable portion of their livestock died from cattle diseases in the new areas. Although the Sokoine University of Agriculture (SUA) came to their rescue by providing the much needed veterinary services, some people have not been able to recover from the loss and hence they have had to change the economic base of their livelihoods, with crop cultivation becoming the new livelihood base.

Therefore, crop cultivation was observed to be on the increase as noted by some 7.5 per cent of the respondents. Limited areas for grazing have also forced some Maasai migrants to adopt crop cultivation as a means of earning a living. This has not been an entirely new activity, though. Actually it was being practiced in their former areas albeit only on a small scale (Homewood and Rogers, 1991). The adoption of crop cultivation to supplement livestock

has forced these immigrants to acquire land on which they grow crops. This change was noted by nearly 7 per cent of the respondents. A few other respondents (7.9%) in the study area reckoned that there was more food available in the new areas. This decline is most notable in Dumila village where about 17 per cent of the respondents noted this change. Based on the assumptions that these people have cash, this could be explained by the fact that this is a roadside village having many opportunities to get food through markets and farm production. The same opportunity is not available in Milama or Kambala villages.

Another change in livelihood as noted by about 7 per cent involves the availability of social services. This change is more noticeable in Dumila and Dakawa villages along the Morogoro - Dodoma road where services such as hospitals, schools, and shops and, in some cases, piped water are available. These respondents noted that such services were not easily available in their home districts. However, in the remote villages of Kambala and Milama few respondents noted this change.

DFID's Sustainable livelihood framework identifies assets as one of the three components of a livelihood (others are, capabilities and activities required for a means of living). On the basis of this therefore loss or gaining assets represent a form of change in livelihood. This is why it is important to look into assets possessed by the immigrant Maasai in their new areas of Kilosa and Morogoro districts.

An increased material assets acquisition by Maasai patoralists in the study area indicated that moving to these new places has improved their purchasing power. The material assets that they have identified and acquired include; houses, farms, farm implements and cattle. Most of these assets were also available in their former areas but some are of a higher quality now. For example, the majority of the respondents reckoned that they now have better houses. It was observed that the Maasai in Dumila and Dakawa villages had their traditional *manyatta* but also had some iron roofed houses. The same was also noted in Kambala village where some few prosperous pastoralists possess modern houses in the village as well as in Morogoro and Kilosa towns.

The adoption of such modern houses was ostensibly prompted by the need to store farm produce and other properties in a safe place. Moreover, the Maasai have decided to settle permanently in those villages. Permanent structures therefore became necessary.

As these pastoral groups have been forced to sedentarise, crop cultivation has become an important economic activity, consequently forcing them to acquire farmlands (through purchase and allocation by village governments). On these farms the Maasai grow food crops, especially maize. Most respondents reckoned

that in their former places individual land ownership was uncommon. The small plots that were individually owned were those on which they built their bomas. Therefore, to most of these people, land acquisition has been among the significant changes that they have undergone in the new villages in Morogoro region. From focus group discussions it was reported that some Maasai own between 10-100 acres of land.

Crop cultivation is almost exclusively for home consumption. Few well-off farmers produce for the market. A more notable case is that of prosperous pastoralist farmers in Kambala who own assets such as tractors that are used for cultivation. The number of this type of farmers is said to be on the increase in the village.

Few other immigrants own shops in Dumila, Dakawa and Kambala villages, as well as in Kilosa town. According to focus group discussions the capital for such establishments was obtained by selling part of their herds. Three other Maasai pastoralists from Dumila village own guest houses and other valuable assets in Morogoro town.

It is evident from Table 7 that the sedentarisation of the Maasai has had varied effects depending on the villages they settled in. To some life has become better in their new areas while to others life has become worse. Less than a quarter (23.9%) of the respondents in the four villages said their livelihoods had changed negatively while 21.2 per cent felt that their livelihoods has remained unchanged. The majority (54.9%) said that their lives had improved for the better. Such variations could be explained by the different resource endowments of the new villages, as well as their locations with respect to roads and urban centres (Table 7).

Table 7: Perception of Change in Livelihoods (%)

Perception	**Dumila (N=40)**	**Kambala (N=40)**	**Dakawa (N=40)**	**Milama (N=40)**	**Average**
Life has improved	54.2	41.2	61.9	62.5	54.9
Life has remained the same	8.3	35.3	28.6	12.5	21.2
Life is worse-off	37.5	23.5	9.5	25.0	23.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999.

Another way of looking at the changes in livelihood strategies of the Maasai migrants is to trace the changes in activities that are necessary for living. The process of sedentarisation has forced the Maasai to adopt new economic activities. Nearly all the Maasai migrants in the study area reckon that there

have been changes in their economic activities. Either there has been new activities or an expansion of some of the activities that were practiced in the former homes. Perhaps the adoption of petty trading has been one of the most significant changes in livelihood in the new areas. This is more pronounced in the Dumila (25 %) and Dakawa (14.3%) villages both of which are located along the Morogoro-Dodoma road (Table 8). The people trade in consumer goods as clothing, milk, beads, etc.

Table 8: Change of Economic Activities in the New Areas (%)

Activities	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)	Average
More crop cultivation	26.0	60.0	14.3	50.0	37.6
Sale of casual labour	7.0	24.0	42.9	12.5	21.6
Selling and buying cattle	21.0	4.0	7.1	37.5	17.4
Petty trading	25.0	4.0	14.3	0.0	10.8
Selling milk	14.0	4.0	21.4	0.0	9.9
Traditional healing	7.0	4.0	0.0	0.0	2.7
Total	100.0	100.0	100.0	100.0	100.0

Source: Field Data, 1999.

The selling of livestock has been on the increase. Most Maasai reckoned that they are selling more cattle in their new areas than they did in their former homes. However, it must be noted that they also buy young cattle to replace those sold and dying from diseases. This increase in cattle business may be a result of increased demand for cash, e.g. for taking children to school, need for capital to establish other businesses, paying for food and other essential social services, etc. The number of weekly markets has also been on the increase in and around Dumila. Meat shop owners from as far as Morogoro town buy cattle in large numbers. Goats are mostly sold in Dumila where traders from other parts of the region congregate to buy them.

Selling of milk has been on the increase. In a conversation between the researchers and Dakawa and Dumila ward secretaries, it was noted that the sale of milk in these areas has been on the increase since the coming of the Maasai migrants. Selling of milk is carried out largely by women and, just like milking the cows, this is their traditional role in the *enkang*'s division of labour. They as well reckoned that they are selling more milk in their new places than in the former homes. This may be due to the fact that there are more milk consumers in these new areas. Indeed, milk from the study villages is transported as far as Morogoro and Kilosa towns. Thus it is hardly surprising to note that

roadside villages of Dumila and Dakawa are more famous for this activity, accounting for 14.0 per cent and 21.4 per cent of the business, respectively.

Although the Maasai do not normally eat chicken, they keep them for selling. The chicken sold is the local breed. These are more preferred by consumers. This business is also more common in Dakawa and Dumila. Selling of eggs has also become an important activity done especially by women. Again like chicken such business is more notable in Dumila and Dakawa villages.

Maasai women are also known to be good herbalists. This is conspicuously noted in many urban centres in Tanzania, including Dar es Salaam, possibly due to high costs of modern medicine and the incidence of new psychosomatic diseases. In the study area the selling of traditional medicine is particularly rife in Dumila village.

Crop cultivation is not totally new to most Maasai. However, what have changed are the scale of production and the range of crops grown. Respondents in Kambala (60%) and Milama (50%) villages reported to have increased their crop cultivation. However, though crop production had increased the methods used were still very crude. A majority, more so the poor, used the hand hoe and applied no fertilizers at all in their farms. More often than not the well-off hired the indigenous *Waswahili* to cultivate for them. On the other hand, the roadside villages (Dumila and Dakawa) have few respondents who had more crop cultivation in the new places. These people grow a wider range of crops. Crops grown include maize, beans and sugar cane.

Despite the diversification of their economic activities livestock keeping remains central to their livelihoods. The little money that is obtained through the sale of crops is used to rebuild their herds of cattle. Also trading activities are linked to livestock keeping in terms of the former providing capital to buy more livestock (Table 9). Although Table 9 tends to show that the selling of crops to buy cattle has not been a significant factor in the study area, except in Milama (30%), rebuilding of stock by manipulating the herds is quite significant.

Table 9: Methods of Increasing Livestock Numbers (%)

Responses	**Dumila (N=40)**	**Kambala (N=40)**	**Dakawa (N=40)**	**Milama (N=40)**
Natural increase	51.9	36.3	75.0	25.0
Sell old and buy young animals	29.6	50.0	9.4	37.5
Sell crops and buy animals	7.4	13.7	9.4	30.0
Inheritance, Dowry, etc.	11.1	0.0	6.2	7.5
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999.

The popular means of building the herd size in all villages, but especially so in Dakawa (75.0%) and Dumila (51.9%), is from natural increase, followed by selling of old stock and buying young animals. The latter means of building the herd was prominent in the predominantly pastoral village of Kambala (50%), suggesting that a majority of these pastoralists had either come to the area with their livestock or that they had lived in the area long enough to have built sizeable herds.

However, it is also noted that much as cattle continue to be a social asset, economic importance attached to cattle is increasing possibly due to an increase in the demand for meat and milk. It is thus that more than half of the respondents (52.9%) stated that they were culturally less dependent on livestock now than they were before. Cattle have especially become an important economic asset in more urbanized villages like Dumila (Table 10).

Table 10: Changes in Dependence on Livestock (%)

Dependence on livestock	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)	Average
More dependent	65.2	23.5	29.2	25.0	35.7
Less dependent	13.1	11.8	20.8	0.0	11.4
No change	21.7	64.7	50.0	75.0	52.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 1999

In conclusion, one can say that the sedentarisation of the Maasai has led to the accumulation of new material assets such as permanent houses, tractors, motor cycles, bicycles, etc. This has been made possible by the growing inclination to sell livestock and invest money in other economic activities. Indeed this is a significant component in the changes of livelihoods among this community. In addition to the acquisition of such material assets, the sedentarisation of the Maasai has also led to increased capabilities in managing their day-to-day life. For example, the sedentarisation process has led to increased involvement in crop cultivation as a means of living. Such a change has been rather gradual though. Also, the process of sedentarisation has led to increased involvement in trading activities. This has increased in magnitude in those villages such as Dumila and Dakawa, which lie along the Morogoro - Dodoma road.

2.1.3 Changes of Livelihoods and the Environment

The findings of this study show clearly that there has been a dramatic change in livelihoods among the migrant pastoralists in the two districts. Environmental

damage is also evident in many parts of the study villages. For example, soil compaction and increased salinity were noted in many water points and this can be attributed to concentration of livestock in smaller areas. Farmers in Milama and Kambala villages also reported of declines in crop yields due to decline in soil fertility. Elsewhere within Kilosa district a situation is noted whereby some farmers have been forced to abandon part of their farmlands because of soil compaction and increased salinity. This problem was also reported in parts of Dumila and Dakawa villages although the villagers saw it as a minor problem. Loss of vegetation cover was particularly evident in Kambala and the roadside villages of Dakawa and Dumila. Such changes on the environment have been prompted by the confinement of livestock in small villages and the increase in livestock herds in sedentary villages. These forces are further compounded by prolonged drought, which has hit most areas of two districts.

The roadside villages such as Dumila and Dakawa are also facing environmental degradation. These are the villages where the Maasai have the advantage to combine livestock keeping with other income generating activities such as trading. Such concentrations are most notable around water points where trampling has become a serious problem.

The sedentarisation of the Maasai has had some effects on the environment. The social differentiation among the Maasai has produced an impoverished group (ndonyo). This group constitutes over a half of the Maasai population. Their impoverishment has largely been caused by the loss of cattle and lack of capital to acquire land or other assets. This section of the Maasai has very little to do with land or other environmental resources. With no large herds of cattle their survival is dependent on working for other people in their villages, but also working for daily wages in the nearby townships.

On the other hand, the well-off *(oloketo)* cultivate the land and own large herds of cattle (average of 500 cattle) with considerable impact on the environment. Loss of vegetation cover was even more evident in villages with large herds of cattle. It is argued here that it is the wealthy pastoralists who cause harm to the environment. Otherwise there is very little evidence to suggest that the poor, or in this case the impoverished pastoralists degrade the environment. On the part of crop cultivators we also note an increased concentration of farming activities in certain localities. Crop cultivation is also undergoing confinement due to increased livestock in the areas – and this has had some adverse impacts on the environment.

2.1.4 Problems Facing Migrant Pastoralists

Pastoralists in the four study villages identified several problems which threaten both their livelihood system and the environment in which they live. It is

noted that the severity of each environmental problem however varies from one village to another (Table 11).

Table 11: Ranking of Major Problems Identified by Pastoralists

Identified Problems	Dumila	Milama	Kambala	Dumila	rank
Shortage of water & grazing land	2	1	1	1	1
Inadequate veterinary services	1	3	2	2	2
Lack of markets for livestock products	4	2	3	3	3
Poor social services	3	4	4	4	4

Source:Field survey, 2000

Shortage of water and good pasture was identified as the most serious problem particularly in Kambala and Dumila villages where there is a higher concentration of livestock. In essence, Kilosa district does not have enough good land to accommodate crop cultivators and the influx of pastoral people. The shortage of land and water has significantly contributed to the spackling clashes between crop cultivators and pastoralists.

The second problem identified was inadequate veterinary services for their livestock. This problem is more pronounced in Milama and Dakawa villages. The pastoralists in these villages attributed this problem to the increased concentration of livestock in permanent villages. Otherwise the Sokoine University of Agriculture (SUA) provides some veterinary services to pastoralists in the two districts.

Lack of reliable market for livestock products was also identified as another problem. Many respondents feel they are in need of some extra cash to purchase consumer items. This has to be obtained by selling part of their stock or its products. However, it was observed that the market for livestock products (e.g. meat, and milk) is not very reliable. Closely related to this problem is the fact that crop cultivation and livestock keeping are no longer reliable as means of earning a decent livelihood. These people want to diversify their livelihoods but they lack of capital to establish non-farm activities was reported as the biggest constraint.

2.2 Sedentarisation and Social Differentiation

Generally, sedentarisation has led to holistic changes in human, social, natural, physical and financial capitals. Human capital represents the skills, knowledge, ability to labour and good health that together enable people to pursue and achieve different livelihood strategies. At household level human capital is a factor of the amount and quality of labour available; this varies according to household size, skill levels and health status among others (DFID, 1997).

In the study villages the majority of Maasai migrants said they had no any formal education. Nevertheless, most respondents reckoned that they have had more opportunities to attend primary school education in their new areas. In Dakawa village, for example, nearly three per cent of the respondents had secondary education. Such achievements have been possible due to their sedentary life.

Human capital in terms of labour has undergone major changes. Most heads of *enkangite* in the study area complained of shortage of labour, particularly for herding. Until recently, young boys and the *morani* warriors have herded cattle. Calves were separated from adults and were herded by women and their daughters. This was to ensure that the calves are not exposed to adult cattle diseases. Field data show, however, that many of the young men in the study villages have either taken up non-livestock keeping activities in the sample villages or have migrated to urban centres, such as Morogoro and Dar es Salaam, in search of wage employment. This led women and young girls to shoulder the herding task. The result has been increased workload for the women. Moreover, as the calves are now grazed together with the rest of the herd, they are systematically exposed to the dreaded cattle diseases.

Traditionally, the relationship between generations was hierarchical and one of mutual dependence. The youth depended on the elders for economic sustenance, information and knowledge needed in their daily activities and relations. As the youth aged the roles changed. Social roles and positioning of children in the family were ascribed according to birth rank and position of the mother in case of a polygamous marriage.

Today the relationship between generations seems to have become more individualistic than before. The notions of success have become very subjective. Those children considered as being successful happen to be of much help to their families. With the economic recession that is facing the study villages, very few young people manage to qualify for the success accolade. The fear for generational discontinuity has, therefore, gripped the elders of the sample villages. The changing economic fortunes have incapacitated the elders; so much so that they have lost control over their children and their activities.

Even the thinking system of the old and new generations are different. While most of the elders hold that there is a future in livestock keeping provided the state plays its role well, most of the youth are of a different opinion. Their hopes are in non-livestock keeping preoccupations. But since these are very often difficult to find in their own villages, many of them have moved away in search of wealth as independent individuals elsewhere while some have opted to drinking and the easy life – a life traditionally reserved for the elders. Meanwhile, the elders remain distraught; looking on disapprovingly but feeling

powerless to influence. This phenomenon is, however, not peculiar among the pastoralist Maasai of the study area. Similar developments are documented among agricultural communities in Njombe district and elsewhere (Mung'ong'o, 2001).

Social capital is defined as social resources upon which people draw in pursuit of their livelihood objectives. These are developed through network connectivity, membership of more formalised groups and relationships of trust, reciprocity and exchange. The social relations between the pastoral migrants and the indigenous people are changing. Initially, the settlement of the Maasai sparked hostile relations due to conflicts over the use of land resources. This explains why some villages like Twatwatwa, near Dumila, were set aside for pastoralists only.

It must be mentioned that up until the time of fieldwork there were already reports of sporadic fightings, and even killings, in some nearby villages. The situation came to a head in the more serious killings of Kilosa late in the year 2000. However, as the migrant pastoralists are forced to change their economic ways of life, good relations are beginning to emerge. This development can be attributed to several factors such as: development of trade relations between the Maasai and the indigenous people; increased use of the common social services by the Maasai; and the phenomenon of intermarriages between the two parties.

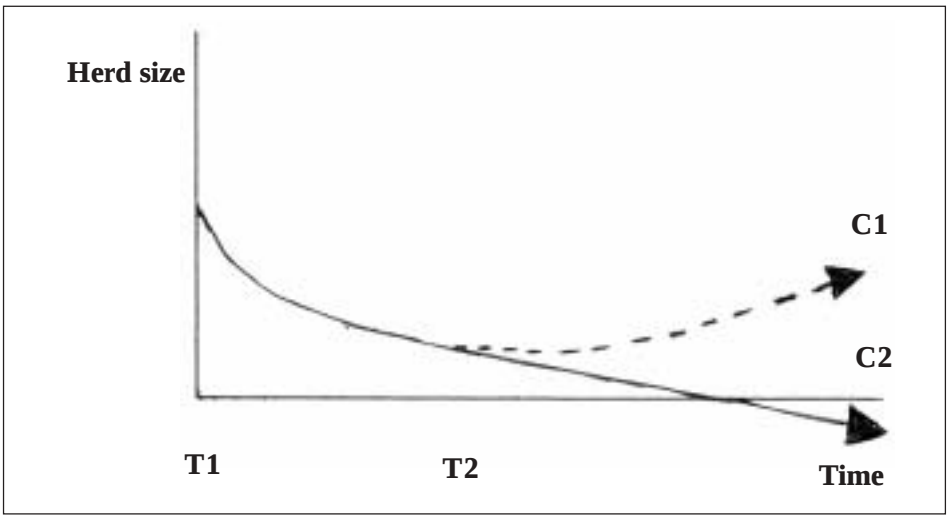
Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of the changes to the physical environment that help people to meet their basic needs and be more productive. Producer goods are the tools and equipment that people use to function more productively. Sedentarisation of the Maasai has had profound effects on these assets.

2.2.1 Trends in Herd Size

Pastoralists throughout Africa are known to place more value on the number of livestock than on the quality of animals. Indeed pastoralists have been characterised as having a social – cultural attachment to cattle – the so-called 'cattle complex'. It is further noted that pastoralists always have a tendency to rebuild their herds of cattle. Therefore, what may seem to be a move to destock is actually a strategy to have a more productive stock. Otherwise the practice has been for the Maasai to sell old stock and buy calves. Thus, the staggering herd size especially as noted in pastoral migrants in Kilosa and Morogoro districts is very deceiving as far as land use planning is concerned.

Almost all respondents in the study villages reported of staggering herd size in their households in the period of stay in the new villages. These trends are represented in Figure 2.

Figure 2: Trends in the size of livestock among immigrant Maasai



Source: Field data, 2000

Time **T1** represent the period of settlement in the respective villages. This is marked by a decline in herd size as part of the stock is sold to obtain capital to buy land, food and other material assets. Other respondents attribute this decline to incidences of cattle diseases, and the fact that their animals have to acclimatise in the new areas.

Time **T2** marks the beginning of social differentiation among pastoralists. To some pastoralists the capital invested on land and other businesses is paying back. The profit is now used to buy more livestock, (usually calves) and hence **curve C1,** which represents a situation whereby livestock is on the increase - a process that enriches some pastoralists while others remain poor.

On the other hand **curve C2** represents a situation where the invested capital fails to yield some profit, and hence impoverishment and a further decline in the number of animals. Most of those who have lost their cattle turn into other economic activities, for example, working for other Maasai for wages in the same villages or in the nearby townships, especially Dumila and Morogoro. Others tend to move as far as Dar es Salaam where they become watchmen. Yet another category of these losers turn into crop cultivators.

Such trends are very central in understanding how much land to allocate to pastoralists. Thus, short-term declines in herd sizes should not be interpreted as a tendency for these pastoralists to reduce their herd size. Otherwise the tendency to rebuild their stock is always at the heart of most Maasai pastoralists.

However, as argued below access to cattle is a crucial criterion in judging between the poor and the well-off.

2.2.2. Wealth Ranking

Table 13 illustrates the status of socio-economic differentiation in the study villages as a result of differentiated access to the above-mentioned capital resources, particularly cattle (Figure 2). The well-off group is characteristically small in all the villages, except for the cohort in the more urbanised Dumila (12.3%). On the other hand, poverty seems to be more concentrated in Dakawa (71.6%) and Milama (64.2%) where the Maasai are more or less still leading a pastoral way of life (Table 12).

Table 12: *Enkang* **Economic** *Uwezo* **(Ability) in the Four Study Villages (%)**

Category	Dumila (N=40)	Kambala (N=40)	Dakawa (N=40)	Milama (N=40)	Average
Well-off (Oloteko)	12.3	4.7	4.5	4.6	6.5
Middle group (*Uwezo kati*)	44.5	50.0	23.9	31.2	37.4
Poor group (*Ndonyo*)	43.2	45.3	71.6	64.2	56.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Field Data, 2000.

Wealth ranking was done to monitor the process of social differentiation and power relations. The wealth ranking exercise was performed by teams of selected Maasai and other villagers from the *vitongoji* (sub-villages) of each village and categorised by age and gender. Unlike the ranking performed by Potkanski (1994) whereby only one variable, i.e. livestock per *engaji*, the present exercise was multivariate, and was accomplished in the following manner:

First of all, a list of assets that are perceived as "wealth" in the community was compiled. The list included; a good house roofed with iron sheets; cattle; goats and sheep; a sizeable food reserve; ox-ploughs; tractors; and big farms plus capital to invest in agriculture. Other assets listed were the ability to hire *Waswahili* (non-Maasai) labourers; the ability to send children to school; and the ability to pay development tax (*kodi ya maendeleo*). Others included owning a shop, owning a milling machine, and bicycles. The power or knowledge to heal other people (traditional healers/midwives) was also listed as an important asset.

Secondly, the importance of each of the listed assets as a criterion for assessing wealth or social status of community members was then determined. The number of cattle, the size of food store and how long such food could sustain an *enkang*'s family's food needs, number of goats, etc., which make a community member to be considered as being well-off or poor were also determined. To qualify as being considered well-off (*Oloteko*) a father or husband in an *enkang* had to own a combination of the following assets: more than 500[1] cattle, more than 200 goats or sheep, and more than 2 bags of grain per person in the *enkang*. He could also own between 20 and 30 acres of farmland and possibly a tractor. He could also own a shop, a milling machine, 3-4 bicycles, a radio and several good houses in the village and the nearest urban centre.

A very poor *enkang* (*ndonyo*) was, on the other hand, defined as one with none of these assets. They depend on traditional help from other *enkangite*. They cultivate less than half an acre for subsistence. They cultivate with a hand hoe. They always plant late and harvest maize when still green. They cannot pay development taxes or send their children to school. When they fall sick they depend on traditional healers for medicare.

In between these extremes the villagers identified a middle group of the not-so-wealthy (*uwezo kati*). The not-so-wealthy have between 100 and 300 cattle, but also keep other people's cattle. They have between 10-20 goats and between 5-6 acres of arable land. They have enough food reserves to last the year but with no surplus. They are dependent on family labour, and often the wife(s) indulge in beer brewing, selling beads and/or dispensing traditional medicine.

Thirdly, this exercise was followed by the ranking of the *enkangite* according to the ownership of the listed assets. The names of the *enkangite* heads from *vitongoji* lists developed during the fieldwork were then written in small pieces of paper and used for ranking by each group.

2.3 Land Use Conflicts and Resolutions

2.3.1 Causes and Magnitude of Both Conflicts

Actually Kilosa and Morogoro do not have much land that is good enough for pastures and cultivation. Thus, with the influx of large herds of cattle, arable land diminishes further and so do other resources, particularly water.

Proper land use planning at both the district and village levels is the major contributing factor to such conflicts. Herders who possess excessive livestock, which by virtue of their concentration to pressure on agricultural land, further compound this. It is estimated that there are 250,00 herds of cattle belonging to the Maasai in the District.

[1] In some cases, however, 500 cattle was on the high mark.

Conflicts over resource use, particularly land and water between sedentary agriculturists and nomadic pastoralists have been on the increase recently. In Ludewa village of Kilosa district these conflicts became so serious to an extent of claiming lives of 31 people in December 2000. Actually, earlier studies in Kilosa District (Misana 1996) had cautioned that land use conflicts between crop cultivation and livestock keeping could lead to bloodshed. This problem becomes graver when prolonged draught, expansion of crop cultivation or overly large herds of cattle cross the time of sustainability for both ways of livelihood. Pastoralists also find themselves in conflict with the forest reserve conservation authorities on the Western Highlands in Kilosa district.

Further conflicts have also been noted between small holder crop cultivators and large estate farms found in Kilosa District. The presence of large-scale farms places a limit for expansion of small holders' farms. Such conflicts, however, have not come out into open clashes probably because the Forestry and Beekeeping Division has had long standing laws that prohibit farmers to expand into the forest reserve. Nevertheless, incidences of encroachment into the forest reserve are not uncommon.

2.3.2 Conflicts Resolution

The conflicts between Maasai pastoralist and the indigenous crop cultivators are being resolved in a number of ways. Such ways include, paying of losses to one group by aother so as to resolve the conflict amicably; through the intervention of the Ward Tribunal Councils; and in a few incidences through the courts of law.

The persistence of open clashes in many villages of Kilosa District for example is an indication of the weaknesses in the reconciliatory bodies. In Kambala village, for example, Maasai pastoralists complained of biased judgments that favor crop cultivators. As one pastoralist put it *"Only in one case out of 10 will a Maasai win a dispute against crop cultivators"*. On the other hand, however, crop cultivators argue that pastoralists are, in most cases, the main offenders as echoed by one villager *"It is very rare that crop cultivators invade the Maasai's grazing lands"*.

Discussions with key informants in the study villages further revealed that the District Councils take wrong approaches to resolve the land use conflicts. It was reported, for example, that the use of fines and threats aggravate the problem even futher. Many other village informants complained that the fines charged on pastoralists were not high enough to deter them from grazing their livestock on croplands. As one elderly woman put it: *"A fine at the level of Tshs. 5,000 (approximately US$ 4.8 in October 2003) is just too low to deter pastoralists from grazing their livestock in our farms"*.

It was further observed that it takes a very long time to resolve conflicts and this breeds suspicion of corruption. The delay in settling these conflicts has often times prompted the conflicting sides to build tension. On their part farmers resort to forming traditional defense group called *'Sungusungu'*. Such moves only succeed in breeding further tension and hatred.

Land use conflicts (causes and resolutions) in Kilosa and Morogoro districts can be looked at from land use planning point of view. Otherwise the root cause of the problem is not simply an increase in the size of livestock in the two districts.

Basically, Kilosa and Morogoro districts do not have adequate land that is good enough for crop cultivation and livestock keeping. What is evident from the study areas is that there is no participatory land use planning through which villagers, both crop cultivators and livestock keepers could express their demands and needs for land. Officials from the National Land Use Planning Commission (NLUPC) who argued that planners do not know villagers' needs for land for different uses further echoed this.

The shortage of land is further aggravated by the presence of sisal estate farms within the village lands. This makes it even more difficult to expand farmlands. Under the privatisation programme one wonders why such large farms are sold to foreign investors instead of giving more land to indigenous villagers.

In a discussion with officials of the National Land Use Commission, it became evident that there is no grassroots participation in village land use planning. For this reason it becomes very difficult on the part of planning authorities to know the actual needs of the villagers. This may also imply that the district may not know what the actual needs for pastoral lands are. There is need for the District officials to collaborate with villagers on land use planning through participatory planning.

Certainly one would even suspect the lack of land use planning capacity at district level. The little land use planning that is being done is actually a simple demarcation of boundaries between villages. The approach has been to designate some villages as crop cultivation areas and others as pastoral villages. Indeed no one village alone can successfully do its own land use planning because of the migratory nature of livestock keepers. Therefore this calls for inter-village planning whereby livestock 'corridors' could be established between villages. Indeed, this is the responsibility of district land use planners.

At the national level, it is noted that the National Land Use Commission has severe budgetary constraints. On average the commission is allocated funds just enough to undertake land use planning in 4 villages per year for the whole country. Definitely this is not enough given the number of villages requiring this service.

Some villages, Kambala, in Kilosa district for example, have been facing relentless pressure for land from local investors based in Morogoro and Dar es Salaam. Presumably acting on pressure from these investors Morogoro Regional officials have been making attempts to split Kambala village into two. One village would be for large-scale farmers and the other for livestock keepers. Actually this is an example of imposition of land demands from outside the villages.

Crop cultivation and livestock keeping can indeed co-exist for mutual benefits. This is only possible when these land users are made aware of their needs for land through participatory land use planning. It is thus recommended that district officials make concerted efforts to involve local people in land use planning rather than imposing plans on villagers.

The Village Land Act (1992) is very elaborate on the priority that is given to villages in land allocation. Therefore, instead of the Parastatal Sector Reform Commission (PSRC) selling the settler plantations to foreign investors, villages should be encouraged to apply to the Commissioner of Lands to acquire land that lies within the village boundaries. District officials could help in creating such awareness. It is further recommended that land use planning capacity at district level should be built to ensure sustainable use of natural resources and hence enhance livelihoods.

3.0 DISCUSSION AND POLICY IMPLICATIONS

3.1 DISCUSSION

As stated in Section 1.5 the present study intended to test four hypotheses. The results are presented and discussed below. The measurement of deskilling required more time and this was one of the problem areas during this study.

Hypothesis 1: *The sedentarisation of the pastoral Maasai and the change in their livelihood strategies has led to their impoverishment.*

This hypothesis was put forth on the premise that sedentarisation processes, livestock diseases and the adoption of consumer practices characteristic of non-pastoral communities have gradually put the resources of the rich among the Maasai less accessible to the poor. Data from the wealth ranking exercises tends to support this hypothesis. It demonstrates that while the group of well-off pastoralists has remained typically small (6.5%), that of the poor has on average grown bigger (56.1%) with the worst cases occurring in the largely pastoral communities of Dakawa and Milama. The decline of pastoral resources and the profitability of agricultural pursuits have drawn more Maasai into agriculture; widening the wealth gap between the well-off groups and the poor. What is telling in this respect, is that change in livelihoods has also led to

changes in interpersonal relations. With the acquisition of new assets access to such resources has also become more individualised.

Hypothesis 2: *Sedentarisation of the Maasai has contributed to the growing pressure on arable lands, thereby threatening the integrity of the environment in the expansion areas.*

This proposition was put forward in the light of the argument that the migrants originate from very different socio-ecological zones and have to adapt to new land management systems in order to comply with the local environmental conditions. It was believed that such adjustments could not always be successful, leading to negative effects on the environment. Data from this study shows that Maasai farmers apply the same cultivation methods as are applied by other non-pastoral communities. In some cases rich Maasai farmers hire non-Maasai people to cultivate for them. Much as pressure on agricultural lands could have increased as more and more Maasai have taken up crop cultivation as a way of life, there is little evidence that the integrity of the environment is under threat as yet.

Hypothesis 3: *Migration of the poor groups among the Maasai out of Maasailand and into the expansion areas has allowed them to rebuild their herds.*

This proposition was put forward with the belief that poor groups among the Maasai that migrate out of Maasailand into new environments aim to produce their own subsistence needs through agriculture. We believed also that they aim to produce a surplus that would allow them to rebuild their herds and return to their traditional pastoralist way of life. Data from this study indicate that genuine social change is taking place among the migrant Maasai. Not only are these people taking up non-pastoral economic activities as alternative ways of life, their very worldview is also changing. Talking to the youth, for example, one notices that their aspirations are very different from the aspirations of their elders. They want to be educated like all other Tanzanians. They want to learn new things and new ways of life (Mbilinyi et al., 1999).

Hypothesis 4: *As they are forced to sedentarise and diversify their sources of livelihoods the Maasai are gradually being de-skilled as pastoralists.*

It is evident from this study that the Maasai have been forced to sedentarise. This move has been prompted by difficulties of moving around with their livestock. The sedentarisation process has resulted in diversification of livelihoods. For example, in addition to livestock keeping, the Maasai have adopted crop cultivation as a means of earning a living. The process of sedentarisation, however, has led to increased social differentiation. While some have carried on with livestock keeping, others are seeking non-pastoral

livelihoods either by adopting crop cultivation or migrating into urban areas. There is no hard evidence from this study to suggest that urban migrants and those who have adopted crop cultivation have been de-skilled as pastoralists. These diversified livelihood strategies may be temporary and simply ways of accumulating capital to rebuild their stock at the opportune time. What is certain, however, is that a small section (especially the youths) of the Maasai appear to be losing a grip on pastoralism as a way of life.

As part of the discussion of the findings, it is important to point out that this study has identified some difficulties in employing the Sustainable Livelihood Approach in practice. For example, there are difficulties in measuring the social capital, thus making it even more problematic to compare between households or even communities. Furthermore, most respondents in the study villages felt that they were being unfairly dealt with because they did not enjoy the same 'political influence' as their crop-cultivators counterparts. They further argued that had they been able to influence the politicians better, they would have been assured of better land for their livestock and that most court cases would have been fair. This was indeed a far cry and raises a big challenge that in some communities 'political capital' could yet be another important dimension of the assets as it mediates access to other assets. Thus this study calls for more research on the applicability of the Sustainable Livelihood Approach among communities with different ethnic groups.

3.2 Policy Implications and Recommendations

It is clear from this study that the development of agriculture and livestock keeping as viable economic pursuits will continue to be the mainstay of the migrant Maasai in the study area and thus policy interventions should follow through three logical steps:

(a) improving the agriculture and livestock development sector so as to provide a base for the development of non-farm economic activities;

(b) improving the human capital in the rural areas so as to enable excess labour in rural communities to access other profitable economic sectors in the country; and

(c) improving the existing and other potential non-farm economic activities so as to expand the income earning portfolios in the rural areas.

This entails that the state takes positive policy actions in several related areas. First, it is strongly recommended that some appropriate form of subsidy programme on farm and livestock production inputs be formulated and implemented for the agriculture and livestock development sectors. How this subsidy can be administered and by whom is a moot point, but according to this and other related studies elsewhere, the need for subsidy itself is an indisputable fact.

Secondly, infrastructure such as rural roads, rural water supply, schools, research institutions, and extension services are important in reducing production costs and increasing productivity in agriculture and livestock keeping. Good roads facilitate efficient spatial distribution of factors of production and the commodities produced. On the other hand, education, research and extension services improve production techniques and enhance farm productivity. Improvements in infrastructure are, however, notoriously costly investments whose profitability is too marginal to be attractive to private sector capital investment. The state has the duty to provide for such investments, both for enhancing not only the development of agriculture and livestock keeping, but also of non-farm economic activities.

Thirdly, a system of micro credit financing to smallholder farmers and livestock keepers has to be developed. The hopes of neo-liberal economists that the structural adjustment programmes would create an enabling environment for private investment in rural banking, crop insurance, micro credit financing, etc., have been completely dashed (World Bank, 1994). Thus, more effective credit financing institutions need to be developed and supported. These institutions should be conjoined to the development of democratic farmers' cooperatives through which farmers would organise the sale of their crops and animal products and generally get their agricultural and livestock keeping requirements in time and at a reasonable cost. The existing cooperatives in Tanzania are still suffering from the hangover of one-party socio-political centralisation. They are ill suited to spearhead the emancipatory rural development thrust demanded by the current situation in Tanzania.

There is need to spend more on basic education and non-formal education, with special emphasis on pastoralists. There is also need to promote and strengthen non-government institutions that promote educational development in predominantly pastoral communities.

Lastly, land use conflicts between pastoralists and crop cultivators have been shown to be a serious socio-economic problem in the study area and Kilosa district in general. To avert these conflicts it is recommended that participatory village land use management be introduced in the area. Participatory village land use management entails participatory land use planning and management of natural resources. Hitherto district officials have approached land and other natural resources use planning by using a top-down approach which rarely takes into account the interests of local stakeholders such as pastoralists. There is need, therefore, to raise awareness on the importance of participatory and integrated land use planning in resolving conflicts both at the local as well as at the district levels.

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