

CHAPTER II

AGRICULTURE, LAND DEGRADATION AND POVERTY INTERACTIONS IN UGANDA

2.1 Introduction

This chapter aims to bring the perspectives of poor farmers to the fore, by providing the basis for government to address their constraints. First, the chapter highlights the importance of agriculture to the Ugandan economy and discusses the proximate and underlying causes of land degradation in Uganda. The chapter also provides a discussion on causes, nature and distribution of poverty in the country. In the last part of the chapter, a discussion of the existing institutional and policy framework for poverty alleviation and environmental management in the country is presented.

2.2 Importance and characteristics of the agricultural sector in Uganda

As already highlighted in the previous chapter, agriculture is the mainstay of the Ugandan economy, contributing about 40 percent of the GDP (see figure 2.1), 85 percent of export earnings, and 80 percent of employment (GOU, 2000a; NEMA 1999). The agricultural sector provides most of the raw materials to the mainly agro-industrial sector comprising of coffee hauling, cotton ginning, tea processing, sugar production, soap industries, edible oil, textile mills, cigarette manufacturing, grain milling, meat processing, and leather manufacturing (GOU, 2000a; NEMA 1999). It is a source of food security and remains the principal livelihood option for the poor people in the country (GOU, 2000a; Ellis and Bahigwa, 2003). Recent estimates show that about two thirds of the earned incomes of the poorest decile come from agriculture (Deininger and Okidi, 2001). While about 80 percent of the county's labour force is concentrated in agriculture, they receive less than half of the total incomes generated by the sector. Poor

smallholder farmers producing for subsistence on less than one acre of land and using traditional production techniques dominate the sector.

Nearly all the agriculture is rain-fed and uses almost no modern inputs. The agricultural sector is labour intensive depending primarily on household labour, largely comprising of women and children. For example, women form close to 80 percent of the agricultural labour force and contribute over 80 percent of all food production in Uganda (GOU, 2000a). The sector uses only a few rudimentary tools such as a hand hoe, with low mechanisation.

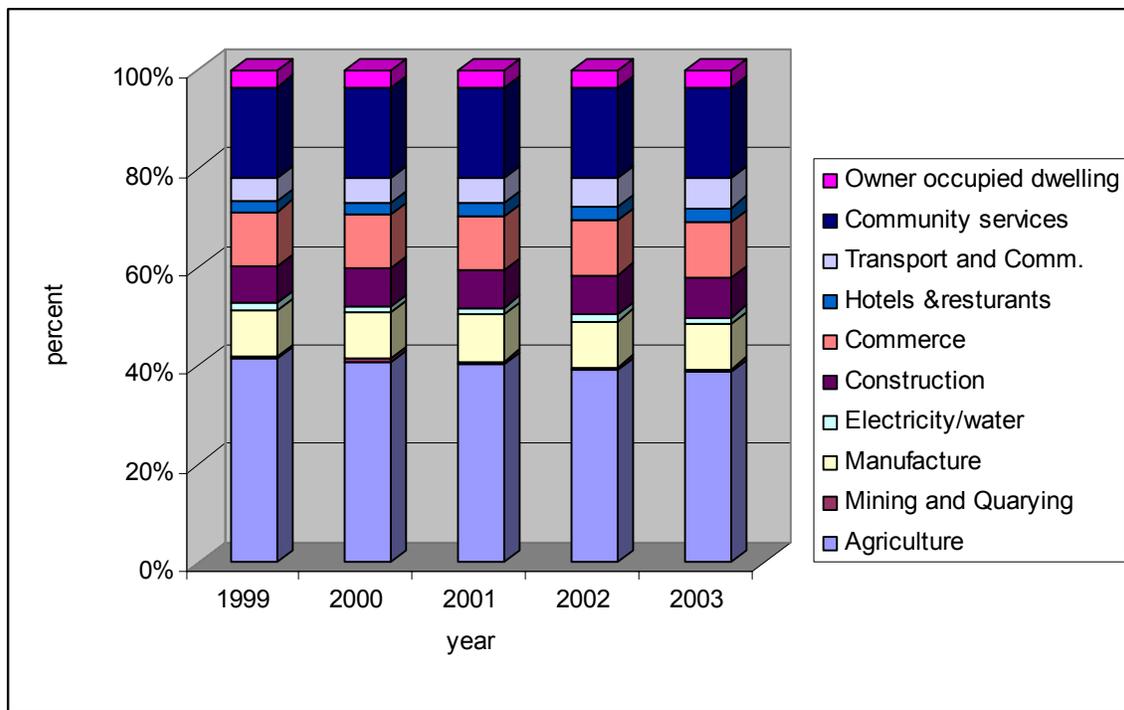


Figure 2.1: Sectoral contribution to GDP (percentage of total GDP)

Source: Constructed by the author with data from GOU (2004b)

In the early 1980's, the agricultural sector performance was very poor, recording an average growth rate of negative two percent per annum. However, following the introduction of the Economic Recovery Programme (ERP) in 1987 and the Structural Adjustment Policies (SAPs) of the early 1990s, economic growth in the country as a whole and agriculture in particular improved significantly. For

instance, the agricultural sector grew at an average rate of six percent per annum for the period 1992 –1996. Relevant policies introduced among others include, focus on rehabilitation of the infrastructure for traditional exports (coffee, cotton, tea and tobacco); development of non-traditional exports; removal of physical, technical and institutional constraints for agricultural development; agricultural pricing, trade and marketing liberalisation and strengthening agricultural research and extension.

Despite the above achievements, however, the welfare of the majority of subsistence farmers has not improved. Household incomes are still low and food security is not guaranteed. A study by the Economic Policy Research Centre (EPRC, 1998) shows that by 1998, about 40 percent of the population were considered to be food insecure. Extension services are not adequate and reach few farmers, while the rates of technology adoption for most soil conservation soil fertility management are below 30 percent. Only one third of the total food production is marketed, up to 60 percent of household expenditure is spent on food, and 56 percent of total agricultural GDP is subsistence production for own household consumption (EPRC, 1998). To make matters worse, recent estimates suggest that the declining agricultural productivity explains worsening poverty in rural Uganda (Deininger and Okidi, 2001). The next section discusses the extent and causes of land degradation in Uganda.

2.3. Extent and causes of land degradation in Uganda

As already highlighted in chapter one, there is strong evidence of wide spread land degradation in Uganda (GOU, 2004b; NEMA, 2002). The main manifestation of the degradation is soil nutrient loss, soil erosion, soil compaction and water logging (Nkonya *et al.*, 2004; Pender *et al.*, 2004). There is however limited empirical evidence on the economic impact of land degradation. The only available estimate of economic impact is by Slade and Weitz (1991) and is up to now still quoted in government papers. Slade and Weitz estimated that 4-12

percent of the GNP was lost due to environmental degradation. Soil erosion and deforestation contribute 85 and 15 percent of water contamination, biodiversity and topsoil loss, respectively (Olson and Berry, 2003). Soil erosion therefore remains one of the biggest environmental challenges being faced by the country at the moment. The lack of economic estimates of the impact of degradation is attributed to lack of data. Even where some data exists, the research institutions responsible for collection and dissemination of such data are not well coordinated

Available figures also suggest that while certain parts of the country such as Arua and Kapchorwa districts remain relatively under-utilized and not experiencing serious soil and land degradation problems, other areas such as Kabale and Kisoro districts are, over-utilised and heavily eroded (Table 2.1). As noted earlier, the extent and levels of soil nutrient loss are devastating. The estimated average annual rate of total nutrient depletion is 70kgs of nitrogen (N), phosphorous (P), and potassium (K) per hectare in the 1980's (Stoorvogel and Smaling, 1990). But what is more surprising is that despite the extent of the land degradation problem, adoption of technologies that could replenish the fertility or halt erosion is limited.

In Uganda, the two most fragile ecosystems are the highlands and the dry lands. As we show later on, population densities are high in the highlands and most land including the marginal lands such as wetlands and hillsides are under cultivation. There is little evidence that the increase in population densities have led to sufficient adoption of land management practices to offset worsening erosion and nutrient depletion (Nkonya *et al.*, 2002). The dry land area, mostly the cattle corridor is overstocked and degraded with de-vegetation and compaction leading to erosion. The soil erosive potential of the various soils in both the highlands and the cattle corridor are also shown to be high (Figure 2.2), except for Mbarara district.

The causes of land degradation in Uganda can be classified into two categories i.e. proximate and underlying causes. The proximate causes of land degradation in Uganda include biophysical factors such as topography, land cover change, climate, soil erodibility, pests and diseases. For instance, Figure 2.2 show that the soils in the densely populated highlands of Kabale and Mbale are highly erodable and Table 2.1 shows the extent and possible causes of erosion in these districts. One would thus expect investment in conservation of practices in such areas to minimise the erosion problem.

Extent and causes of land degradation also vary across the different agro-ecological zones. Uganda's agro-ecological zones are broadly categorized into two major classifications, as Uni-modal and Bi-modal pattern rainfall zones by Ruecker *et al.* (2003). The classification was based on the average length of growing period, rainfall pattern, maximum annual temperature and altitude (Figure 2.3).

The bi-modal rainfall zone covers most of the Lake Victoria crescent southwest highlands, central and western Uganda. The uni-modal rainfall zone on the other hand covers the eastern highlands, and northern Uganda. The local distribution is influenced by the presence of Lake Victoria and local topography. The average rainfall in Uganda varies between 700 mm in the very low uni-modal areas of Karamoja in the semi-arid north eastern-part of the country to above 2000mm in Kalangala district in the Lake Victoria region. The observed bi-modal pattern is linked to the double passage of the inter-tropical convergence zone

The observed rainfall patterns (Figure 2.3) vary significantly across the country and such variations have implications on land management, productivity and household incomes. The rainfall patterns greatly influence local land use patterns and management and this in turn influences population distribution and provide different challenges to the population. For instance, farmers in the highland areas such as Kabale and Kapchorwa districts are expected to adopt more soil conservation structures as opposed to those in fairly flat areas of the north and north east (Soroti and Lira districts) though the latter may adopt soil fertility enhancing technologies more.

Table 2.1 Areas affected by soil erosion and the leading causes in selected districts

District	Total land Area (Ha)	Estimated area affected by erosion (Ha)	area by soil erosion (Percent)	Population density (People/km ²)	Region	Main causes of soil erosion
Kabale	165,300	148,770	90	250	Western	Slopes, population pressure, deforestation, poor farming techniques, vulnerable soils
Kisoro	66,200	56,270	85	279	Western	Slopes, population pressure, deforestation, poor farming techniques, vulnerable soils
Masaka	551,800	275,900	50	151	Central	Slopes, population pressure, poor farming techniques, vulnerable soils
Mbarara	1,058,700	529,350	50	88	Western	Overgrazing, bush burning, deforestation, poor farming techniques, vulnerable soils
Kapchorwa	173,800	52,140	30	67	Eastern	Slopes, deforestation, poor farming techniques,
Arua	759,500	151,900	25	82	Northern	Slopes, population pressure, poor farming techniques, vulnerable soils, overgrazing

Source: GOU (2002)

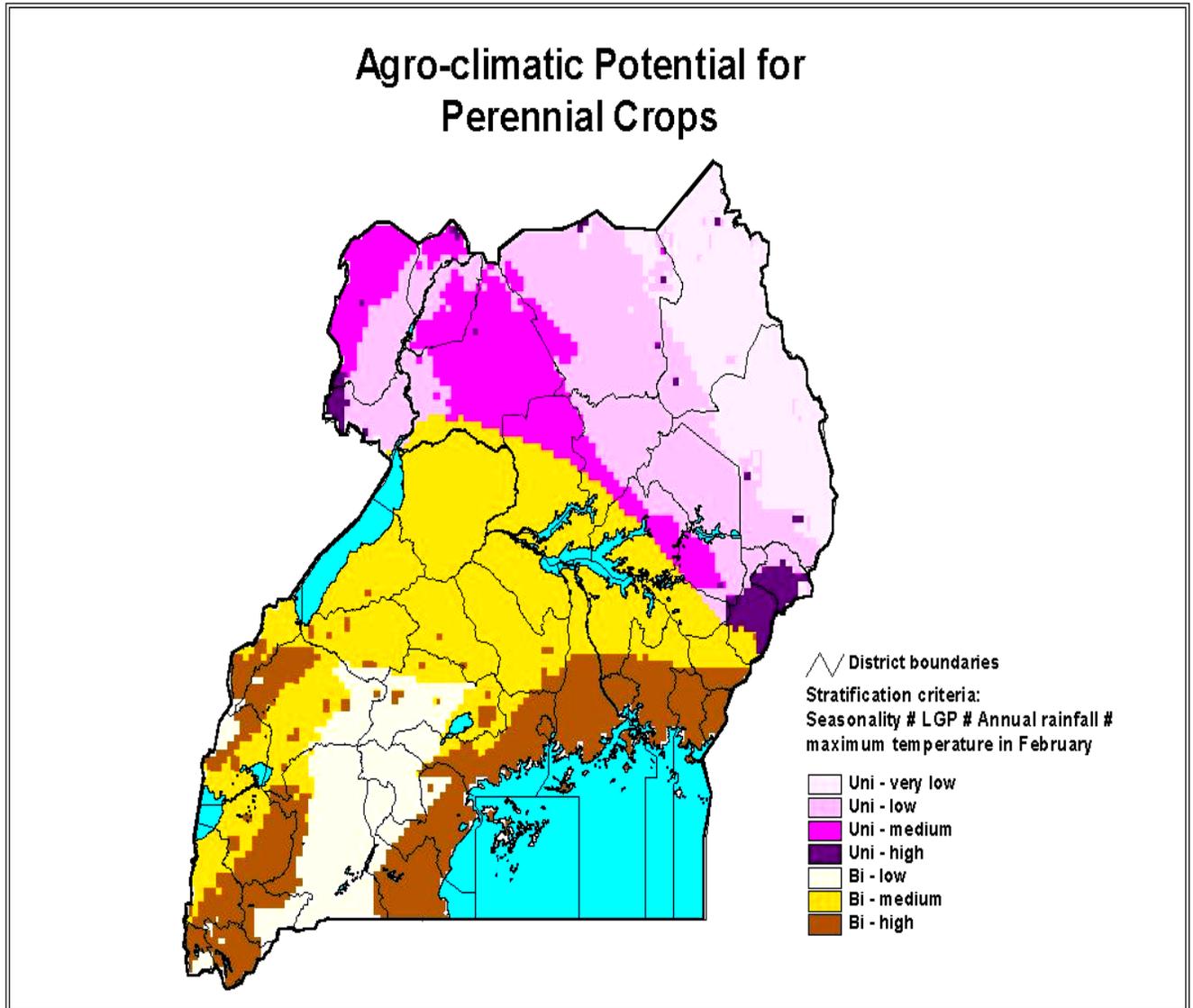


Figure 2.3: The agro-climatic potential for perennial crops in Uganda

Source: Pender *et al.*, (2004)

However, many of these factors such as climate, topography cannot be influenced by policy. As a result, this chapter puts more emphasis on the underlying factors that can be influenced by policy measures. These underlying factors include poverty, policy and market failures, increasing population pressure, access to rural finance, access to markets and public services, social norms and institutions, technical assistance and basic service delivery, and land tenure systems. The diversity of these factors across the country explains the differences in levels of soil erosion and soil nutrient depletion as well as the ability/inability to manage such degradation. In the following section, key leading causes of land degradation are discussed.

2.4 Underlying causes of land degradation in Uganda

2.4.1 Population pressure

In the 1960's, the country's population was small and fallowing was possible. Farmers small or big used to cultivate the soils until such a point they observed a reduction in yield and is only then they fallow. Fallowing helped restore soil fertility and improve soil physical properties. However, with current increases in population, fallowing is no longer possible. In some districts, land has become extremely scarce and fragmented. Only 27.9 percent of households practice fallowing in Uganda and the average fallow times have decreased from 2.06 years in the late 1992 to 1.63 years in the late 2002. Such premature fallow periods have little impact on recovering fertility and hence lead to low crop yields and soil erosion, plus persistence of pests, weeds and crop diseases (Omara-Ojunga, 1992).

Population growth is considered to be one of the most important factors behind the declining use of fallows and increased land fragmentation in Uganda (Nkonya *et al.*, 2004). From Table 2.3 it is also clear that population pressure is an important factor contributing to soil degradation in many of the districts in the country. For instance, the population density of 250 and 279 people per square

kilometre for Kabale and Kisoro districts, respectively, is too high. Given that these are highland areas with high erodibility potential of soils, such high population density is likely to lead to land degradation. Over the last three decades, population in Uganda has increased by 121 percent (UBOS, 2002). Provisional results of the 2002 population and housing census show that population grew at an annual average rate of 2.5 percent between 1991 and 2002 with the urban population increasing at a much faster rate than the rural population (UBOS, 2002).

Population growth affects soil degradation in a number of ways. First, rural population growth increases pressure on arable land, resulting in land fragmentation, cultivation of marginal lands, and reduced fallow periods (Nkonya *et al.*, 2004; Pender *et al.*, 2004; Omara-Ojungu, 1992). In fact, of the rural households in Uganda, 62 percent own farms which are less than a hectare, while 23 percent have farms which are between one and two hectares (NEMA, 2002). According to NEMA (2002), in many parts of the country vegetative fallowing has been largely abandoned, particularly in the districts of Kabale, Kisoro, Mbale and Tororo.

The expansion of agriculture into marginal areas such as wetlands, hillsides etc. due to population pressure require special attention and intervention. This practice of expanding agricultural activities to fragile lands is common in many parts of Uganda today. The situation is worsened when cultivation takes place on hill slopes where erodibility is high. Nevertheless, these marginal areas can be very productive if farmers make substantial investments on their land. Such investments include terracing, application of manure, planting of trees among others. These investments conserve soil and water at both the community and farm levels. With such investments, the food security situation will improve and other national objectives of poverty alleviation are more likely to be achieved.

2.4.2. Access to markets, roads and transport

As noted by Barbier (2000), many impoverished rural households find themselves in remote marginal areas, where access to central markets and government services is very poor. In Uganda many local farming communities have been largely neglected by government development efforts that have instead concentrated on farmers in more favourable and central agricultural areas mainly because of access. Access to markets, road and transport infrastructure is a significant problem in many areas of the country, hindering agricultural production.

Road infrastructure and market access has significant implications on productivity, and poverty reduction. Lack of good infrastructure can deter the transmission of price signals to farmers and render the production of agricultural products insensitive to price incentives. Poor infrastructure also impedes farmers' access to modern factor inputs that would enhance soil productivity. The road infrastructure in Uganda is still underdeveloped. More so, it limits the transportation of the produce to the market. More than 90 percent of the road network consists of earth and gravel and about 25 percent of the rural roads are impassable during rainy seasons. Wood, *et al.* (1999) classified the areas of relatively high market access in Uganda using the potential market integration (PMI) index, an index of travel time from each location to the nearest five markets, weighted by the population size of those markets. The areas classified as having relatively high market access include most of the Lake Victoria crescent region and areas close to main roads in the rest of the country (Figure 2.4).

About 49 percent of the total road network is all dry weather roads (dirt) (GOU, 2000a). This poses a severe problem to the agricultural sector and other sectors such as tourism, trade, and social services, especially during the rainy season when the roads become impassable. This poor state of roads limits the linkages

between sectors, undermines the proper functioning of internal markets, and increases wear and tear. Rural feeder roads are particularly critical for agribusiness and for the modernisation of agriculture.

The government has however put in place policies and programs to improve the road network. Government has accorded the highest priority to road maintenance and putting in place institutions (e.g. establishment of Road Agency Formation Unit), for road rehabilitation and construction. Government is also preparing an investment plan for prioritised rural feeder and urban roads to be implemented in the medium to the long term. This plan will also seek to strengthen institutional capacity and to ensure sustainability of the road network, among others.

2.4.3 Land access and tenure security in Uganda

Land access and prudent management and control of land is one factor that can minimise land degradation and enhance the productivity of the land as well as reduce poverty in Uganda. Given the pre-dominance of the agricultural sector noted in earlier sections of this chapter, access to land constitutes a major input to increased production. Access of the poor to productive assets such as land improves household welfare. Notwithstanding the importance of land as a productive asset, access to land by poor people is limited due to Uganda's high fertility rates and population growth rate, averaging 3.5 percent per annum in the last decade.

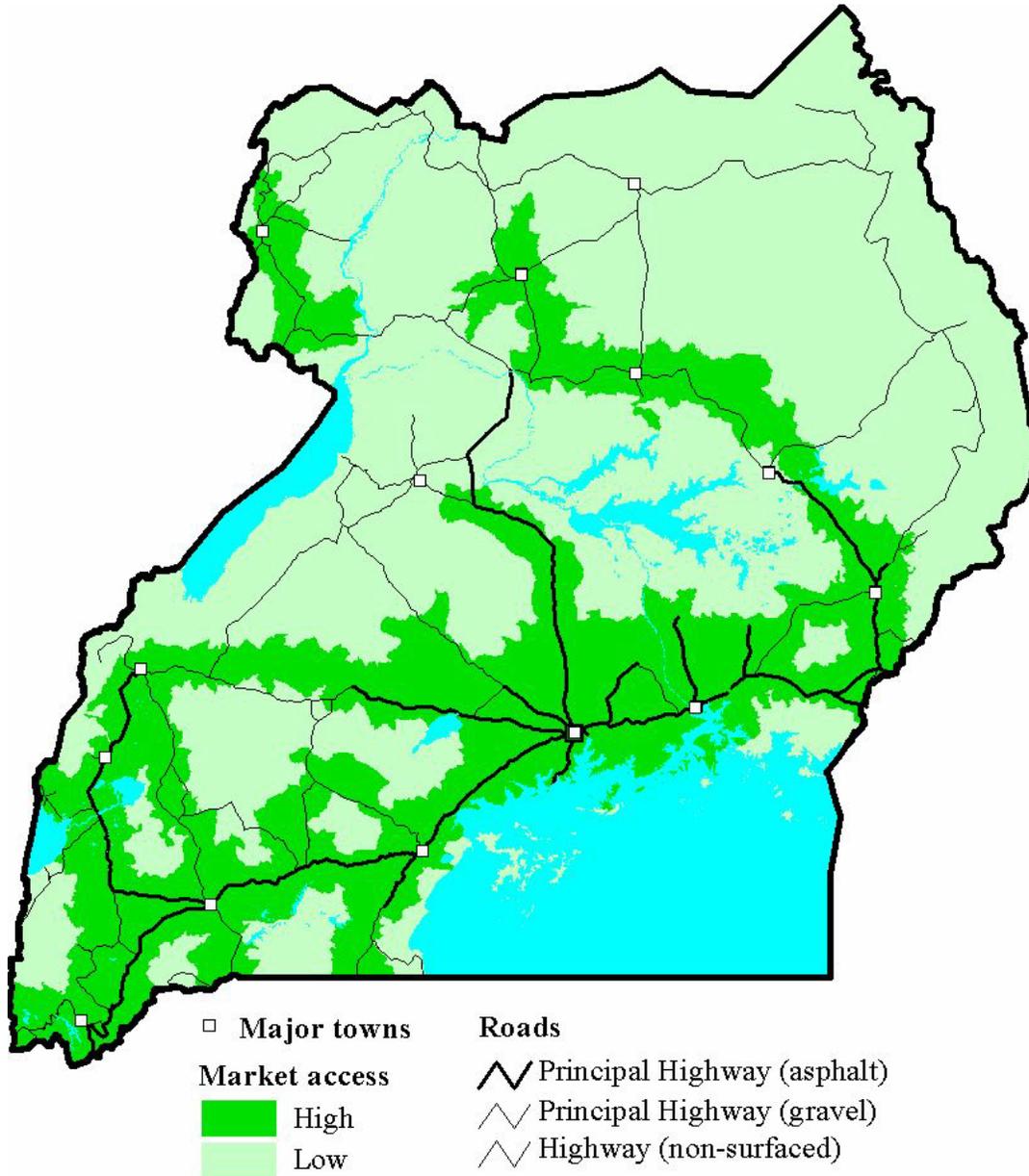


Figure 2.4: Access to markets, roads and other transport infrastructure

Source: Pender *et al.* (2004)

More so, land tenure security can influence land management, because it affects farmers' incentives or ability to invest in land improvement. For an agricultural economy like Uganda, tenure security is important for a number of reasons. First, it is argued that more secure land rights enhance investment to protect soil fertility by increasing the probability of applying manure, construction of terraces, fallowing, and the owner's propensity to rent out or sell the land. Secondly, land with secure property rights can serve as collateral for formal credit.

Thirdly, tenure security with rights of transfer and well functioning markets are important to enhance agricultural productivity and household welfare by shifting land towards its most productive use, either through sales or rentals. Movement from highly insecure to de facto tenure (introduced by the land act 1998), has significant private and market benefits, which include reduced risks of eviction, increased land values, enhancement of land markets, ability to use land as collateral, and increased investment in soil conservation and thus increased agricultural productivity.

In Uganda, the management and control of land is regulated by the land act, 1998. The act recognises four tenure systems, namely customary, *mailo*, freehold and leasehold tenure systems. Most of the land in the country is mainly customary land held either for communal utilisation or specific single permanent holdings (NEMA, 2002). Implementation of the land act however, has faced several challenges including poor human and financial resources for its enforcement.

According to the act, customary land tenure means a system of land tenure regulated by customary rules, which are limited in their operation to a particular description or class of people. Holders of land under the customary system do not have formal land titles but generally have secure tenure. Under this tenure land is divided among the different clans, who in turn divide it among the households within the clan. Households holding land under this system have

indefinite tenancy with rights to bequeath (Nkonya *et al.*, 2004; Kisamba-Mugerwa, 1992).

However, there are strict rules and regulations usually enforced by the clan leaders and elders. For instance, a holder may not sell land without consulting the elders. In fact in many parts of the country, clan leaders have to meet and agree once land is to be transferred to non-members of that particular community. In this kind of tenure arrangement, the role of social institutions in enforcing bylaws is again very critical in the management of such land resources. Social institutions facilitate the monitoring and enforcement of common set of norms and sanctions at the community level. These rules and norms are normally set by elders and members at village meetings, and enforced by the communities as a whole.

However it has been observed that certain communal land resources can also be mismanaged. Some communal areas particularly within rangelands, are some times treated as open access resources in which no control is exercised in determining where, when and who utilises grazing resources (Kisamba-Mugerwa, 1992). As a result, these open access land resources have experienced significant degradation (NEMA, 2002).

In realisation of these shortcomings, the land act 1998 came in to provide tenure security for community members. According to the land act 1998, a customary tenant can be issued a customary certificate of ownership to recognise and guarantee his/her interest in the land. This certificate can also be used as collateral to get credit from the financial institutions. In addition, the act, allows for the formation of community land associations for the purposes of communal ownership and management of such land resources. These provisions provide incentives to the customary tenant to invest in proper land management practices that are long-term.

The second category of land tenure recognised by the land act is *mailo* land. *Mailo* land refers to the holding of registered land in perpetuity and having allotment of land pursuant to the 1900 Uganda agreements by the colonial masters and subject to statutory qualifications. *Mailo* tenure is common in the central parts (Buganda region) of the country and parts of Bunyoro. Under the 1900 agreement, large tracts of land measured in square miles were allocated to the royal family (Kabaka), other notables and the protectorate government. The landlords then divided their land into smaller parcels (*Kibanja*) that were rented out to tenants. The tenants were allowed to bequeath to their children but with some restrictions on what could be planted and when (Kisamba-Mugerwa, 1992). Eviction of tenants had also to be sanctioned by the courts of law, and in such circumstances, the tenant had to be compensated for investments on the land.

Kisamba-Mugerwa (1992) also found that within the *mailo* land, there was considerable uncertainty as to future land rights. On land occupied by tenants, it was the owner who especially felt insecure about long-term land rights because of possible land reforms. At the same time, tenants also felt insecure and did not have incentives to protect the land. As a result, large tracts of *mailo* land have been subjected to degradation for a long time by the tenants (squatters) who, until the coming into force of the land act 1998, did not have any secured interests in investing in the conservation of land. The act makes provision for the tenants to obtain a certificate of occupancy from a registered *Mailo* owner, which recognises and protects their interests in the land. This should therefore motivate the tenants to invest in land improvement technology and increase agricultural productivity.

Thirdly, freehold is the holding of registered land in perpetuity subject to statutory and common-law qualifications. This tenure system derives its legality from the constitution and is the prescribed system for registered interests outside *mailo* land. There are no restrictions on user rights and provides complete rights to the land owners i.e. rights to use, sell, lease, transfer, subdivide, mortgage or

bequeath the land to other generations. The act requires that all freehold landowners should have titles to remove doubts of tenure security. However, according to Nkonya *et al.* (2004), land titling is expensive and most farmers do not process title registration. For conservation interests, this particular tenure system is expected to provide maximum tenure security. However, this may not always be the case. For instance, in Uganda, studies by Nkonya *et al.*, (2004) and Nkonya *et al.*, (2005) show that farmers under customary tenure arrangements were more likely to use sustainable land management than those holding land under freehold tenure.

The leasehold land tenure is the holding of land for a given period from a specified date of commencement, on such terms and conditions as the Lessor and lessee may agree to. The terms and conditions of agreements however, vary greatly from one to another. The advantage of this system is that the lessor can attach conditions on management and has the right to invoke ownership if conditions are abused. Mainly because of variations in terms and conditions of the agreements, one cannot generalise on tenure security. Many leases are 49 years or 99 years. This is long enough period to encourage conservation activities and increase agricultural productivity.

From the discussion above, it is clear that the land act has many provisions to protect the land resource by providing incentives for its conservation. The law requires the owners of the land to manage their lands in accordance to the National Environmental Statute 1995 and other environmental related sectoral laws. It also provides for decentralised management of land through the district land boards together with decentralised environmental management. The challenge that remains however is for the government to enforce the provisions of the law. This calls for a proper land use policy to ease the implementation process, which doesn't exist at the moment. Unless a comprehensive land use policy is put in place, land degradation may continue unabated.

2.5 On-site and Off-site effects of soil erosion

There are numerous on-site and off-site effects of soil erosion. The on-site effects include removal of valuable topsoil, which directly affect crop emergence, growth and yield through the loss of natural nutrients and applied fertilizers with the soil. Seeds and plants also get removed from the eroded site. More so, the soil quality, structure, stability and texture can also be affected by this loss of soil. This may have detrimental effects on soil productivity. For instance, change in texture can affect the water-holding capacity of the soil, making it more susceptible to extreme condition such a drought.

On the other hand are the off-site effects that are not as clear as the on-site effects. For instance, eroded soil, deposited down slope can inhibit or delay the emergence of seeds, bury small seedling and necessitate replanting in the affected areas. Sediment can also be deposited on down slope properties, contribute to road damage, clog drainage ditches and stream channels, silt in reservoirs, cover fish spawning grounds and reduce downstream water quality. Pesticides and fertilizers, frequently transported along with the eroding soil can contaminate or pollute downstream water sources and recreational areas.

Given the importance of agriculture in Uganda and the seriousness of both on-site and off-site effects, soils must be preserved. Sometimes owners or users of land subject to erosion may have little incentive to control erosion rates if they do not show up clearly in on-site productivity losses. Even if there is an underlying trend to such losses, they are often 'masked' by changes in compensating applications of fertiliser.

Whereas it is in the interest of the farmers to invest in the control of on-site effects, management of off-site effects may require interventions from local social institutions, government, cross country initiatives among others. The policy implications of managing the off-site and on-site effects are different. It should however be noted that where off-site effects are quite observable and significant,

is often more profitable to control the erosion by changing management practices, e.g. construction of terraces, reduce the intensity of crops and crop rotation, agro forestry, better cover from surrounding vegetation, more organic and inorganic fertiliser applications among many others. This study however did not address the off-site effects, an externality the management of which requires measures different from those appropriate for managing on-site effects.

2.6 Poverty and land degradation in Uganda

Land degradation is having a significant negative impact on the poor in Uganda because their livelihoods depend on the quality of the natural resources. In Uganda as much as in many other sub-Saharan African countries, environmental quality is a very important determinant of the health, earning capacity, food security, energy supplies, and housing quality of the majority of the population. For instance, fertile land and adequate climatic conditions are a prerequisite for food security, and household income. As land deteriorates in quality, the poor become poorer. A study by Deininger and Okidi (2001) shows that in 1992 and 1999, rural households received about 72 percent of their incomes from own agricultural enterprises. More so, natural resource degradation, particularly with regard to the ability of soil to produce food, was actually quoted as the most central constraint to increasing food production and securing livelihoods (UPPAP, 2000). Given the over dependency on natural resources, stagnation or reduction in agricultural productivity due to land degradation imposes serious income and livelihood constraints for the rural households and therefore leading to poverty.

Poverty on the other hand has been blamed for the prevailing land degradation in the country. Poverty in Uganda affects land degradation in a number of ways. First, poverty acts as a constraining factor to households' ability to invest in mitigating land degradation. Most farmers live barely on subsistence level and do not have the capacity to use purchased inputs or to pay for labour to use the labour intensive conservation technologies. A study by Pender *et al.* (2004)

shows that there are variations across the different income groups in the use of non-labour inputs such as fertilisers, pesticides and improved seeds with the richer households using more. Use of traditional inputs was found to be more or less the same across the different income groups. The poor are also said to have limited productive assets such as land and may therefore not be able to practice simple traditional technologies such as fallowing especially in the densely populated areas. Secondly, poor households are unable to compete for resources including high quality and productive land and are hence confined in marginal lands that may not sustain their practices. According to NEMA (2002), the poor find themselves farming on steep hill slopes, and in wetlands resulting in massive erosion, drying up of reclaimed wetlands among others. The impacts of poverty on land degradation and vice versa vary across the country and over time. It is therefore important to review the trends and variation of poverty in the country.

2.7 Poverty in Uganda

Poverty is still a serious problem and more predominant in the rural areas. This situation holds even after adjusting for the cost of living differentials. Figure 2.5 and Appendix 1 show that during the period 1992/93 – 1999/2000, poverty fell in both rural and urban areas. The national poverty head count almost halved from 56 percent in 1992 to 35 percent in 1999/2000. Poverty head count fell in both rural and urban areas. The mean living standards rose faster in rural areas: the mean rise in consumption per adult equivalent was higher in rural than in the urban areas (Appleton, 1999).

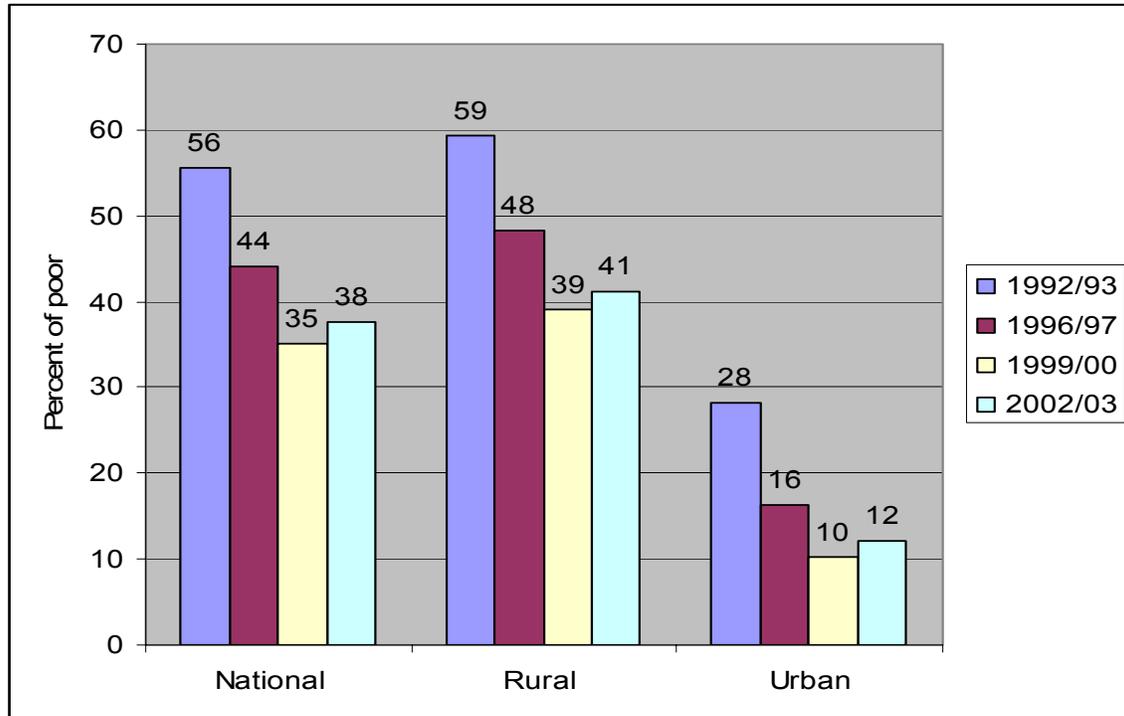


Figure 2.5: Poverty in Uganda, 1992-2003

Source: Appleton, 2001 and Appleton and Ssewanyana, 2003

Recent results from Appleton and Ssewanyana (2003) however, show that poverty in Uganda has increased to 38 percent and inequality remained more or less the same at a Gini of 0.38 in 2002/03. The recent increase in poverty has been attributed to slower growth in agriculture, declines in international coffee prices, insecurity in the northern and eastern parts of the country, high fertility rates as well as social and political factors. The incidence of poverty has increased from 39 percent in 1999/00 to 42 percent in 2002/03 and from 10 percent to 12 percent in the same period for the rural and urban areas, respectively. Worsening poverty headcount especially in the rural areas is a major concern for improvement in land management and therefore soil degradation in the country.

All regions generally experienced lower poverty between 1992 and 2000 (Appendix 1 and Figure 2.6). However, the magnitude of the fall and extent

varied greatly among regions. In general the trends have been encouraging. From, Figure 2.6, which takes into consideration only the rural strata, the northern region accounts for the highest incidence of poverty with 65% of the population being poor in 2002/03 followed by the Eastern region (48%) and lowest is the Central region (28%).

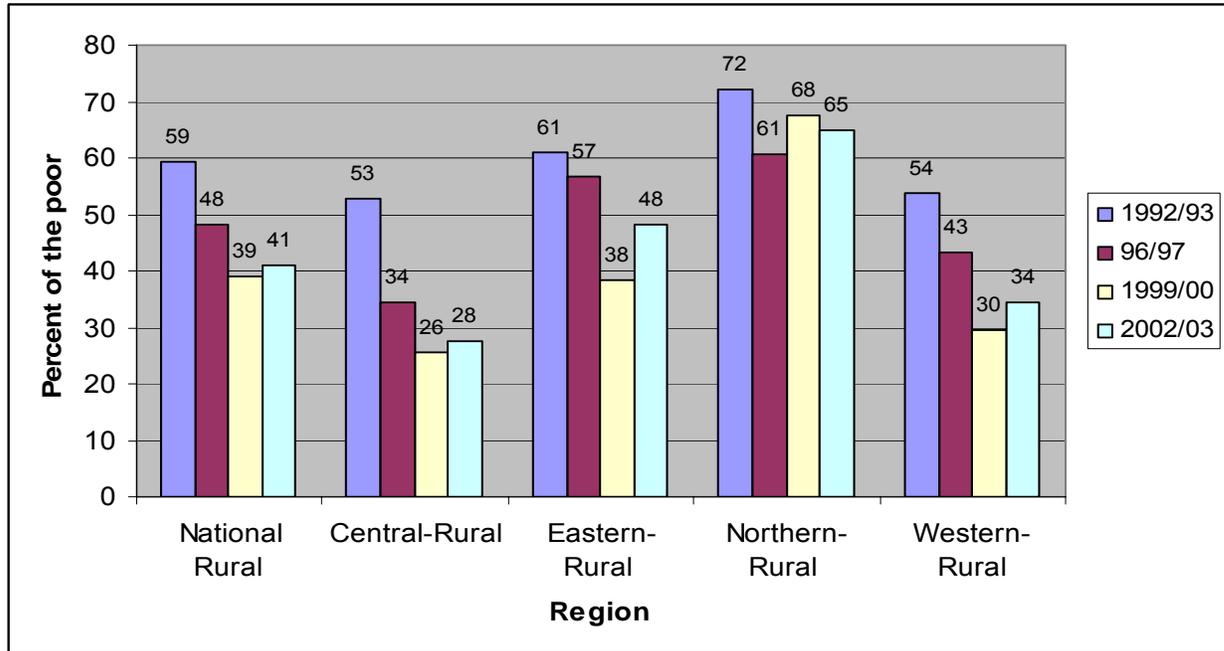


Figure 2.6: Regional distribution of rural poverty in Uganda, 1992-2003

Source: Appleton, 2001 and Appleton and Ssewanyana, 2003

Further more, poverty was higher for those households whose head works in agriculture. Poverty among agricultural households was worse for those practicing crop farming than among those engaged in non-crop agriculture like livestock and fishing. Table 2.2 shows that, between 1999/00 and 2002/03, poverty for those households in crop farming rose from 39 percent to 50 percent, while it reduced from 42 percent to 34 percent for those individuals practicing non-crop agriculture. The observed increases in poverty incidence for those households in the crop sector has been attributed to lower international prices of coffee, population growth which reduces average farm size, and reduced labour inputs in production as people switch to higher non-farm activities.

Table 2.2: Proportion of people below the poverty line by occupational group (%) in Uganda

Occupation of household head	1992	1996	1999/2000	2002/03
Food crop	64	62	45	---
Cash crop	63	46	34	---
Crop farmers	---	---	39	50
Non-crop agriculture	55	40	42	34
Manufacturing	44	34	23	28
Construction	37	35	20	23
Trade	26	21	13	17
Government services	37	32	15	13
Not working	59	60	43	38

Source: GOU (2004a)

Poverty is lowest for those households in the trade and government services sectors. The socio-economic groups that have seen falls in poverty are mainly those households in non-crop agriculture, in government services or are not working. The reduction in the non-crop agriculture arises mainly from livestock.

2.8. Social capital and the poverty-land degradation interaction in Uganda

One key area that conditions the poverty-land degradation interactions but has attracted minimum discussion in Ugandan policy papers and academic research is that of social capital. The term social capital means the rules, norms, obligations, reciprocity, and trust embedded in social relations, social structures, and societies institutional arrangements which enable its members to achieve their individual and community objectives (Narayan, 1997).

Social capital can facilitate investment in resource conservation and reduction in poverty in a number of ways. First, it facilitates transmission of knowledge about technology and markets. This can lead to reduced degradation because of the resulting adoption of technologies associated with knowledge transfer. For instance, Isham (2000) and Narayan (1997) find that villages with higher social capital were much more likely to use fertiliser, agrochemical inputs, or improved

seeds in Tanzania. The use of such inputs contributes to increased agricultural productivity, household incomes and therefore reduces poverty.

Secondly, social capital can facilitate cooperative action in resource management and thus reducing problems of free riding. Thirdly, enhancing coordination and monitoring effective public services delivery, through enforcement of local bylaws and social norms. The ability of local groups to cooperate and come to acceptable solutions can play an important role in overcoming the “tragedy of the commons”. Fourthly, social capital may ameliorate other conventional resource constraints such as market access or credit limitations and thus reduce vulnerability of households to poverty.

In Uganda, the importance of knowledge and human capital in economic growth has recently been re-emphasised, particularly in the development of the PEAP for the period 2004 – 2007 (GOU, 2004b). The PEAP notes that improved capabilities can be obtained not only from formal education but also from family and village institutions, which do play an important role in local area development. These institutions may be formal or informal. The types of these institutions that exist in the country are diverse and may include, community based organisations, local village associations, elders associations, mutual self help groups, churches, government structures such as the local administrative councils, cooperatives, non-governmental organisations (NGOs), and other commercial organisations.

The aforementioned institutions differ in their respective short-term and long-term objectives and organisational structures. The objectives in many of the institutions are agreed upon by the group members and may range from the provision of community services (schools, water supply, health services, roads), to establishment of income-earning activities (poultry rearing, fishing, tree planting), to mutual assistance (building houses for members, rotating saving schemes, turn-by-turn work on members’ farms-weeding, harvesting, terracing

etc), to social support (churches and mosques, burial societies, etc). Such institutions are therefore an important mechanism for social and family capital accumulation, investment in conservation activities and poverty reduction.

More so in Uganda, most of the land is customary land held for communal utilisation (NEMA, 2002). Management of such resources requires great cooperation. Wherever this kind of tenure exists, the elders normally sanction transfer of land and monitoring of violations of norms set by the communities is the responsibility of all members. Members of the communities also implement punishments such as expulsions in case of any violations. Social capital institutions are also important in resolving conflicts over inheritance and rightful ownership of land. Peasants may turn to formal legal systems when the informal systems fail. In Uganda, using the formal legal system is very expensive for the peasants as transactions costs of resolving conflicts through the formal system are very high. In rural areas, there is a heavy reliance on social relations and customary arrangements to ensure access to land.

The government of Uganda has recently recognised the role social institutions play in poverty reduction and has decided to devote funds to supplement such activities through the PEAP under a political program known as “Prosperity for all” locally known as “*Boona bagaggawale*”. The program intends to provide micro finance at reasonable interest rates to the poor and provide marketing channels for produce. According to the GOU (2004b), interventions in the social development sector are intended to strengthen the social capital of the poor. This is expected to increase social inclusion, social and economic security, and empowerment achieved through community mobilisation.

The “*Boona bagaggawale*” program is a good program because of a number of factors; government intervention in credit provision has been poor, which means that government will now avail cheap credit to rural farmers; lessen structural constraints production; and strengthen local institutions. However, the program

faces several challenges that include: politicisation of the program; sustainability of the program because it lacks a clear operational framework; management and operational constraints and sustainability of other supportive infrastructure by other arms of government.

2.9 Policy framework for poverty reduction, agricultural extension and environmental management in Uganda

2.9.1 Policy framework for poverty reduction

The most important policy paper for poverty reduction in Uganda is the Poverty Eradication Action Plan (PEAP) (GOU, 1997; 2000b; 2004b). The country's PEAP is a good attempt to integrate economic, social and environmental issues into the planning framework for poverty alleviation. It stresses the importance of ensuring the sustainability of growth; the assessment of environmental impact of government policies; and the integration of environmental issues in sectoral plans.

The PEAP is a medium term strategy for achieving the long-run government goal of poverty reduction, and economic and social transformation of the country. The PEAP framework rests on four pillars those are; sustainable economic growth and structural transformation; good governance and security; increased ability of the poor to raise their incomes and lastly, increased quality of life of the poor. In Uganda, sustainable economic growth can only be attained with proper management of natural resources, because the country's economy is heavily dependent on its natural resource base.

Within the PEAP framework, the government of Uganda has been implementing the holistic Program for the Modernisation of Agriculture (PMA) for poverty reduction. The PMA's vision is poverty eradication through profitable, competitive, sustainable and dynamic agricultural and agro-industrial sector. The PMA emphasised the transformation of subsistence agriculture to commercial

agriculture. To achieve the stated mission, the PMA is working towards facilitating the creation of an efficient competitive system for the processing and marketing of agricultural commodities and developing rural financial markets and rural infrastructure - roads, communication links, and extension services among others (Nkonya *et al.*, 2004). The PMA framework however lacks well-defined linkages between agricultural policies proposed to sustainable production. Key resources for the implementation of the PMA are land, water, forests, and wetlands resources, human and social capital.

Since most of the poor, depend on agriculture as a source of income and livelihood, successful implementation of the PEAP and PMA programs and policies would lead to reduced transactions costs, which in turn leads to increased farmers' income-earning opportunities both on and off farm and therefore reduce poverty. However, though mentioned in both policy papers (PEAP and PMA), the structures through which the implementation of such programs/policies would provide better results have not been given due attention. The next subsection therefore discusses the institutions in Uganda through which implementation of such programs/policies may yield greater returns.

2.9.2 Policy framework for Agricultural Extension services in Uganda

As part of the PMA, the National Agricultural Advisory Service (NAADS) was established to replace the more generalised public extension service delivery with more focused demand-driven strategy. Under the new strategy, the farmers are expected to be empowered to purchase privately-delivered, publicly-funded advisory services. NAADS advocates for a service that is owned by and responsive to the needs of the stakeholders. The objective of the NAADS programme is to establish a system that effectively enables farmers to pursue opportunities of their own interest aimed at increasing and sustaining productivity and income.

The farmers are empowered as key partners in determining who and how agriculture, environment and market services are delivered. Currently, the program is being implemented in almost all districts in the country. In their approach, NAADS requires farmers to constitute farmer group. The district office of NAADS would then deploy one service provider to each sub-county, who meets representatives of farmer groups in farmer forums.

The farmer forums are expected to generate farmer priority service demands and contract service providers to respond to the demands. The linkage between community members and service providers though has remained a bit elusive and therefore the NAADS program has been criticised on a number of fronts.

First, the program has had implementation constraints. Some of the selected private providers lack the basic skills; there is a long bidding process for service provision; corruption; low information access; and over stretched outreach program leaving limited impact in areas they service. Secondly, given it is a demand driven service, the program basically target the well to do leaving out the rural poor. The poor therefore are denied access to the all important extension services.

Thirdly, the technology being marketed to the farmers is not appropriate. For instance, there is the introduction of imported hybrid goats that have not been developed and acclimatised to the rural condition. In these rural areas, basic supplies of veterinary services are extremely limited. They need extension services that are pro-poor, that guide them on the kind of crops to plant, when, how and advise on possible sources of the market. Despite the fact that the districts covered by this study are NAADS covered, we show later on in chapter three that farmer contact with an extension agent is about 28 percent in all districts.

2.9.3 Environmental policy and management in Uganda

Uganda's policy framework and legislation has undergone a number of reforms in the last decade. The adoption of modern technological skills in industry, agriculture and other essential aspects of the national economy have had fundamental effects on the environment in the economy. As a result, the country has therefore been compelled to modify its environmental policies and legislation to cope with these changes (NEMA 1999). Traditionally, Uganda's policy framework and legislation has been of a sectoral nature. Each line ministry would come up with a policy without adequate consultation with other key stakeholders. Recent challenges however have shown that there is a need for a well coordinated policy framework among the line ministries and other key institutions of management. The National Environment Action Plan (NEAP) made fundamental recommendations aimed at having an integrated national policy framework and legislation for sustainable maintenance, protection and exploitation of the environment and natural resources. This led to the National Environment Management Policy (NEMP) of 1994, which is the main policy statement on the environment for the country. The overall policy objective of NEMP is to achieve sound sustainable development by reconciling economic growth and conservation of resources while spearheading social development. The policy calls for the integration of environmental concerns into the economic, social and development plans, policies and programs in their sectors. The policy is legitimised by the constitution of Uganda and a number of other sectoral laws that include: the national environment statute 1995, local government act 1997, Uganda wildlife statute 1996, land act 1998, water statute, 1995, and fish and crocodiles act 1964 (Sgobbi and Muramira, 2003). The sectoral laws address the main policy goals on environmental management in Uganda. These include the integration of environmental considerations in all sectoral policies, plans and programs, the requirement that all projects with potentially damaging effects on

the environment be preceded by an environmental impact assessment, and that users and polluters of the environment pay for the use and/or pollution.

The constitution requires the state to hold in trust for the people and protect important natural resources, including land, water, wetlands, minerals, oil, fauna, and flora on behalf of the people of Uganda. This is re-echoed in the land act 1998, which is intended to implement the constitutional provisions. The state is also required to promote sustainable development and public awareness of the need to manage land, air, and water resources in a balanced and sustainable manner for the present and future generations. The constitution and other legislation require the state and local governments to develop comprehensive mechanisms for the sustainable management of the natural resources.

The National Environmental Statutes, 1995, provided for the conservation of biological resources and created the National Environmental Management Authority (NEMA), which is charged with coordinating, monitoring and supervising all matters on the environment in Uganda. NEMA is empowered to issue guidelines for land use methods, which are intended to conserve biological diversity. The statute provides for new environmental management tools, including environmental impact assessment (EIA). The law also gives recognition to the need of freedom of access to any information relating to the state of the environment. In line with the decentralisation policy, the statute also requires districts to produce district state of the environment reports on annual basis. It also provides a framework for the development of targeted byelaws and ordinances on natural resource and environmental management at the local levels of governance. In line with the local government act 1997, the existing law provides for governance structures at the community and local government level including district environmental management committees, sub-county environment committees and local environment committees. This means analysis of the poverty-environmental linkage would make more sense if done at the lowest levels possible, to provide policy intuitions at the different levels.

The current legislative framework has a number of shortcomings, whereas the national environmental statute attempts to address environmental issues holistically, it does not establish a clear, well coordinated governance structure, particularly at the national line-ministry level. Conflicts over competencies to manage environmental issues arising in the various sectors, therefore still exist. To implement a number of these laws, there is need to put in place prerequisite regulations and standards. These have not yet been gazetted and therefore slowing the implementation of the laws. There are so many conflicting laws and regulations. For example, there has been a lot of confusion on how to implement the national regulations on the management of wetlands, lakeshores and riverbanks. The constitution provides for wetlands as land held in trust, which should be managed by the state for the people. In many rural areas, wetlands have been alienated under the customary land tenure system. Increasing pressure on land may therefore predispose them as agriculture and other activities expand to the marginal lands. There is need for a sectoral law on wetlands, which harmonises the land act, 1998, the national environmental statute, 1995 and the national constitution 1995. Similarly, new laws or revisions of old laws are required for forestry, mines, agriculture, fisheries and other important natural resources to ensure mainstreaming of environmental considerations into sectoral plans and policies.

2.10 Summary

This chapter discussed the importance of agriculture, and showed that agriculture is important for the Ugandan economy, not only as a source of livelihoods but also as a source of foreign exchange. The exposition of the extent, distribution and causes of poverty in Uganda shows that there are big variations of poverty levels across regions, occupations and over time.

The chapter also discussed the determinants and extent of land degradation in Uganda. The determinants covered included both proximate and underlying factors such as agro-climatic zones, terrain, population pressure, land tenure, poverty, infrastructure, social capital among others. Scientific information to quantify the impact of these factors on degradation, use of soil and water conservation technologies is limited. A review of the social institutions that exist in the country shows that many self help institutions and other formal institutions do exist in the country, though little evidence on their impact on poverty reduction and investment in conservation activities exist. Also noted the absence of social capital related studies in guiding policies in Uganda. Finally, the chapter discusses the policy framework for poverty eradication and environmental management in Uganda. The next chapter provides descriptive statistics on most of these key variables and description of the study area, and data type used in subsequent chapters