CHAPTER III

DATA AND SELECTED SOCIO-ECONOMIC FEATURES OF THE STUDY AREA

3.1 Introduction

This chapter describes the data and highlights key socio-economic attributes of the study districts. In the next sub-section, the study area and the data used are discussed while in section 3.3; selected economic indicators are presented and discussed. The chapter also discusses the associational life of the sample households in subsection 3.4. Types of the associations, and services/functions offered and prevalence of these organizations are presented and discussed.

3.2 Study area and sources of the data

Lack of comprehensive data sets that cover comparable household, plot and other environmental characteristics is a major constraint to analysing the relationship between household and plot level characteristics. This study used two data sets. First, the study had access to data from a survey conducted in Uganda in 2002 by IFPRI, in collaboration with the World Bank, and the Uganda Bureau of Statistics (UBOS). The IFPRI survey covered rural areas in eight districts in Uganda: Arua, Iganga, Kabale, Kapchorwa, Lira, Masaka, Mbarara, and Soroti (Fig 3.1). The districts were chosen to represent wide range of social, economic, environmental and institutional circumstances. The IFPRI survey collected information on plot and household characteristics as well as the associational life of these households. The main objective of the survey was to provide an understanding of the linkages between natural resource management (NRM) and poverty in Uganda.

The districts of Kapchorwa, Soroti, Arua and Lira are found in the Unimodal agro-climatic zone. With the exception of Kapchorwa, the remaining three districts are generally characterized by high poverty levels, low population densities, low average income per capita, low value of output per acre and more use of both purchased agricultural inputs and traditional land management techniques such as fallowing (Table 3.1 and 3.2). Unique features in Kapchorwa are the relatively lower poverty levels, low use of fallowing and high value of output per acre. This is believed to be due to the comparatively higher use of organic and inorganic fertilizer, organised maize farming and marketing, closeness to the Kenyan border which provides easy market access to their produce, strong presence of social capital institutions among others (Table 3.1 and 3.2).

On the other hand, the districts of Iganga, Kabale, Mbarara and Masaka are located in the bi-modal agro-climatic zone, and are generally characterized by comparatively lower levels of poverty, in spite of their high population densities. A more detailed discussion of these socio-economic characteristics is given in section 3.3 of this chapter. The districts of Mbarara, Kapchorwa Soroti and part of Masaka represent the cattle corridor, while the districts of Kabale and Kapchorwa represent the highland areas. Masaka and Iganga districts are in the high Rainfall Lake Victoria region, whereas the districts of Lira and Arua are in the low rainfall northern part of Uganda.

However, the IFPRI data did not cover key variables such as education and gender of household members and household expenditure. This information was obtained from the national household survey data (2002) since the two data sets had common identifiers.

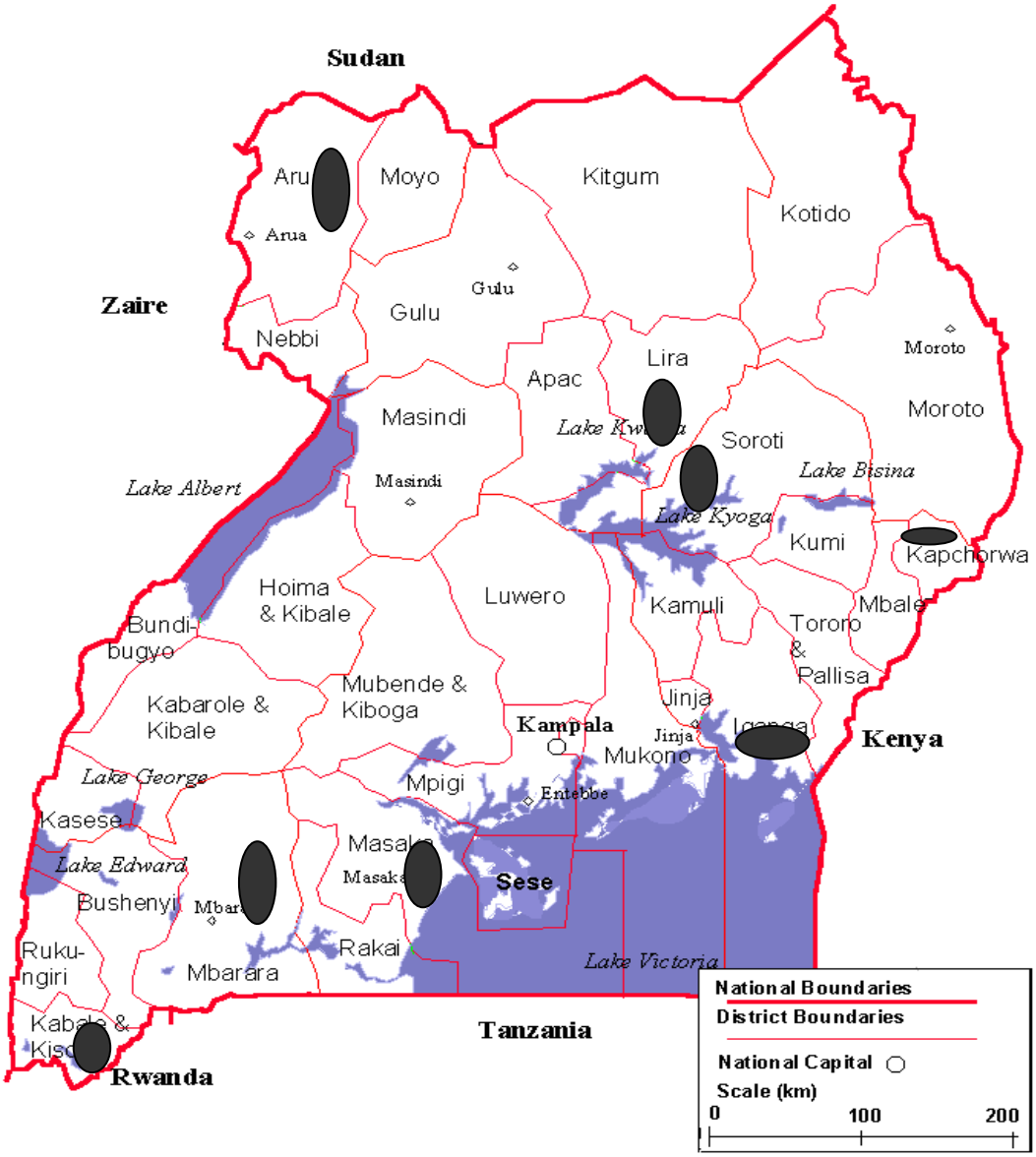

Figure 3.1: Map showing the study districts covered during the survey. The dark shadings on the map highlight study districts. The shading however may not represent the exact location of sub-counties or villages.

A stratified two-stage sampling was used to draw a sample for the Uganda National Household survey (UNHS). The UNHS covered nearly all the districts with the exception of Pader and parts of Kitgum and Kasese districts because of insecurity in those districts at the time, which also do not form part of the sample for this study. A total of 972 enumeration areas (565 rural and 407 urban) were randomly selected in the first stage of sampling from which a total of 9,711 households were randomly selected in the second stage. Sampling was proportional to population density of each district. The IFPRI data used in this study was derived from a sub-sample of 123 enumeration areas. The IFPRI survey focused on rural enumeration areas as the sampling frame since the main objective of the survey was to collect in-depth natural resource management data (Nkonya et al., 2005). A total of 851 households were selected in the IFPRI survey.

The IFPRI survey administered three questionnaires at household, plot and community levels. This study however utilized only the household and plot level data. The data collected covered a number of sections that included household composition, human and social capital, livestock assets, land use, tenure and market. A number of questionnaires were left out of the analysis because they were considered incomplete or unreliable. Some questionnaires were left out because the data appeared to have extreme values than were expected. The collected data are used in the following sections to provide some descriptive background to the study area and context.

3.3. Selected socio-economic characteristics of households in study Districts

3.3.1 Incidence and levels of poverty

Poverty levels (head count and poverty gap[2]) are lowest in the districts of Masaka, Kabale, Kapchorwa and Mbarara and highest in the districts of Arua, Soroti, Lira and Iganga (Table 3.1).

The figures presented in the tables compare well with other national averages reported in several government reports (GOU, 2004a; 2004b; Appleton and Sewanyana, 2003). For instance, Appleton and Sewanyana (2003), report 42 percent of the rural population to be poor based on headcount, which compares well with 44.7 percent reported for this sample (Table 3.1), in spite of the fact that all districts covered by the 2002 household survey are not included in the IFPRI survey.

Table 3.1: Poverty indices and other household and area characteristics by district

District	Head Count (%)	Poverty Gap (%)	Average income per capita (Ushs per month)	Value of output per acre (Ushs per annum)	Population density (people per Km^2)	Agro-climate
Masaka	35.9	8.9	27,910.36	325,308.4	151	Bi-modal
Iganga	56.2	15.2	36,992.25	201,794.2	288	Bi-modal
Kapchorwa	13.3	2.1	46,335.75	563,978.1	67	Unimodal
Soroti	47.6	21.6	20,861.96	327,043.3	50	Unimodal
Arua	67.3	21.3	18,532.03	307,719.6	82	Unimodal
Lira	66.7	25.6	16,567.77	48,128.9	70	Unimodal
Kabale	37.6	9.6	27,631.81	549,003.6	250	Bi-modal
Mbarara	37.9	12.6	28,017.69	718,606.9	88	Bi-modal
All	44.7	12.9	27,695.52	438,928.9	92	

Source: Author's calculations and NEMA (2002)

As expected, poverty is comparatively lower in all the districts that are located in the bi-modal agricultural zones, with the exception of Kapchorwa district.

[2] The head count index simply measures the proportion of the population below the poverty line while the poverty gap on the other hand measures the depth of poverty. See appendix 4 for a complete exposition of these measures.

Uganda's agro-ecologies are broadly categorized into two major classifications, as Uni-modal and Bi-modal rainfall zones by Ruecker et al. (2003). This classification was based on the average length of growing period, rainfall pattern, maximum annual temperature and altitude. The districts in the Uni-modal zone are also characterised by low population densities, average income per capita and value of output per acre (Table 3.1).

There is a significant difference in mean incomes per capita (Pr=0.0006), and mean value of output per acre (Pr=0.0005) between Unimodal and bi-modal agro-climatic zones. This seems to suggest that the favourable climatic conditions such as long growing periods, rainfall patterns among others in the bi-modal zones may partly explain differences in poverty levels, earning capacity and agricultural output.

3.3.2 Land management practices by district

Table 3.2 shows that the extent and types of technologies adopted vary from one district to another. Fallowing is practised in almost all districts except Kapchorwa district with the greatest use in the northern districts of Lira (86.2%), Soroti (80%) and Arua (46.9%). These districts have low population densities and therefore fallowing is relatively feasible. Secondly, with availability of land, it is one of the cheapest available alternatives for the poor. Probably that partly explains why it is mostly used in the poor districts of the north. In fact fallowing was the only reported practice in Lira district, which is one of the poorest. In the more densely populated districts of Mbarara, Iganga and Masaka fallowing is not a major practice as only 10-13 percent of the population practice fallowing.

Surprisingly, 35.8 percent of the sampled households in the densely populated district of Kabale practiced fallowing. An earlier long-term study by Lindblade et al. (1996), have also found that fallowing in Kabale increased with increases in population, and attribute this finding to a long historical colonial legacy of encouraging use of terraces, fallowing and other land management practices in

the district. The British colonial masters in the early 1960's were worried about population growth in Kabale and invested in extension service to encourage use of soil conservation technologies.

Overall however fallowing remains the most commonly used practice in many parts of the country, but the length of fallow has been changing overtime. For instance, the data show that the average fallow period has decreased from 2.06 years in the late 1992 to 1.63 years in the late 2002. Such premature fallow period 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-Ojungu, 1992).

Organic fertiliser use is comparatively more common in the districts of Kapchorwa (28.9%), Mbarara (24.8%) and Masaka (18.1%). Possible explanations for this outcome are first, Kapchorwa, Mbarara and part of Masaka are cattle keeping areas and use of animal manure is a common practice. Secondly, the ability to pay for labour, since use of organic fertiliser is a labour intensive activity. What is surprising however is the low use of organic fertiliser in Soroti district, which is another major cattle keeping district (Table 3.4). Instead however, Soroti relies more on fallowing as a key SFM practice due to very low population density.

Table 3.2: Land management practices by district (% of farmers)

Districts	Fallow	Organic fert.	Inorganic fert.	Terracing
Masaka	10.40	18.04	1.22	0.92
Iganga	12.96	12.15	1.39	0.00
Kapchorwa	0.00	28.85	15.72	16.98
Soroti	80.00	5.00	5.00	0.00
Arua	46.90	4.40	7.56	4.26
Lira	86.21	0.00	0.00	0.00
Kabale	35.84	7.78	2.41	19.88
Mbarara	12.71	24.82	1.37	9.28
All	27.90	12.61	4.14	9.50

Source: Author's calculations

Inorganic fertiliser use is substantially low in almost all districts. Compared to other districts, use of inorganic fertiliser is relatively higher in Soroti, Kapchorwa and Arua districts due to organised input supply for maize and barley farmers in Kapchorwa (15%) and tobacco farmers in Arua (7%) districts and comparatively better extension services in Kapchorwa and Soroti districts (Table 3.4). In Kapchorwa district, maize and barley farmers get inputs through a well organised local association, the Kapchorwa Commercial Farmers Association (KACOFA), while tobacco farmers in Arua get their inputs from British American Tobacco (U) ltd (BAT). Farmers are assured of markets for their produce through the same institutions and costs of inputs are deducted directly from their payments.

Generally however, use of inorganic fertiliser is not a common practice in all the other districts and Uganda in general. In an earlier study, Woelcke et al., (2002), show that the level of adoption of inorganic fertiliser is inadequate to halt declining soil fertility. FAO (1999) reports that 95 percent of inorganic fertiliser use is by large-scale plantations and only five percent is accounted for by the small holder farmers.

A number of reasons may explain this low use of inorganic fertiliser. First, is the lack of an effective agricultural extension program. For instance, only 28 percent of the population had a single visit of an extension agent in the year, 2002. This limits adoption since inorganic fertiliser is new to many households in the country. Secondly, the level of profitability of agriculture in Uganda is very low (Nkonya et al., 2002). Low profitability limits farmers' ability to apply adequate inputs necessary for addressing the level of fertility loss. Third, poverty is high among the rural smallholder farmers, and as a result, cannot afford the purchased inputs such as inorganic fertiliser.

Terracing is comparatively more practised in the highland districts of Kapchorwa (16.98%) and Kabale (19.88%) as well as in the hilly district of Mbarara (9.28%).

This is again expected, because farming in these districts takes place on steep slopes and terracing is inevitable to ease soil erosion. However Miiro (2001) reports that terraces are being destroyed to access more fertile portions of the terrace, to control rodents or reduce landslides.

3.3.3 Household income, assets and demography

Across income quintiles, some interesting observations do emerge. As expected, the non-poor households (Top quintiles) have more livestock assets, are more educated, and earn more non-farm income. Total livestock assets, years of education, and non-farm income, all increase the richer the household becomes (Table 3.3). Education is expected to provide alternative opportunities for salaried employment off farm and increases the ability to startup various non-farm activities (Deininger and Okidi 2001). This finding partly explains the result that the higher the education level, the richer the household becomes and the greater the non-farm income (Table 3.3).

With the exception of the second quintile, there is no significant difference in average farm size among the remaining income quintiles. This finding may be surprising but given the different tenure systems across the country, and variations in population densities, this outcome is possible. Table 3.4 shows that the average farm size in the poor districts of Lira and Soroti is more than four acres and much bigger than in other well to do districts of Masaka, Kapchorwa, Kabale and Mbarara.

Table 3.3 selected socio-economic characteristics by income groups

Income Quintiles	Livestock assets*	Farm size (acres)	Education (years)	Non-farm income (millions of shs**)	Number of parcels	HH-size
Bottom	1.84	1.76	3.82	0.24	3.09	6.60
2nd	1.85	1.21	5.53	0.30	4.43	6.47
3rd	2.49	1.52	5.56	0.53	4.99	5.98
4th	2.67	2.01	6.87	0.50	4.93	5.98
Top	3.42	1.94	8.41	0.57	4.21	5.41

Source: Author's calculations. * Livestock is measured in tropical livestock unit (TLU). Average TLU for common livestock in Uganda is cow = 0.9, Oxen = 1.5, sheep or goat = 0.2, calf = 0.25. ** Uganda shilling to USD exchange rate was approximately $1=1800.

Also interesting to note is the negative relationship between household size and income. Dasgupta (1995; 2000) discusses several reasons in support of this finding. First, in areas where savings are low and public support for the elderly is non-existent, the poor households look at children as a source of security in their old age and a source of income earning assets. Secondly, the poor do not have information on modern family planning methods, compared to their educated rich counter parts. More educated women for instance tend to have a higher opportunity cost of child bearing and raring and in general have lower fertility. However, large family size is associated with greater labour force available for the households and can therefore serve to ameliorate labour constraints.

The average age of the household head range between 38.4 years in Mbarara district to 43.9 years in Kabale (Table 3.4). The family size is generally high at an average of 6.2 persons per family, with the lowest of 5.3 in lira district and the highest of 6.9 persons in Iganga district. Overall, most of the sampled household heads have spent 5.8 years in school with the highest of 6.97 years in Mbarara and a lowest of 4.6 years in Arua district. Most of the households are male headed with less than 25 percent of the households in all districts being female headed.

Access to non-farm income is highest in the districts of Masaka (0.583 million shs) and Mbarara (0.572 million shs) per annum and lowest in the districts of Soroti (0.146 million shs) and Arua (0.291million shs). Lack of diversified earnings could therefore partly explain high levels of poverty in some northern districts. The districts of Mbarara, Soroti, Lira and Kapchorwa are the major livestock districts. Livestock ownership is also crucial in production and investment in land management. First, livestock is a good source of animal manure and hence cattle keeping are associated with more use of organic fertilizer. Secondly, livestock can be considered as a social insurance mechanism that can be sold off especially in bad years to offset other financial shortfalls such

as the purchase of inputs for agricultural production, fees for school going children, medical bills among others.

Extension service is very poor in the country. For instance, only 28 percent of the sample households are reported to have had a single visit of an extension agent for a period of one year. The worst service was reported in the districts of Iganga (11.9%) and Lira (18.2%) while higher extension visits were reported in the districts of Masaka (36.2%), Soroti (42.9%), Mbarara (34.6%) and Kapchorwa (33.8%).

Table 3.4: Selected social, environmental and economic characteristics by district

Variable /District	Masaka	Iganga	Kapchorwa	Soroti	Arua	Lira	Kabale	Mbarara	ALL
Bequeath (dummy)	0.726	0.619	0.869	0.667	0.885	0.818	0.854	0.815	0.812
Distance from plot to Residence (Kms)	1.535	0.619	1.997	0.108	0.610	0.378	0.916	0.411	0.905
Dist from plot to nearest MKT (Kms)	3.047	2.631	2.083	2.357	1.616	2.614	4.646	3.754	3.155
Dist from plot Seasonal Road (Kms)	0.412	0.658	0.447	0.114	0.677	0.220	0.812	0.317	0.598
Perceived nutrient deterioration (dummy)	0.461	0.438	0.656	0.524	0.524	0.273	0.337	0.597	0.467
Extension (dummy)	0.362	0.119	0.338	0.429	0.285	0.182	0.250	0.346	0.281
Household Head age (Years)	42.43	38.58	40.29	38.62	41.73	42.06	44.00	38.39	41.61
Household Head Education (Years)	6.289	5.898	6.675	5.238	4.563	6.333	5.619	6.970	5.779
Household size (number)	6.560	6.907	6.644	6.238	5.472	5.303	6.098	6.480	6.186
Household Head Sex (dummy)	0.802	0.832	0.819	1.000	0.758	0.939	0.845	0.893	0.825
Non-Farm Income (millions of Ushs)	0.583	0.467	0.400	0.146	0.291	0.440	0.335	0.572	0.412
Farm size (acres)	1.683	2.927	1.108	4.333	1.730	5.174	0.682	2.068	1.611
Livestock (Tropical Livestock Units)	1.656	1.130	3.283	7.188	2.932	4.106	1.447	5.342	2.527

Source: Author's calculations.

3.3.4 Plot and farm characteristics

Tenure security is generally more stable as more than 61 percent of the plots covered in all districts can be bequeathed to next generations (Table 3.4). Bequeath in this case measures long-term security with all user rights. Secure tenure rights on land increases incentives for smaller rural farmers to invest in long-term conservation measures such as soil conservation structures as well as use of soil nutrient enhancing techniques.

Farmer awareness has been found to be an important constraint to positive adaptation to environmental changes and also a constraint to making appropriate investments in land for conservation. As for perceptions of households regarding level of nutrient depletion in covered plots, an average of 46.7% of the respondents observed severe nutrient depletion. Observations of nutrient depletion were highest in the district of Kapchorwa (65.6%) compared to a low of 27.3 percent in lira district. This probably partly explains the high use of inorganic and organic fertilizer in Kapchorwa and low or no reported use in Lira district. From a policy perspective, it is important to provide adequate information about natural resource status to the key stakeholders. Farmer education through extension services or through demonstration plots about the status of the resource base, and gains arising from proper natural resource management would be important in this case to trigger adoption.

The mean distance from residence to plots is about 0.9 kms with the longest average distance of 2 kms reported in Kapchorwa district and lowest of 0.12 kms in Soroti. This could partly be explained by terrain differences in these districts, since distance information was collected based on individual approximations of distance rather than actual measurement (Kapchorwa is in the highlands while Soroti is mostly flat land). Surprisingly, distance from plot to market and seasonal roads are longer for relatively well to do districts of Masaka, Kabale and Mbarara as opposed to those in the relatively poor districts of Soroti, Arua and Lira. Other studies in Uganda (Nkonya et al.,

2004; Pender et al., 2004) have come up with similar or inconclusive results on the role of roads on adoption of natural resource conserving technologies, agricultural production, and/or poverty reduction. Pender et al. (2004) suggest a possible explanation to be that road access favors non-farm income activities and immigration of poor people.

3.4 Social capital and associational life in the study area

The IFPRI survey also collected information on the associational life of households. The analysis shows that social networks are strong at the inter-household level and in horizontally structured organizations. A few structures associated with local leadership were however found to be hierarchical in nature. For example, the government management system was found to have a reporting structure from local council one (LC1) to local council five (LC5) at village and district levels, respectively.

Twenty-two social groups in total were identified and reclassified into three major categories depending on the services they offer and for ease of analysis. The three categories include production and financial services, supra-community organizations, and social service groups. The supra-community includes institutions whose services, objectives and memberships normally cut across communities or go beyond the borders of particular communities. The description and brief summary of the diverse services they offer are given in Table 3.5 and discussed thereafter in subsequent sub-sections.

It is important to note that the services provided by these groups may not be exclusive to those particular groups or limited to one service type i.e. not specialized. For example, to a small extent, some burials societies may also organize themselves to offer savings and credit services as well as other community mobilization activities. Also, a member is not restricted to one type of association/group but can be a member in more than one type of association like social groups and production groups.

Table 3.5: Associations, groups and services provided

Groups/ Classification	Examples	Services provided
Production and Financial services,	• Savings and credit associations • Rotating credit schemes, • Farmers groups • Women groups	• Provide savings and credit facilities • Exchange of labour, provision of livestock and crop, agro forestry extension services, environmental management activities.
Supra-Community organizations*	• Government programs and structures, • NGO's, • Political party structures, • Education and health groups	• Community mobilization for public good provision • Education, training and senstisation on various needs.
Social service groups	• Burial societies, • Religious, • Drama/choir, • Youth sports clubs	Mutual support activities such as provision of household amenities, hospitality, comforting the bereaved, assisting the disadvantaged, meeting funeral expenses and provide care for the sick.

***Supra-community organisations are organised beyond community programs.**

All the above groups may positively impact on farm and non-farm production and therefore reduce household poverty. These groups/associations normally facilitate cooperation in the direct provision of services, sharing of information, encourage participation in decision making, labour provision, enhance trust building and ameliorate resource constraints among others. The data show that overall membership in associations tends to be skewed towards locally initiated institutions, accounting for more than 81.4 percent of the total membership. This outcome is associated with trust in local organizations built around strong kinship ties of members.

All the groups are ethnically homogenous. More than 93 percent of all groups belong to the same ethnic group. The advantage of homogenous groups is that they tend to be associated with greater trust among members because of stronger kinship ties. The disadvantage however is that such associations

tend to be conservative and enjoy limited success in acquiring and generating new skills and knowledge essential for improvement of household as well as community welfare.

3.4.1 Production and financial services groups

The production and financial services groups are among the most popular categories and account for more than 40 percent of the total membership (Table 3.6). These groups include savings and credit associations, rotating credit schemes, farmers groups as well as many women groups. These groups offer a range of services to members such as provision of savings and credit facilities, exchange of labour, provision of extension services among members, as well as environmental management activities e.g. promotion of energy conservation methods, soil and water conservation technologies among others. Also, these groups provide information about markets, marketing and processing of agricultural products. Being members of such associations therefore provides opportunities to invest in soil conservation and nutrient enhancing technologies, more than in any other groups/categories.

All these services offered have implications on adoption of land management technologies and therefore household welfare. For instance, availability of credit ameliorates credit limitations and other conventional resource constraints such as market access, labour, equipment and therefore increases investment in land conservation. Secondly, credit access may also reduce vulnerability of households to poverty. Thirdly, supply of labour a major activity of this group reduces labour constraints and may lead to use of soil conserving and nutrient enhancing technologies that may be labour intensive such as organic fertiliser and terracing. Labour or resource pooling is a common practise among the farmer groups. Labour pooling mainly targets particular activities such as house building, harvesting, and construction of terraces among others.

Fourthly, these associations and others provide avenues for dissemination of new technologies to the communities. The presence of these institutions can

be utilised for effective extension service delivery. Most of these groups are built on trust among members with the objective of maximizing group interests. This probably explains why more than 75 percent of these groups in this category are locally initiated with more than 95 percent of the members being from the same ethnic group (Table 3.6). Locally initiated institutions tend to be homogeneous. Homogenous associations are built on strong kinship ties because of trust among relatives.

3.4.2 Social service groups

The social service category is the most popular of all, accounting for 51.74 percent of the total membership and covering groups such as burial societies, religious, drama/choir and youth sports clubs. Again these groups offer a wide range of services that are important for household welfare. These services include mutual support activities such as provision of household amenities, hospitality, comforting the bereaved, assisting the disadvantaged, assisting with funeral expenses and provide care for the sick. They basically provide insurance for funeral costs, medical care and hospitality and counseling services where formal insurance markets do not exist. Other services include choir, drama and sports activities for leisure purposes.

These groups also positively impact on household welfare. By sharing the burden of caring for the sick, counseling the bereaved, meeting burial expenses among others reduce emotional pressures and therefore mitigate the negative effects of such social problems and events on individual households. More than 92 percent of the social services groups are locally initiated, with 94 percent of the members being from the same ethnic group.

Table 3.6: Groups/associations in rural Uganda, by membership characteristics

Group type	Membership (freq)	Membership (%)	%ge of group that is local**	Ethnic homogeneity (%)
Production and financial services	696	40.3	75.0	95.1
Supra-Community	137	7.9	42.3	96.3
Social service	893	51.7	92.4	93.9

Source: Author's calculations. ** An association being local means local community initiated.

3.4. 3 Supra-community organizations

This category covers institutions that are largely external (57.7%) to local communities and these institutions/groups include, Non-Governmental organizations (NGO's), government programs and structures, and political party structures. The supra-community institutions are also very important for household productivity and welfare. They provide a range of services that include, community mobilization for public good provision in construction and maintenance of community-based infrastructure e.g. water, roads, electricity, sanitation, education and health facilities. Education, training and senstisation on various household needs such as adult education, domestic hygiene, poverty, nutrition, immunization, family planning, sex education, counseling, and post-natal services. These institutions therefore target improving the health and information for members, and help in the provision of public goods.

The improvement of the health of household members increases their productive labour time by reducing absenteeism caused by sickness. Also, information derived from the educational groups improves the ability of members to take advantage of any opportunity within their community and to further information flow among community members. This category is the least subscribed, with eight percent of membership. One possible explanation is that since majority of these associations are external to the communities, the level of trust in these organizations is low and many do not require broad memberships such as NGO's, extension and government bodies work with selected groups as agents for demonstration and dissemination purposes.

There is a strong presence of NGO's in the country in almost every aspect of livelihood. For instance, the observed success in use of productivity enhancing technologies in Kapchorwa district is partly associated with the strong presence of USAID funded projects such as- Agricultural Productivity Enhancement Program (APEP), and the Rural Savings Promotion Enhancement of Enterprise Development (Rural –Speed). These projects provide training on better farming techniques that increase productivity and have been very influential in securing World Food Program (WFP) long-term maize contracts for the local associations.

3.5 Social capital dimensions by district and income quintiles

Considering the different income groups, there is no clear difference in membership in organisations for the top 80 percent of the (from second up to the fifth quintiles). However, for the bottom 20 percent only 67.6 percent were members of some groups compared to more than 78 percent for all the other groups. One possible explanation is that these are poor landless labourers, not able to afford basic subscription requirements, and end up excluded in all decision making processes.

The poor may have low participation in terms of percentage of members but spend much more time in associational activities compared to the rich. For instance the lowest 20 percent spend an average of 136.9 hours per year compared to 77 hours for the top quintile and 69.9 hours for the fourth quintile. One possible explanation for this outcome could be the low opportunity cost of time for the rural poor. Secondly, the associations/groups and therefore the resultant activities the poor and the rich participate in are different. Poor people are more associated with social groups while the rich tend to be more involved in the production related associations (Table 3.7). Membership to social institutions reduces with an increase in income while membership to production institutions increases with income.

Also as expected districts with strong horizontal networks are more likely to adopt use of soil conservation and nutrient enhancing practices and thus reduce poverty in these districts. For instance, in Kapchorwa and Lira districts the most common associations are those classified as production and financial services while in many other districts, households tend to join the social service associations. Production and financial services groups are expected to be directly related to production and investment in land management activities. This could partly explain the greater use of soil nutrient and conservation practices and thus low poverty levels in Kapchorwa district. Surprisingly, this is not the case for Lira district. The reason for this outcome could be the insecurity in Lira, which has disrupted peoples' livelihoods and may not allow proper functioning of the social institutions.

Table 3.7: Social capital dimensions by income quintiles and districts

Income Quintiles	Membership to Orgs. (%)	Membership to Prodn. and fin. svces (%)	Membership to Supra-Community Orgs. (%)	Membership to Social service Orgs. (%)	Time in Orgs. (Hrs)
Bottom	67.62	32.1	12.4	55.6	136.91
2nd	80.56	42.0	7.2	50.8	85.82
3rd	78.99	36.6	7.1	56.3	87.39
4th	79.30	46.9	3.9	49.3	69.90
Top	85.31	44.3	13.7	42.1	77.05
All	78.13	40.3	7.9	51.7	91.18
Districts					
Masaka	59.33	35.2	21.4	43.4	59.19
Iganga	58.80	53.2	10.7	36.1	64.39
Kapchorwa	84.28	89.1	6.5	4.4	53.55
Soroti	60.00	14.3	0.0	85.7	91.80
Arua	65.89	49.7	16.5	33.8	96.40
Lira	65.52	94.7	0.0	5.3	56.41
Kabale	93.98	24.6	1.3	74.1	130.56
Mbarara	95.53	36.3	3.9	59.8	71.86
All	78.13	40.3	7.9	51.7	91.18

Source: Author's calculations.

Membership to at least one local association is highest in the districts of Kapchorwa, Kabale, and Mbarara districts. However what is important to note is that in districts such as Kabale and Soroti, less than 25 percent belong to production related institutions with the rest belonging to social or supra-community institutions. To the contrary in Kapchorwa district where welfare

levels are higher, more than 89 percent are in production related institutions. The higher membership in production institutions in Kapchorwa could be explained by the strong presence of Kapchorwa Commercial Farmers Association (KACOFA) that organises maize and barley farmers in the district.

3.6 Relationship between social capital and other socio-economic characteristics

Education tends to be associated with higher membership in the production related and supra-community institutions, while the less educated tend to join the social services groups. This could be a sign that the educated are actually taking advantage of the more productive services and opportunities provided by the production and financial services institutions. There are no observed age differences across the different types of institutions a household may join. Value of output per acre, and non-farm income are greatest for those households who are members of supra-community organisations. Possible explanation for the observed relationship is that such organisations of an external origin tend to work with and benefit the local elite and bring little if any assistance to the poorest segments of the community. Alternatively, the organisations actually make their members rich through their supportive mechanisms in credit provision, extension services among others.

Table 3.8 key social economic indicators by social capital groups

Group type	HH - age	Educ (years)	Non-Farm Inc(millions of Ushs per annum)	Value of output per acre (millions of Ushs per annum)	Average no of hrs
Production and financial services	40.8	7.0	0.456	0.531	91.58
Supra-Community	42.7	6.5	0.989	0.787	127.32
Social service	43.2	5.3	0.304	0.358	132.36

Source: Author's calculations

More time is spent in social service activities such as burial, choirs, games and sports as opposed to production related activities such as investment in land management activities. The reasons for this outcome could be that; first, the poorest participate more in social activities because their opportunity cost of time is low. Secondly, the poor sometimes make in-kind contributions by offering their labour time as a way of contributing to associational activities while the rich may pay cash. Lastly, this finding could also be showing the importance the poor attach to these associational activities. The rich may have limited need to join social associations for mutual support in social ceremonies because they can afford to pay for hiring some of these services from commercial providers.

3.7 Relationship between social capital and adoption of land management technologies

There is no major difference in adoption of traditional land management techniques (fallowing, organic and terracing) across the different social capital groups. However, adoption of inorganic fertilizer is much more in production and financial services groups than in the social services groups. A number of reasons may explain this outcome. First, inorganic fertilizer is a purchased input, and therefore requires greater purchasing ability, which is more possible with the other groups other than the social services group. It is also usually imported from outside the rural localities under study.

Table 3.9 Adoption of land management technologies by social capital groups (%age of farmers)

Group type	Fallow (%)	Organic fert (%).	Inorganic fert (%).	Terracing (%)
Production and financial services	30	14.9	4.6	8.4
Supra-Community	26	13.9	5.1	4.3
Social service	27	10.2	0.5	13.3

Source: Author's calculations

Secondly, because of higher awareness, level of education and being more open institutions, production and supra community categories provide more chances of adoption than the social groups. Lastly, the majority of the users are located in Kapchorwa district, where most households are members to social institutions.

3.8 Summary

The discussion in the chapter shows that levels of poverty in different districts may be explained by a number of factors that include; use of soil conservation and nutrient enhancing technologies, differences in household characteristics and agro-climatic conditions, and nature and types of social institutions that are most prevalent. The chapter highlights key interesting observations. First, districts in the bi-modal rainfall zones generally tend to be less poor and more densely populated than their counterparts in the Unimodal zones. Secondly, there is no significant difference in land holdings among the different income quintiles. This outcome is attributed to the structure of the tenure system and variations in population densities across the districts. Third, farmers' awareness of the level of environmental degradation is positively related to adoption.

Regarding the prevalence and characteristics of the social capital associations, a number of interesting outcomes are also observed. First, membership to associations is skewed to locally initiated groups and these associations are ethnically homogeneous as opposed to externally originated. This finding is attributed to relatively higher trust in homogeneous associations. Secondly, more associational time is spent in social groups because of the low opportunity cost of labour for the poorest communities. Third, more educated households tend to join production and financial services groups than the social services institutions. Lastly, well to do households are mostly members of production and financial services groups as opposed to social groups.

To understand the extent to which household and other characteristics highlighted in the above analysis affect household adoption of farming technologies and household welfare, we present multivariate analysis in the next two chapters. Chapter IV that follows discusses the impact of property rights, social capital and poverty on adoption of land management technologies while chapter V there after looks at the determinants of group memberships and the impact this group membership may have on household poverty.