

NATURAL RESOURCES SYSTEMS PROGRAMME  
FINAL TECHNICAL REPORT R 7856

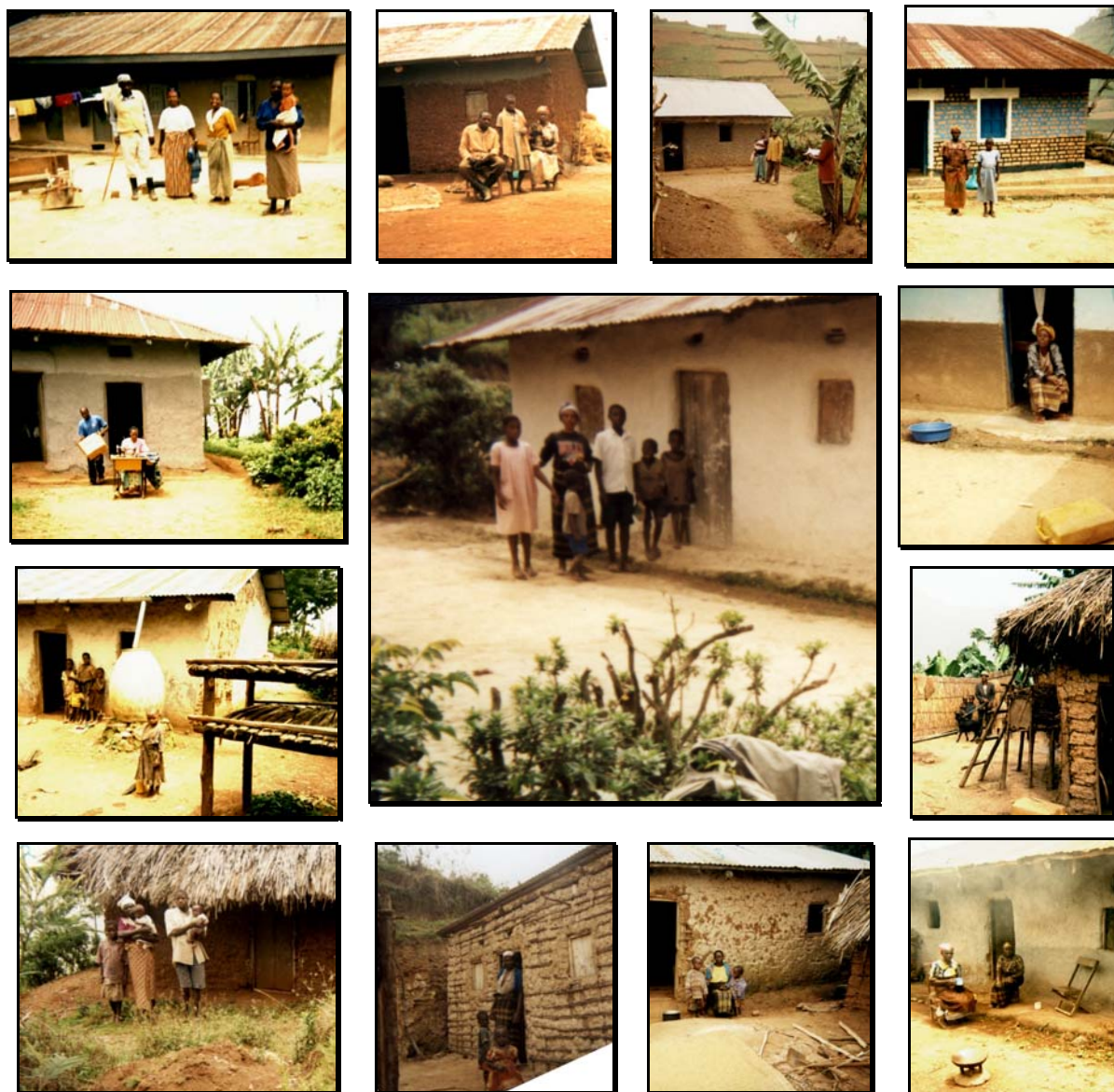
Strengthening Social Capital for Improving Policies and  
Decision Making in Natural Resources Management

Annex C

Methodology for social capital, gender and livelihood analysis

Adrienne M. Martin, Pascal C. Sanginga, Rick N. Kamugisha

September 2004.



African Highlands Initiative  
Natural Resources Institute

International Centre for Tropical Agriculture, Uganda

## **ACKNOWLEDGEMENT**

We are very grateful to the twenty four families and the people of the four study villages in Kabale District for their enthusiasm, patience and active participation in this project.

Particular thanks go to Lilian Kobusingye, Michael Besigye and Oliver Nakitunda ,who under the team leadership of Rick Kamugisha, conducted the panel interviews with the selected households.

This document is an output from a project funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID

## TABLE OF CONTENTS

1. INTRODUCTION AND OBJECTIVES .....	1
2. CONCEPTUALISATION OF SOCIAL CAPITAL .....	1
2.1 Different conceptualisations in the literature. ....	2
2.2 Critiques of social capital .....	4
2.3 Measurement of social capital.....	5
3. CASE STUDY RATIONAL AND METHODOLOGY .....	5
3.1 Rationale for case studies.....	5
3.2 Selection of case study households.....	7
3.3 Development and use of tools for household case studies.....	9
3.4 Research questions .....	10
4. FINDINGS .....	11
4.1. Case study households and access to assets .....	11
4.1.1. Household and clan membership .....	11
4.1.2 <i>Household members occupations</i> .....	12
4.1.3 <i>Health</i> .....	13
4.1.4 <i>Labour</i> .....	13
4.1.5 <i>Physical capital</i> .....	13
4.1.6 <i>Financial capital</i> .....	14
4.1.7 <i>Natural capital</i> .....	16
4.1.8 <i>Social Capital</i> .....	18
5.1 Vulnerability and strategies .....	26
5.2 Social capital and NRM byelaws .....	29
5. CONCLUSIONS .....	30
REFERENCES .....	32
APPENDIX 1 Selection of case study households, Rubaya Sub country	
APPENDIX 2 Checklist for Social Capital Household Case studies	
APPENDIX 3 Formats for households and plot recording	
APPENDIX 4 Case study household characteristics	
APPENDIX 5 Plot records	

### List of Tables and figures

Table 1 Occupations and income sources of case study households.....	12
Table 2 Estimated household income from agriculture for the season.....	15
Table 3 Access to land by gender of head of household.....	16
Table 4 Land use among case study households .....	17
Table 5 Crops grown by case study households .....	18
Table 6 Group memberships by village and case study household. ....	19
Figure 1 Distribution of all households by wealth rank in the case study villages. ....	7
Figure 2 Social network diagram, showing ties with immediate kin. ....	24
Figure 3 Social network diagram, showing ties with kin inside and outside the village. ..	25
Figure 4 Social network diagram, showing ties with relatives and non relatives inside the village. ....	26

## **1. INTRODUCTION AND OBJECTIVES**

The project “Strengthening Social Capital for Improving Policies and Decision-Making in Natural Resources Management” aimed to strengthen social capital and local institutions to improve participatory Natural Resource Management innovations and policies and to accelerate dissemination and adoption of sustainable NRM technologies and policies to wider communities.

Underlying the emphasis on strengthening social capital was the need for further understanding of the nature of social capital, comprising both the social ties constituting formal village based organisations (what we have termed ‘bridging’ social capital) together with the informal social relations of cooperation and mutual support (bonding social capital) embedded in the social life of communities. This understanding was intended to lead to better identification of strategies to enhance and strengthen the operation of joint action in support of natural resource management. In particular, it was hypothesised that strengthening of social capital, particularly women’s involvement in discussion and decision making on NRM, would result in greater all-round stakeholder understanding of the issues and actively improve local policies. It would increase the probability that people would participate in the coordinated formulation and implementation of local policies and would adopt many of the improved NRM innovations. The project’s strategy was to build on existing social capital and to *strengthen* it through supporting and facilitating collective action.

The understanding of social capital (specified in output 1 of the project logframe) was generated through a number of related activities. The participatory diagnostic work with village based farmers’ groups and the analysis of the constraints to their operation, together with survey work carried out under related projects, provided a good basis for understanding the functioning of village based organisations and their relationships with service providers and local government. However, to complement these approaches it was decided to explore social capital in the pilot communities using a case study approach. This allowed a broadening of the focus on social capital from formally constituted groups to the wider network of informal social relations. The case studies were designed to explore in detail how social capital and social relations operated within the livelihoods of richer and poorer households and how these relations affected access to assets (particularly natural resources) and influenced practices.

This report begins by examining the concept and definitions of social capital and issues in its measurement, then discusses the research questions and approaches and issues in the case studies design before presenting the main findings and conclusions.

## **2. CONCEPTUALISATION OF SOCIAL CAPITAL**

The term ‘social capital’ is a concept that has generated much debate in recent years. A starting point for research under this project, was to examine the various meanings and applications of ‘social capital’ together with their strengths and limitations. Social capital is one of the five capital assets in the pentagon of the livelihoods framework. (Carney, 1998). In this formulation social capital is considered to be the social resources upon which people draw in pursuit of their livelihood objectives. These include networks and relations of connectedness, both vertical and horizontal, that increase people’s trust and ability to work together and expand their access to wider institutions such as political or civic bodies. It includes membership of more formalised groups and relationships of trust, reciprocity and exchange that facilitate co-operation, reduce transaction costs and may provide the basis for informal safety nets amongst the poor (DFID Sustainable Livelihoods Guidance Sheets, section 2.3.2).

The term 'social capital' implies that social relationships are themselves resources which can assist in increasing well-being (Rudd, 2000). However, in order to develop strategies to build on social relationships and increase participation it was necessary to consider what forms of social capital exist, how these are constituted through various community associations and indigenous institutions with different forms of solidarity and cooperation, patterns of inclusion and exclusion and negative, as well as positive outcomes.

### ***2.1 Different conceptualisations in the literature.***

One of the earliest formulations of the concept of social capital is found in the work of Pierre Bourdieu. He identifies several dimensions of capital - economic, cultural and social capital, which become effective and legitimised through the mediation of symbolic capital. Bourdieu emphasised the social construction of social capital and its attachment to forms of stratification which, in turn, are associated with the exercise of economic and other forms of exploitation (Siisiäinen, 2000; Fine, 2002). Social capital becomes a resource in the struggles that are carried out in different social arenas as actors seek to advance their interests and change their positions within hierarchical social structures (Siisiäinen, 2000)

An important aspect of Bourdieu's contribution was the emphasis on social capital as a resource that is connected with group membership and social networks. He defined social capital as "the aggregate of the actual or potential resources which are linked to the possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition or, in other words, to membership in a group." Membership in groups and involvement in the social networks and social relationships developing within and from such membership can be utilised in efforts to improve the social position of the actors in a variety of different fields. Group memberships creating social capital have a "multiplication effect" on the influence of other forms of capital (Bourdieu 1986). Thus Bourdieu's approach to concept of social capital is concerned both with the structure of social networks and the resources contained within the network that may be drawn on by its members.

Other early antecedents of current debates on social capital focused more on the normative community dimension, "the features of social life – networks, norms and trust – that enable participation to act together more effectively to pursue shared objectives" (Putnam; 1996:66;). The emphasis was on shared values and horizontal associations between people which facilitate community collaboration and mutual collective action and contribute to economic prosperity (Putnam, 1993). The strength of social capital was measured by the density of voluntary organisations. Putnam argues that social capital in form of civic engagement reduces incentives for opportunism and corruption and makes for a more efficient and less distrustful society.

It was recognised that this relatively simple definition worked well in small homogeneous areas (Narayan and Pritchett 1997), but did not capture the range or complexity of social relationships (Grootaert, 1998). It tended to assume the existence of a homogenous community with shared interests and values rather than competing interests. Other interpretations emphasised complexity while defining the specific function of social capital as an aspect of social structure which facilitates certain actions of actors – whether persons or corporate actors - within that structure. (Coleman 1990:302). Hence the focus was broader than networks of trust between individuals within a community and included examination of vertical associations (Coleman 1988 and 1990). This highlights issues of hierarchical relationships, unequal power distribution and negative outcomes as a dimension of the operation of social capital; benefits to some may imply harm to others or may result in socially undesirable outcomes. Strong norms of solidarity may lead to

excessive claims and economic decline, while weak solidarity may lead to failure of trust and cooperation (Granovetter 1995:137).

A third perspective sees social capital as including the social and political environment that enables norms to develop and shape social structure, with a particular focus on formal and informal institutions (North, 1990). The focus extends beyond civil society to include government, political and legal institutions and other forms of networking based on partnerships for innovation and competitiveness, for example, with universities, enterprises, business networks, and the labour market (Cohen and Fields 1998). In this view, social capital generated through civil society engagement is insufficient alone to bring about economic transformation.

More recent formulations and studies using the concept of social capital build on these principles. Uphoff and Mijayaratna (2000) distinguish between structural and cognitive forms of social capital, refining the notions of shared norms and trust at individual and household levels, and the horizontal and vertical social networks constituting social capital. They define *structural* social capital as referring to the networks, linkages and practices within and between communities, including membership in formal and informal associations, participation in decision making and the forms of social organisation within which networks of relationships are located.

In contrast, *cognitive* social capital refers to the attitudes, values, beliefs, social norms and behaviours that exist within a community (Uphoff and Mijayaratna, 2000; Grant, 2001). Examples of cognitive forms of social capital include interpersonal trust, norms and values facilitating exchange and reciprocity, cooperation and collective action, tolerance of diversity, altruism, personal commitment to community action, confidence in formal and informal institutions. Both structural and cognitive social capital must be combined to create the potential for mutually beneficial collective action within a community.

The two dimensions relate to a further refinement of the concept of social capital into *bonding*, *bridging* and *linking* social capital (Grootaert and Van Bastelaer, 2001; Pretty, 2003). Pretty describes 'bonding' social capital as the social cohesion within groups or communities resulting from relationships between people of similar ethnicity, social status and location, based on local ties, trust and shared moral values, reinforced by working together. This is closely allied to cognitive social capital.

'Bridging' social capital refers to the structural relationships and networks which cross social groupings, involving coordination or collaboration with other groups, external associations, mechanisms of social support or information sharing across communities and groups (Narayan and Pritchett, 1999). 'Linking' social capital crosses describes the ability of groups to engage with external agencies, either to draw on useful resources or to influence policies (Pretty 2003). Linking social capital crosses status, linking poor people and those in positions of influence.

The synthesis of studies under the World Bank Social Capital Initiative indicates the high levels of social cohesion where strong bonding social capital exists, allied with strong vertical linkages (Grootaert and Van Bastelaer 2001). Bonding social capital alone is limited in impact, since its strength is founded on exclusivity. .

The 'synergy approach' to social capital (Woolcock and Narayan, 2000) resonates with earlier perspectives which argued the importance of the wider social and political environment and institutions beyond civil society. However, Woolcock and Narayan focus on the need for complementarities and partnerships across sectors and between

public and private actors, local government and local communities, emphasising the nature and extent of ties connecting people and communities and public institutions.

The building, sustaining or more negatively, the undermining of social capital, can depend on wider policies that help to determine the resources available to people. While agreeing that social capital in the form of networks and associational activity is an important resource in tackling poverty and social disintegration, some writers emphasise that it is no substitute for policies designed to achieve a more socially integrated society through redistributive measures and sound economic policies (Molyneux, 2001). Policies should strengthen the capabilities of agents to enter into voluntary and mutually beneficial association sustainable over time, rather than simply being short term and parasitic on the ties of solidarity that may exist. In conditions of poverty, 'coping strategies' might be a more appropriate description than 'social capital' to denote the forms of co-operation that arise.

The above perspectives have somewhat different emphases on which dimensions of social and institutional relationships should be included in the concept of social capital. However, all focus on the ways in which stable social relationships can enhance effectiveness and efficiency of collective and individual action. Social capital has the characteristic of a public good; with the implication that it can be strengthened, through allocating resources to support and build these relationships and institutions.

Hence the particular relevance of social capital for the sustainability of natural resources and the environment, which often requires collective or coordinated action for its maintenance and enhancement and the imposition of sanctions on short term self interested behaviour (Rudd, 2000). The shared norms and values underpinning this cooperation are generated through patterned social interactions, both formal and informal (Collier, 1998) and hence by stimulating an "interactive process of identification of alternatives, discussion, contestation and decision making" (Rudd 2000), social capital can be created and strengthened.

## **2.2. Critiques of social capital**

Aspects of the development of the concept 'social capital' have been outlined above, but an important criticism is that the tendency has been to treat it as a politically neutral term, avoiding confrontation with social inequalities, social exclusion, structured power relations and conflict (Molyneux, 2001). The perspectives of Putnam and Coleman have been elaborated rather than those of Bourdieu. An approach to planning and policy implementation through community participation based on shared social capital, runs the risk of ignoring or by-passing the vexed question of the voice of the poorest and those with least power to influence the emerging consensus.

The different roles of men and women with respect to the maintenance of social capital also risk being subsumed if approaches exclusively emphasise the 'household' as the locus of social capital and participation. Since women are frequently those with the strongest community and kin ties, maintaining social capital "can come at a high, if unacknowledged, cost to women" (Molyneux, 2001:177). There are gender differences in the kinds of networks to which men and women belong. Women's networks are often more akin to coping strategies, relying on unremunerated time and non-monetised labour exchanges, as compared with the more economically advantageous networks of men (Mayoux, 2001).

Some of the methodological difficulties in relation to social capital are common to wider research into poverty and livelihoods, including challenges of how to derive valid generalisations, to link different levels of analysis, incorporate diversity of livelihood

components, especially over time, and how to understand the relationship with the macro context together with political economy analysis (Murray 2001; Bagchi et al 1998).

A radical critique is presented by Ben Fine (2002) who regards the term social capital as a catch-all phrase, potentially including all social variables in whatever context and having the capacity “to mean more or less anything”, and therefore not analytically useful.

Other writers have raised the criticism of tautology in the discussion of social capital. For example, the assertion that communities will be more successful in collective action if there are high levels of trust and social capital, while at the same time considering collective action, networking and cooperation themselves as the indicators of high level of social capital. At community level, social capital is conceptualised both as the structural and relational context within which people make livelihood decisions, and also as a resource on which people can draw for specific outcomes. One partial solution to this dilemma is to examine the relationship between social capital and its antecedents in structures of resource access and power relationships linked with the interests of differently socially situated groups.

### **2.3 Measurement of social capital**

There are theoretical and methodological difficulties associated with various efforts to *measure* social capital (World Bank, 2000; Narayan and Pritchett, 1999; Grootaert and Van Bastelaer, 2001). Obtaining a single measure of social capital is difficult given the comprehensive, multidimensional and dynamic aspects of social capital and there are unanswered questions over how this measurement relates to economic growth and development.

Narayan and Cassidy (2001), identify criteria or indicators for measuring social capital. These include group characteristics such as financial contributions, frequency of participation in activities and extent of participation in decision making, heterogeneity of membership; prevalence of norms of trust, helpfulness, fairness; closeness of everyday social interaction. Criteria also include community characteristics, - neighbourly connections (for child care, help in illness), the extent of voluntary work on community activities and sanctions for non participation; the extent of trust among different groups within family, neighbourhood and leadership roles both inside and outside village; a sense of pride and identity; the extent of communication. Outcomes of strong social capital would be expressed in the quality of government, honesty, security and service delivery and in the extent of local political engagement and participation. Work under the World Bank Social capital project has led to the development of an Integrated Questionnaire for the Measurement of Social Capital. Six dimensions are considered: groups and networks; trust and solidarity; collective action and cooperation; information and communication; social cohesion and inclusion; empowerment and political action (Grootaert et al., 2004)

## **3. CASE STUDY RATIONAL AND METHODOLOGY**

### **3.1 Rationale for case studies**

The decision to conduct case studies in four pilot villages in Kabale District, South Western Uganda, was linked to the objective of understanding how resource access and utilisation by different social groups related to levels of social capital in the form of networks of social relationships and group participation. The case studies were designed to look comparatively at households in contrasting circumstances to explore the reasons for differences in livelihood patterns between richer and poorer households and how these related to natural resource management practices.



Stakeholder analysis had been undertaken at an early stage of the project at village and sub county level to identify the range of actors and institutions, but it was felt necessary to conduct more detailed household level investigations to understand how interest groups and power relations operate in practice and compare with descriptions and value statements concerning their functions and interplay. The objective was to gain a clearer idea of how poverty and social exclusion was constituted, with a focus on the role of natural capital and its management. Through this analysis, the existing patterns of social capital were to be identified and opportunities for building and extending its role in NR management explored, particularly strategies to support social capital building of the poorest. Where social capital is lacking, or where existing forms play negative roles for sections of the community, strategies to create new forms of social capital would be considered.

The examination of social capital in Kabale district was not attempting to construct aggregate estimates of the amount of social capital in the project pilot areas, but to generate understanding of how social relationships operated in practice within community groups and organisations and informally within and between households and external bodies. The case studies were intended to increase understanding of how social capital is activated in the pursuit of livelihoods, particularly how access to (or exclusion from) social capital can assist or impede access to other forms of capital and hence influence livelihood choices and outcomes.

The case studies covered households across a range of wealth and status, including the poorest. This allowed inclusion and consultation with households who were not represented in groups or project participatory activities, especially poorer women. This understanding was necessary as the basis for supporting women's involvement in decision making on NR management and the integration of their problems and perspectives (Output 1).

Case studies can provide substantive examples of gender relations in practice and insights into gendered inequalities. It was considered likely that men and women would have different kinds of networks and experiences of collaboration, different values of collaboration and different capacities to overcome social division and conflict. Hence the aim to explore how far membership of groups and networks by men and women brought economic advantage and extended resource access and to better understand the gender implications of NRM policies, byelaws, technologies and constraints.

It was also hoped that case studies could illuminate any negative dimensions of social capital, such as excessive burden of obligations to family, kin and friends within informal social capital networks (Rose, 1997) or perceptions of corruption or exclusion.

The case study comparisons across different household types was also intended to show which strategies for improving NR management and productivity have more relevance for which groups, and what additional policy changes and capacity building would be needed for their implementation - specifically the viability of options which are necessarily implemented at a level beyond the individual, versus options which can be implemented on single plot scale by an single decision maker. Analysis of social relations would indicate where there were barriers to access to natural resources for certain groups and how this factor influenced patterns of NR exploitation.

The case studies were intended to be complementary to the questionnaire surveys and group discussion approaches conducted under the project as well as data from other projects in the district. Detailed rationales of decision making can be compared with results from wider scale surveys (Lindblade et al 1996) and rapid rural appraisals (Olsen, 1995) and more recent studies listed below.

- A survey by AHI on farmers' research groups studying the factors promoting group social capital covering the same four villages plus 11 others (2000).
- PRA in 9 communities including the 4 studied (AHI).
- A study on Conflict and natural resource management, starting with wealth ranking and key informant interviews followed by a detailed survey, covering all four study villages and one other (2004 CIAT/ECAPAPA)
- A study "Beyond Agricultural Productivity to Poverty Alleviation" (BAPPA) in three villages in Kabale district, two of which are in the present study, and comparative studies in Malawi and Tanzania (CIAT).
- A resource mapping and visioning process for future development in two villages in Rubaya sub county (not case study villages).
- Policy task force meeting minutes.

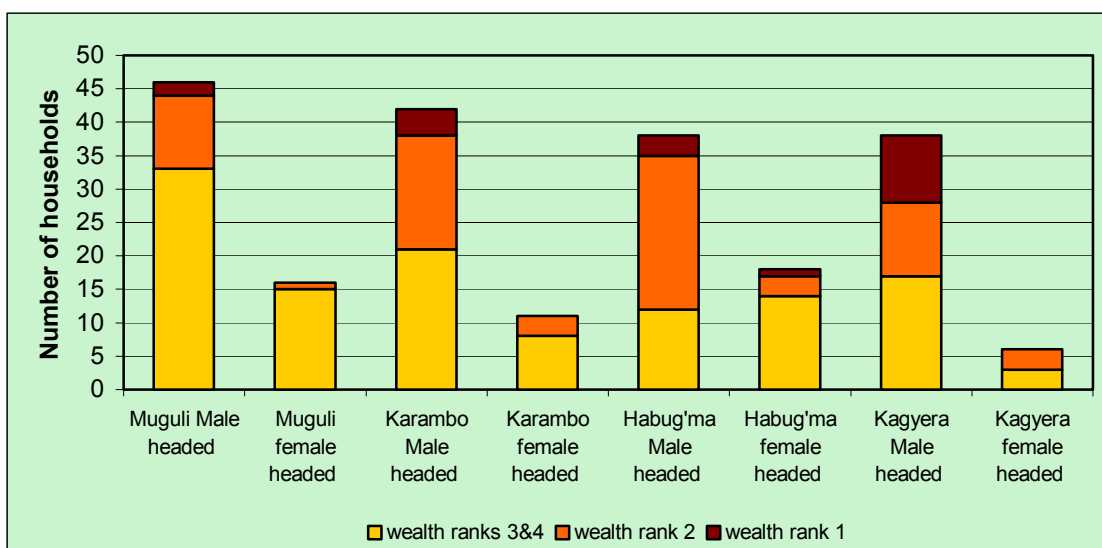
### 3.2 Selection of case study households

The case study households were selected from four villages in Rubaya Sub-county, Kabale district. The study only covers one sub county, but it was considered that resources would better allocated in doing the work thoroughly in one accessible sub county (also one of the highest populated), rather than spreading too thinly. Rubaya subcounty covers an area of 114 square kilometres and with an estimated population of 46,800 people, is densely populated. Administratively it consists of 8 parishes.

Rubaya sub county is relatively ethnically homogeneous, although there are different clans. The significance of clan membership, age, gender and marital status in determining access to social capital is poorly understood, although such understanding is an important foundation for the development of policies to assist the disadvantaged to improve their livelihoods, and to determine which forms of social capital could be appropriately strengthened to the benefit of the poorer social groups.

The four villages in Rubaya sub county selected for the case studies were Habugarama in Kitooma parish, Muguli and Kagyera in Mugandu parish, and Karambo in Buramba parish. They vary in size from 46 to 62 households. Wealth ranked household lists for Muguli and Karambo were available from the CIAT BAPPA study and for Habugarama and Kagyera from the ECAPAPA funded land conflict study.

**Figure 1 Distribution of all households by wealth rank in the case study villages.**



Factors differentiating rural households in Kabale district have been explored in some detail. Wealth ranking exercises pointed to the significant role of access to land. Other factors are land size and location, children in school, ownership of cattle and improved breeds, off farm income, children in Kampala and house type.

Selection of households was from the household lists of each of the four villages, stratified by wealth rank and gender of the head of household. The case study households were randomly selected within the strata. The numbers and distribution of selected households are shown in appendix 1. Between 5 and 7 households were selected in each village, making a total of 24 households (8 of which were female headed). A second 'reserve' sample was taken for substitution in case a selected household was unable or unwilling to participate.

The selection of households across wealth ranks and gender ensured inclusion of households who are often not represented in groups or participatory activities, especially those headed by poorer women.

Seven households were selected across the 4 wealth ranks in Muguli village. Two were female headed (both widows) and four were male headed households (married men). One household head was under the age of 30 years, two were aged between 30-50 and four were over 50.

There were 3 wealth ranks defined in Karambo village and 6 households were selected from the total of 53. Four were headed by married men and two by widows. Two of the selected household heads were under the age of 30 years, three were aged between 30-50 and one was over 50.

Habugarama also had 3 wealth ranks. Six households were selected from the total of 56. Three were headed by married men and three by women; one with an absent husband, one a widow and one divorced. Three household heads were aged between 30-50 and three were over 50.

Five households were selected across the 3 wealth ranks in Kagyera village, out of a total of 44 households that had been wealth ranked. Four were headed by married men and one by a widow. Three household heads were under the age of 30 years and one was aged between 30-50 and one was over 50.

The relative poverty of households and particularly of female headed households was as follows:

- 57.2% of households were in wealth ranks 3 and 4, 33.5% in wealth rank 2 and 9.3% in wealth rank 1.
- 23.7% of households were female headed. Only one female headed household was included in wealth rank 1 and this was a household with a husband working in Kampala.
- 19.6% of women headed households were in wealth rank 2 and 78.4% were in wealth ranks 3 and 4 compared with 37.8% and 50.6% of male headed households in the same categories.
- Comparing across the villages, the distribution of wealth ranks is most even in Kagyera and most skewed in Muguli (77.4% of households in wealth ranks 3 and 4). The highest proportion of female headed households was in Habugarama (32.1%) and the lowest in Kagyera (13.6%)

### **3.3 Development and use of tools for household case studies.**

The livelihoods framework was used to develop check lists covering areas for exploration (human, physical, natural, financial and social capital from the assets pentagon) and for each type of asset, exploring the relevance of social capital (appendix 2). Also included were gender and decision making processes, understanding of policies and institutions, perceptions of vulnerability and longer term livelihood strategies and preferred outcomes. Importantly the checklist also included questions on the range of informal relationships and social networks as aspects of bonding social capital and on linkages beyond the village –membership of externally linked organisations or outside contacts as indicative of bridging and linking social capital. Particular attention was given to the social relationships involved in NRM decisions, for example between the owners of neighbouring plots on a single hillside.

The checklist was used as a flexible tool, applied over a number of visits. This allowed for the build up of trust and for the cross checking of information which is difficult in one-off questionnaire surveys. It allowed discussion of sensitive issues such as gender roles and responsibilities, group membership and credit arrangements, strategies for coping with poverty. It also facilitated comparison of attitudes to NRM expressed on an individual private basis with those voiced in public discussions.

Throughout the case study discussions, attempts were also made to record comments that reflected the existence of cognitive forms of social capital; for example, the extent to which people expressed trust and confidence in their neighbours, kinsfolk and fellow villages or conversely, suspicion or jealousy; confidence or lack of it, that they felt in their political leadership and values of helping others and cooperating together.

The initial checklist was tested in Habugarama village, then modified to meet a number of concerns;

- Problems in recording the complexity of family membership and relationships led to the design of a household record sheet for details of family members (appendix 3)
- To capture the complexity (especially for the higher wealth ranked households) of numbers and locations of plots and cropping decisions, plot record and crop production record sheets were produced to facilitate systematic recording (appendix 3).
- The need to emphasise relationships, institutions and decision making which influence access, rather than simple descriptions of assets held. These aspects were strengthened in the check list.

The revised checklist, together with the forms for household membership, and plot and crop recording, were tested in the other three villages, final adjustments were made. And team members were assigned responsibilities for particular households. Plans were made to visit each household once every two weeks for a period of 4-5 months. While this did not cover the complete annual cycle, it did capture some significant decision making points, the harvest of main season crops at the end of June/early July, dry season valley bottom cropping, land preparations and cropping decisions for the following season, and a critical period for livestock.

Home and field visits and interviews were conducted with household members, using the checklists, forms and supplemented with diagrams. The idea was to record natural assets plot by plot on the early visits, then use the checklist to explore and follow up. Sketch maps were drawn of plots, including identification of owners of neighbouring plots and their relationship with the case study household. Information discussed with households included their mode of access to agricultural plots, including rented or borrowed land, description of soil quality and erosion on the plots, soil conservation

measures taken (plot sheet A) and details of crops and crop management (Plot sheet B - (see appendix 3). The interrelationships between different areas of the checklist were highlighted by colour coding (e.g. social capital relationships in pink).

### **3.4 Research questions**

Understanding of social capital was central to the case study methodology since it cross cuts all other activities. The research questions were intended to explore existing forms and patterns of social capital and to understand how these varied according to different individual, household and community characteristics. Social relationships and norms of trust were explored to enable a understanding of 'activated' social capital for households of different wealth categories, gender of head of household and age. Different patterns of social relationships were anticipated for men and women at different stages of the family development cycle; newly formed households and those of the elderly potentially relying more heavily on forms of social capital for their survival.

The concepts of *bonding*, *bridging* and *linking* were used to help in understanding the nature of the social capital relationships at individual, household and village level and beyond and how these contributed to enhancing household and individual physical, human, financial and natural capital. Spatial aspects of social relationships were taking into account, for example, migration outside the home village and remittances of money and other goods. The cross-cutting dimension of access to information and means of communication was also included. As a core feature of social capital, household members participation in groups, local associations and networks was carefully explored, including participation in community collective action.

The discussions also covered different participating households visions for the future - how they saw their current status and sources of vulnerability, in what ways they mitigated risks and what future strategies were envisaged. The dimension of policies and institutions was also included, covering the process of byelaw formulation and responsibilities for natural resource management.

The study was in particular seeking to understand the kinds of social relationships that were important in facilitating access to *natural assets*, for agricultural production and marketing, particularly access to land, labour and inputs. Questions on decision making and NR management were also included, exploring perceptions of land quality (soil erosion, soil fertility) and strategies for management.

The context for this is the considerable debate on environmental change in the Kabale area. The district has seen a significant increase in population and is among the most densely inhabited of Uganda (Guinand 1996). However, while there are frequent references to land degradation in the literature, some authors have challenged the empirical evidence for severe environmental degradation. Lindblade et al (1996) repeated a land use survey conducted by Purseglove (Purseglove, 1945), over fifty years ago, using his original transects. They found that there had been an increase in tree cover, and the area under cultivation as a proportion of the land surface had decreased since 1945, despite the doubling of the district population in the period. There had been no disastrous decline in soil fertility (a view supported by Farley, 1996). The proportion of land under fallow and the length of resting time had both increased.

One possible explanation for apparently contradictory findings is that experience of richer and poorer households are different, and these differences are masked in studies which look at overall quantification of change at landscape level. Lindblade et al found that wealthier households have a higher percentage of fallow land and fallow for longer periods, although poorer households tend to fallow their more distant fields. Following

correlates to distance from home to field and seems to be associated with contexts where potential returns to labour are low. Older people follow more because of labour constraints. Farmers' perceptions of erosion are also important in affecting following decisions (Olsen 1996).

The case studies provided an opportunity to discuss perceptions of change in land quality and decisions relating to fallowing and other soil conservation measures, while relating this information to differentiation in wealth and natural assets, focusing on the following;

- the rationale of fallowing
- labour availability
- access to wood fuel and tree planting decisions.
- soil erosion measures.
- access to inputs
- grazing practices
- knowledge of byelaws and policy processes.

Intended outcomes from the case studies were:

- To identify what 'social capital' exists over what socially differentiated groups, and how it can be strengthened or built where necessary
- To indicate which strategies for improving NR management and productivity have relevance for which groups and what additional policy changes and capacity building are needed for their implementation?
- To illustrate how social capital, informal social networks and formal organizations influence access to resources and the outcomes of their utilisation; how some people can pursue a trajectory of increasing assets while others are unable
- To guide in the development of approaches that strengthen the capabilities of men and women to engage in new forms of association that can be a forum for their democratic participation and influence over wider policy processes in support of natural resources management.
- To inform researchers and decision makers about poverty and NR management constraints at village level.

## **4. FINDINGS**

### **4.1. Case study households and access to assets**

This section summarises the main findings concerning the distribution of assets, the factors that differentiate households and the social relationships through which households access their means of livelihood.

#### **4.1.1. Household and clan membership**

The basic details of family structure of the case study households are given in appendix 4. Family sizes varied between two and ten members and dependency ratios between 1:0 and 1:4 (Adults to children under 18). As expected, the highest dependency ratios were found in households headed by men or women aged 30 to 45, but also among some older people looking after grandchildren.

The patrilocal exogamous clan relationship is reflected in the clan affiliations of household heads. Of the 16 male headed households in the case study group, 12 were born in their villages, or had more than 50 years residence. Only 3 had moved into the village, whereas the majority of women had come to the village on marriage. Eleven of the male headed households were from the dominant clan or from the other significant clans in the village. All of the female headed households were either from the dominant clan or secondary clans (5) or their previous or deceased husband was from the

dominant clan (3). There were three male headed households where the clan linkage was through the wife. There were only 2 households, both in Karambo, where neither husband or wife were from either the dominant or secondary clans in the village. The clan relationships did not coincide clearly with wealth rank.

#### 4.1.2 Household members occupations

The pattern of occupations within the case study households shows the predominance of agriculture in rural livelihoods, but also shows the importance of non agricultural income as a factor in enhanced wealth and well-being. Higher wealth ranked households – particularly middle aged households, were characterised by a greater number and diversity of economic activities, involving linkages outside the village.

**Table 1 Occupations and income sources of case study households**

#### Muguli

Wealth rank 1		Wealth rank 2		Wealth rank 3 (& 4)	
Male headed	Female headed	Male headed	Female headed	Male headed	Female headed
M1 Crop sales; local and cross border trade in alcohol and cattle Remittances from daughter in UK		M2b Crop sales; cross-border trade to Rwanda (tobacco)	M2a Crop sales; traditional birth attendant and healer; bicycle hire.	M3 a Crop sales; agricultural wage labour on tea estate; sale of livestock - sheep and goats	M4 Crop sales; agricultural wage labour
				M3b Crop sales only	
				M3c Crop sales; agricultural labour; brick making	

#### Karambo

KR1 School teaching (Husband and wife); crop sales; brewing; trade; car hire; shop owner.		KR2b Crop sales, salary as a dry cleaner in Kabale	KR2a Crop sales	KR3b Crop sales	KR3a Crop sales; support from relatives and friends; bicycle repair in Rwanda market (son).
				KR3c Crop sales; wage labour.	

#### Habugarama

H1b Crop sales, poultry and livestock keeping.	H1a Tailoring; crop sales; remittance from family in Kampala; tree sales	H2b Crop sales, charcoal making, honey, livestock, trees.	H2a Crop sales; tree sales	H3b Sale of crops; goats; sale of trees; handicraft; remittances from sons (teacher, soldier); land rents	H3a Remittances from son (clergyman) crop sales.
--	--	---	----------------------------	---	--

#### Kagyera

K1 Crop sales; cross-border trade in livestock, sale of trees		K2 a Crop sales; construction worker in Kabale and Rwanda	K2b Crop sales; agricultural wage labour	K3a Crop sales; driver/mechanic	
				K3b Crop sales; agricultural wage labour, brewing beer.	

Only one household in the highest wealth category (H1b<sup>1</sup>) relied on agricultural income alone, but this was generated from specialisation in poultry production as well as extensive crop production. For female headed households, the pattern was similar, (M2a and H1a).

Kin relations were also an important means of accessing job opportunities outside the village (e.g. in Kabale or Kampala). Information on jobs was often identified through social networks. In contrast, one man had heard an advertisement broadcast on a neighbour's radio, for workers on tea estates

#### **4.1.3 Health**

Ill health was frequently mentioned as constituting a major source of vulnerability to households, in cases of chronic illness or disability or in case of acute illness. Most households use the Ryakarimira Health Centre at the nearest trading centre to the study villages or a health centre 5 km away in Rwanda. The main water source is from protected springs. The rate of HIV/AIDS infection in Kabale district is thought to be relatively low, but moderate to high in sub-counties along the border with Rwanda. No information on HIV/AIDS incidence was available for Rubaya subcounty and although health issues were discussed with households, no reference was made to this problem.

#### **4.1.4 Labour**

One of the significant changes in agriculture identified by the village communities was the general decline of forms of unremunerated labour in agriculture. In the past, *"If you had no piece of land to work on, you could ask someone to give you a piece of land to cultivate your own food. The land was given in return for a specific number of days labour on the owner's field. You could also exchange labour services for animals, acquiring a goat for a specified number of days..."*

Some of these arrangements still exist, particularly between women. Land can still be accessed in exchange for labour and labour can be exchanged for food, but people no longer work for animals. The majority now work for cash.

The combination of agriculture and enterprise followed by the better-off households involves the hire of labour. For example, in Maguli, M1 employs three labourers on a full time basis; one is in charge of the farm and the cattle, the second is in charge of goats and the third is in charge of house keeping. Casual labourers are hired from Rwanda during the high seasonal peaks of weeding and harvesting. Men were paid 1000= for the working period of morning to late afternoon while 500= was paid to a woman or young girls. This household prefers not to employ relatives as agricultural labourers as the kin relationship was thought to make control over workers and quality of work more difficult. Others employing casual labour did involve relatives and friends, but stressed the need to find hardworking people with ability. (M2b)

Poorer households do agricultural work using family labour or through exchange labour groups.

#### **4.1.5 Physical capital**

The physical aspects of case study households are good indicators of the economic condition of their occupants. House roofing materials were regarded as an important indicator in the wealth ranking exercises carried out in Kabale district. Wealthier households typically had brick houses with iron sheet roofing, cement floors, with several

---

<sup>1</sup> To protect confidentiality, households were coded by village (e.g. H = Habugarama, M= Muguli, K= Kagyera and KR=Karambo; wealth rank 1-4, and by a, b, or c where there was more than one case study household in the same village/wealth rank.



rooms, kitchen, latrine, and included separate structures for animals and storage. Middle ranking households were more likely to have semi permanent structures, iron sheet roofed, containing several rooms, but with thatched structures for the kitchen and for animals. The poorest families lived in grass-thatched houses with two rooms, which doubled as a store for crops or shelter for poultry.

Social relationships with family and kin are important for women and young people looking to construct or improve their housing. Men were considered social responsible for the provision of housing and on occasion provide labour to assist female relatives. One female headed household occupying a semi-permanent house had, by the end of the study, shifted to a new house in the same village which was built by her brother and son. A house for a young wealth ranked 3 household in Kagyera was constructed with assistance from the husband's father who bought doors for the house, gave him cows to marry and two plots of land.

All the case study families owned their house. Poorer families regarded house improvement as an important priority for investment.

Developing social contacts which reach beyond the immediate village is difficult when means of access and communication are limited. Only one household owned a car, although several had bicycles. People boarded "pickups" to travel between the village and Kabale town, at a cost of about 3000/- for the return journey. All wealth ranked one and two households owned a radio and two owned mobile telephones. Poorer households listened to neighbours radios.

#### **4.1.6 Financial capital**

Discussions on sources of finance and credit with the case study households indicated the vital role played by social capital in accessing financial capital, particularly for poorer households. The major source of loans for agricultural investment, for home improvement and for meeting the cost of medical bills was from village based savings groups. For membership of these groups, the conditions were the payment of a membership fee; to be able to afford the monthly contribution and to be of a trustworthy character. The majority of the poor to middle ranking households had membership in at least one savings group, and in some cases were members of several. In contrast, membership of village savings groups was *not* characteristic of the richer households, some of whom had bank accounts and secured larger loans directly from commercial banks, at what they maintained were lower rates of interest than the 10% per month charged by village credit groups.

There were differences in the levels of regular financial contributions to savings groups. For example, Muguli Tweterane – "Muguli let us unite", founded in 1992 requires a contribution of 20,000/- per month. There are 11 members, 2 of whom are women. It provides loans at 20% interest over 6 months. Two of the wealthier case study households in Muguli were members, one of whom received a loan of 150,000 which she successfully repaid in 6 months.

Other groups have more modest entrance requirements. They require contributions of between 1000/- and 2000/- per month and provide loans to members. Interest is 10% per month. Joining fees of these groups vary between 5,000-10,000/-. Some are women only groups, others are mixed.

Some groups have exclusive non-financial criteria for membership - some are clan based, some church based (e.g. the Mothers' union). Interest rates on loans to members of these groups is around 5% per month and joining fees are slightly lower at 1000-3000/-.

Other types of savings group are more geared toward food security. Contributions are in kind after the harvest season, which are later given out to members who need seed at planting time, to be returned with a profit e.g. if one took 5 kgs of seed, she should return 6 kgs i.e. 1 kg for every 5 kgs. Loans are also given, and the profits used to buy more produce during the harvest period, which is later shared among members in time of scarcity or for planting.

The most common uses for loans are for agricultural production, including seed purchase, or for use in family crises, such as illness. Agricultural groups in particular, provided loans used for land purchase, livestock purchase and construction of animal housing.

There were several examples where individuals reported being a former member of a savings group which had collapsed due to default on payment, financial mismanagement or corruption.

In spite of the prevalence of savings groups, nevertheless, there is also a strong reliance on social networks of relatives and friends to provide small amounts of loans and financial support (for example, a loan from in-laws of 10,000/- to pay graduated tax) . Nearly all adult members of the case study households reported giving small amounts of financial assistance to their relatives, friends and neighbours. People resort to taking interest bearing loans when their financial requirements are higher than can be informally supported.

#### *Income levels*

Estimates of aggregate household incomes from arising from the diverse activities characteristic of households in the four villages are very difficult. The case studies provided insights into level of income derived from sales of agricultural produce although they were less accurate in estimating income from business sources.

Other studies (see annex B) have estimated the mean seasonal income at 122,350 Ugandan Shillings for female farmers and 177,631 for male farmers. Over 50% of female farmers were in the lower income categories, i.e. less than 25% of the mean income. The figures from the present case studies show similar results for women farmers in the lower wealth ranks. There are strikingly large differences in income between the richer and poorer households, reflecting their different assets and occupational involvements.

**Table 2 Estimated income from agriculture (crops, livestock and trees) for the season, by household wealth rank and gender. (Ugandan shillings)**

Wealth rank	Maguli		Karambo		Habugarama		Kagyera	
	M	F	M	F	M	F	M	F
1	583,500		N/A		N/A	135,000	440,000	
2	346,000	240,000	N/A	N/A	985,000	N/A	509,000	200,000
3/4	17,000 80,000 69,000	65,000	30,000 N/A	20,000	N/A	N/A	N/A 101,000	

Sorghum sales accounted for the largest proportion of agricultural income for wealth rank three households, followed by beans and woodlots. For wealth rank 2, potatoes were more important and for wealth rank 1, woodlots and livestock were included. Other crops sold included cabbages and wheat.

When off-farm income is included, income estimates for the richest households reach in excess of 500,000/- for the same period (two households over 1,000,000/-) and for middle ranking households between 240,000 and 900,000/-. The poorest households depend on agricultural or other casual labour and assistance from relatives for additional income. With daily agricultural wage rates between 500-1000/- , it is unlikely that poor women could generate more than 50,000/-, from this source.

#### 4.1.7 Natural capital

##### *Access to land*

Estimating access to land in terms of area is challenging in a rural environment where production takes place on numerous small and widely dispersed plots. Nevertheless, the combination of number of plots and an estimate of area is indicative of the overall level of land resources to which households have access.

The case studies showed marked differences in land access between the case study households and according to gender. Estimated average land holdings for female-headed case study households were 2.5 acres, while for male-headed households it was 4.3 acres. The distribution of ownership suggests that the second wealth rank category has the highest average land ownership (5.22 acres) compared with wealth rank 1 (3.35 acres) and wealth rank 3 (2.64 acres). In the light of the pattern of occupations given in table 1 above, it seems likely that wealth rank 1 households do not maximise their land holding, given their focus on non farm occupations, but rather specialise in particular enterprises, e.g. potato production, timber. The relatively low land ownership of wealth rank 3 households is an indication of the pressure on land that many attribute as the underlying cause of soil degradation.

Wealth ranks 1 and 2 had between 5 and 30 plots, with two households having consolidated their plots into a single area. Wealth rank 2 were more likely to hire land in. Wealth rank 3 and 4 households had between 1 and 8 plots and some were also renting land out, reflecting the older dependant age groups in this category.

Social capital, particularly bonding social capital in the form of clan or kinship relations influences access to land. In addition to patrilineal inheritance, land was acquired through rent and purchase. These purchasing and renting arrangements were often based on kinship and village neighbourhood linkages.

**Table 3 Access to land by gender of head of household (number of plots)**

	Inherited	Purchase from clans man	Purchase from in law	Given by Husband's relatives	Purchase from other	Rented	Total
Male headed	27	13	5		17	8	70
Female headed	9	5		6	7	1	28
	36	18	5	6	24	9	98
	36.7%	18.4%	5.1%	6.1%	24.5%	9.2%	100%

The main channel of access to land was through purchase, (48% of plots were said to have been purchased) followed by inheritance. The main gender differences were the acquisition of plots from husband's clan or relatives by women, and purchase from in-laws by men. Women headed households had a lower % of rented plots. Social relationships are clearly important to land access, with inheritance, purchase from

clansmen and in-laws and access through husbands relatives accounting for two thirds of plot acquisitions.

*Soil fertility, soil erosion and soil conservation*

The case study discussions focused on the perceived quality of the land, the decisions made on land management and the reasons for these. Soil types and condition were described by farmers for each of their plots (see appendix 5). For example, of the thirty plots described in Muguli, nine had problems with both soil erosion and low fertility, six were described as having erosion problems and six were said to be of poor soil fertility. No fertility or erosion problems were reported on the other nine plots. The main reason given for loss of soil fertility was overcropping. In cases of serious fertility and erosion problems some owners had abandoned plots or were fallowing the land. Other strategies were to plant agro forestry species (*Calliandra*), use manure or kitchen waste and to dig trenches.

Generally plot owners did not collaborate with owners of neighbouring plots to dig trenches or to carry out other soil conservation works. However, the ability to influence the activities of those on surrounding plots – particularly those with plots higher up the slope, was recognised as important. This was facilitated if the surrounding owners were relatives or from the same village. One case was reported where all owners with plots on a particular hill had dug trenches. There were several plots where owners of neighbouring plots had refused to dig trenches. One elderly woman, head of a wealth ranked 4 household, said that she had been told to put trenches on one of her plots which she admitted was susceptible to soil erosion, but that “she did not have the power”. This scenario has important implications for the enforcement of byelaws on soil conservation, since the capacity of the elderly and poorer household to comply with the requirements is very limited.

*Land use*

Fallow plots among the case study households were 9% of the total number of plots and were estimated at 6% of the area. Six of the nine fallowed plots were owned by households in wealth ranks 1 and 2.

**Table 4 Land use among case study households (number of plots)**

	<b>Cropped</b>	<b>Trees</b>	<b>fallow</b>	<b>abandoned</b>	<b>Total</b>
Muguli	22	2	3	3	30
Karambo	15	2	2	0	19
Habugarama	16	3	3	0	22
Kagyera	26	3	1	0	30
	<b>79</b>	<b>10</b>	<b>9</b>	<b>3</b>	<b>101</b>
	79%	10%	9%	3%	

The case studies constitute too small a group to generalise about the relationship between size of land ownership and fallow. Olsen (1996) found a clear relationship between fallowing and farm size in Kabale district. In her transect of 263 plots, the % area of fallow and the duration of fallow was higher for larger farmers (59% of land fallow of which 20% was for 2-3 years) compared with small and medium (33% fallow of which 23% was for less than one year). Fallowing also increased with distance from the homestead. Fallowing was also more likely where farmers perceived there to be quite serious erosion compared with plots where there was none.

### *Crops grown*

The most frequent crops grown by case study households over all villages were beans (36 plots) and sorghum (34 plots) followed by sweet potatoes, Irish potatoes, wheat and peas.

**Table 5 Crops grown by case study households (2002) (numbers of plots/subplots)**

	<b>Muguli</b>	<b>Kagyera</b>	<b>Habugarama</b>	<b>Karambo</b>	<b>Total</b>
Beans	9	11	7	9	36
Sorghum	9	7	8	7	31
Sweet potatoes	8	3	2	3	16
Irish potatoes	2	2	2	0	6
Wheat	3	2	0	0	5
Peas	0	1	3	0	4
Banana	3	0	0	1	4
Millet	0	2	0	0	2
Sugar cane	0	0	2	0	2
Trees	2	3	3	4	12

### *Ownership of livestock*

Eighteen of the 24 households had some livestock; 11 had sheep and/or goats, 6 had cow and sheep/goats and 1 had poultry only. Animals were kept in small numbers – from 1-3 cows and 3-4 sheep or goats. Those from Muguli had more cows than the other villages. One wealthier household in Habugarama was specialising in goats and poultry and kept larger numbers.

### **4.1.8 Social Capital**

To explore the existing patterns of social capital, the discussions with members of case study households covered their membership in local associations and networks, the criteria for membership and the activities and benefits received. They also explored informal relationships and the values associated with these, including the extent to which people expressed trust in their neighbours and community leaders.

### *Membership in local associations and networks*

The number of groups existing and operating at village level is indicative of the strength of associational life, and hence of social capital. They varied from formal registered groups with linkages beyond the village, to informal neighbourhood cooperation. A consistent typology of groups and associations is difficult to formulate, however, a distinction can be made between groups open to anyone with an interest in the activities able to meet the membership contribution and those targeted to specific categories of people with more exclusive criteria. The former are more closely associated with the notion of bridging and linking social capital, while the latter are more founded on bonding social capital. Examples of the first type are:

- Agricultural groups, initiated by NGOs operating in the subcounty, (including AHI and AFRICARE) and mainly for introduction of improved seeds, cropping practices and soil conservation. Some groups provided loans for accessing agricultural inputs
- Specialised agricultural groups such as fish farming and pyrethrum linked with the National Agricultural Advisory Service.
- Ruhu Rweitaka – village based groups which provide assistance and community support at funerals. Members are from the whole community. Often associated with these are the 'Engozi' or stretcher groups for carrying the sick.

Also associated with bridging social capital, there is a range of elected political and representational roles for managing village affairs. These also link to structures at sub-county level.

- Committee positions on local councils (LC1)
- Wetland management groups which control the allocation of land in the valley bottoms. These cross cut villages.
- Village policy task force committees – facilitated by the project with members chosen in an open community meeting.

Groups of the second type, founded on bonding social capital and operating internally within the villages included;

- Savings groups
- Labour groups for agricultural production and profit share
- Food security/food storage groups in which members contribute quantities of crops for storage for later sale at higher prices or to be made available in times of shortage, or for seed.

Membership of these groups was often made specific to certain categories of people on the basis of common interest and capability, for example for youth, for women, or for widows. Finally, there were some specialist groups subject to more specific criteria ;

- the Mothers' Union and Fathers' Union, for which church membership was required. These had social and moral aims as well as practical support for members.
- Clan based groups for social development and for savings.
- Cultural groups.

In all villages, community work is required from time to time from households (usually adult men) for clearing roads and cleaning water sources.

**Table 6 Group memberships by village and case study household.**

**Habugarama**

Wealth rank	Gender of hhld head	Group membership
H1a	F	<ul style="list-style-type: none"> <li>• Habugarama <i>Bakyara Kweterana</i> women's group</li> <li>• <i>Bhara babarihira</i> – clan based savings group.</li> </ul>
H1b	M	<ul style="list-style-type: none"> <li>• Member of the village policy task force committee.</li> <li>• <i>Engozi</i> group</li> <li>• <i>Kamwe Kamwe</i> savings group</li> <li>• Chairman and member of clan group for <i>Omuyundo</i> which stores food and seeds.</li> </ul>
H2a	F	<ul style="list-style-type: none"> <li>• Daughter is secretary for youth at church</li> <li>• Participates in community work</li> </ul>
H2b	M	<ul style="list-style-type: none"> <li>• AHI agricultural group (W)</li> <li>• <i>Kitooma Kweterana</i> savings group (H)</li> </ul>
H3a	F	<ul style="list-style-type: none"> <li>• <i>Engozi</i> group.</li> <li>• Participates in communal work but excused when too weak.</li> </ul>
H3b	M	<ul style="list-style-type: none"> <li>• <i>Ruhu Rweitaka</i> association (lends money and contributes food.</li> <li>• Mothers and fathers union members in church.</li> <li>• Church leadership roles.</li> </ul>

## Muguli

Wealth rank	Gender	Groups
M1	M	<ul style="list-style-type: none"> <li>• Chair LC1.</li> <li>• Adviser/chair of agricultural group- <i>Muguri Turwanise Obworo</i> working with AFRICARE</li> <li>• Wetland management group</li> <li>• 'Engozi' group - Funeral group - <i>Ruhu Rweitaka</i></li> <li>• Mothers' Union (W)</li> </ul>
M2A	F	<ul style="list-style-type: none"> <li>• Savings group - <i>Muguri Tweterane</i></li> <li>• Funeral group - <i>Ruhu Rweitaka</i></li> <li>• Mother's union</li> </ul>
M2 B	M	<ul style="list-style-type: none"> <li>• Vice chair LC1 &amp; wife is on disciplinary committee.</li> <li>• Pyrethrum group</li> <li>• Soil conservation group</li> <li>• Stretcher group (<i>Engozi</i>). H responsible for security</li> <li>• Savings group - <i>Bujara Kweterana</i></li> <li>• Muguri youth association – agricultural production and profit share – secretary for labour</li> <li>• General secretary of clan group for self development - <i>Bungura Kweterana</i> (H)</li> <li>• Clan based savings group for <i>Basigi</i> (W)</li> <li>• Participates in community work.</li> </ul>
M3 A	M	<ul style="list-style-type: none"> <li>• Savings group - <i>Bayore Bakyara Kweterana</i>; (W)</li> <li>• Funeral group - <i>Ruhu Rweitaka</i> (W)</li> <li>• Savings group - <i>Bujara Kweterana</i> (H)</li> <li>• Youth Group (H is secretary)</li> <li>• Community work in maintaining feeder roads.</li> </ul>
M3B	M	<ul style="list-style-type: none"> <li>• <i>Muguri Shukasika</i> Savings group (W)</li> <li>• Ngozi group <i>Bayole Kweterana</i>.</li> <li>• Savings group - <i>Banyore</i></li> </ul>
M3 C	M	<ul style="list-style-type: none"> <li>• CIAT agricultural group.</li> <li>• Bayole timber group store (<i>Ngozi</i> group linked with <i>Ruhu Rweitaka</i>) Savings group.</li> <li>• Muhenvu women's group (W)</li> </ul>
M4	F	<ul style="list-style-type: none"> <li>• Savings group - <i>Banyore Kweterana</i></li> <li>• Agricultural groups CIAT and AFRICARE</li> <li>• Byore Bakazi women's savings group (under Ngozi group)</li> <li>• Community work on roads and wells</li> </ul>

## Kagyera

Wealth rank	Gender of household head	Group membership
K1	M	<ul style="list-style-type: none"> <li>Vice chairman village policy task force committee (H)</li> </ul>
K2a	M	<ul style="list-style-type: none"> <li>Agricultural group (AHI)</li> <li><i>Ruhurweitaka</i> (Engozi group)</li> <li><i>Kagyera Bataka Kweterana</i>, a welfare group which also gives loans (H)</li> <li>Savings group - <i>Kagyera Bakyara Kweterana</i> (W)</li> <li>Savings group - <i>Biika oguze</i></li> <li>Church savings group (W)</li> <li>Clan group.</li> <li>Participation in community work</li> </ul>
K2b	F	<ul style="list-style-type: none"> <li>Son is LC1 secretary for youth</li> <li>Agricultural labour and savings group <i>Kagyera Bakyara Tuyambane</i> (Kagyera women help one another)</li> <li>Savings group - <i>Kagyera Tugyende Omumeisho</i></li> <li><i>Kagyera Bahingi Kweterana</i> (son)</li> <li>Agricultural production group.</li> </ul>
K3a	M	<ul style="list-style-type: none"> <li>Member of the youth committee of Kagyera (W)</li> <li><i>Engozi</i> group.</li> <li><i>Bakyara Kweterana</i> savings group (W) member and secretary</li> <li>Crop purchase and storage group</li> <li>Labour group</li> </ul>
K3b	M	<ul style="list-style-type: none"> <li>Fish farming group (NAADS linked) Defence secretary</li> <li><i>Ruhu Rweitaka</i> (<i>Engozi</i> group) and food storage group</li> <li>Women's group "MOVE" (W)</li> </ul>

## Karambo

Wealth rank	Gender of household head	Group membership
KR1	M	<ul style="list-style-type: none"> <li>Local council chairman of Karambo</li> <li><i>Ruhurweitaka</i> member (Group cultivation of potatoes).</li> <li>Karambo women's association (W)</li> </ul>
KR2a	F	<ul style="list-style-type: none"> <li>Karambo village <i>Kwebeisaho</i> savings group (agricultural labour and loans). She is treasurer.</li> <li>Member of <i>Engozi</i> group</li> <li>Labour group (storage and loans)</li> <li>Church widows group</li> </ul>
KR2b	M	<ul style="list-style-type: none"> <li><i>Ruhurweitaka</i> member</li> <li><i>Bakyara Kweterana</i> (W) Agricultural production group.</li> </ul>
KR3a	F	<ul style="list-style-type: none"> <li><i>Ruhurweitaka</i> member</li> </ul>
KR3b	M	<ul style="list-style-type: none"> <li>Savings group- <i>Mbaho Ruhurweitaka</i> (Pools money to make coffins)</li> </ul>
KR3c	M	<ul style="list-style-type: none"> <li>Itaagi Ryabaana - parents savings group on behalf of children.</li> <li>Secretary of a savings group in Masaka</li> <li>Participate in community work.</li> </ul>



Participation in groups by case study households appears higher in Muguli and Kagyera compared with Habugarama and Karambo. There were high levels of membership in community based groups by both men and women across different wealth categories. Male headed, wealth ranked 1 households did not participate in local savings groups, although they were clearly called upon to perform leadership roles. Three heads of poorer households (two women and one man) said they found it hard to be in a savings group, because of the need to find money for membership and the regular subscriptions.

Membership of the Ruhurweitaka funeral group cuts across gender and status. Its main role is to provide social welfare support in time of bereavement, but it also engages in a range of other activities. In Kagyera village it was also involved in crop and livestock production, seed saving and labour exchange. *'It has brought unity among the community members because they normally make parties, buy meat and beer and drink at the end of every year'*. However, not all households are involved in the associated savings activities.

The nature of the benefits received from group membership is very variable. Some of the groups functioned more as support systems for times of crisis rather than mechanisms for accumulating profit and making investments. The agricultural groups were valued as means of accessing training and inputs around specific areas of interest such as poultry, potatoes, pyrethrum and soil conservation. They are particularly useful for building women's social capital as they extend their affiliations and access to knowledge and resources beyond the immediate household, kin and neighbours.

Savings groups are vulnerable to collapse if there is non payment. Some have stopped giving loans because of this. However, some indications of fragility of social capital – particularly the suspicion that group leaders take more than their share.

#### *Clan membership*

Clan identity is an important aspect of bonding social capital. Clan identity is transmitted through the father to sons and daughters. The clan is an exogamous patrilocal unit; neither sons nor daughters can marry from their own clan, but while a son can marry a girl from his mother's clan, a daughter cannot marry a man from her mother's clan. The strength of clan relationships varies across the different villages, but it was generally recognised that clan members should help each other in emergencies and in times of sickness.

There are several clans in each village, although two or three may be dominant. Clan membership can facilitate labour exchange on crops provide seeds for planting and access to small loans and food sharing. Clansmen can also help in cases of theft and insecurity. Cattle were stolen from a household in Muguli, and clansmen responded to the alarm and the animals were rescued. Clan groups also reinforce social ties through parties and celebrations.

*A household in Kagyera said they had benefited from the wife's clan membership through getting assistance from clansmen in case of a problem. They care for each other in case need arises. The household has also benefited from the husband's clan who are many in Kagyera and are cooperative. They help the household in case of a problem or need for money and clansmen are contacted first before rushing for a loan in savings groups. They meet together at Christmas and for other celebrations.*

#### *Trust and cooperation*

Generally people felt that there were good levels of trust and cooperation within their villages, particularly among neighbours and kin. This view was stronger amongst older

people in regard to their relationships with each other, rather than in their relationships with the younger generation. *“They are too ambitious and they have developed the tendency of being cheats”.*

A number of people mentioned the disruptive social impacts of the civil war in Rwanda which affected many families with relatives on both sides and fostered a “get rich quick” mentality as a consequence of the looting.

However, tensions exist. There were indications that economic success can bring perceptions that clansmen and neighbours are resentful or jealous, in one case expressed in allegations of witchcraft. Other tensions arose where widows or wives had a poor relationship with their in-laws, often because they are using land resources accessed through their husband’s family. This situation can be difficult if the women do not have their own relatives or clansfolk present in the village.

As noted above in the discussion of soil conservation activities, it was rare for there to be active cooperation in construction of soil conservation structures on fields. However, in all four villages people participated in community work together.

#### *Gender roles.*

Households varied in patterns of responsibilities and decision making. In some, the husband was the main decision maker on all aspects of household planning – crops, livestock, crop sales, food security and children’s education, although their wives made day to day decisions on consumption and activities. In others, the husband /wife relationship was more consultative and major financial decisions were made jointly. Some women heads of households said they would consult their late husband’s relatives on actions relating to disposal of land and livestock (where these were inherited rather than bought with her own money).

For many households, including the more wealthy, women are the main day to day managers and decision makers concerning cropping activities. But a distinction was drawn between ‘family’ crops which women have management control and those financed by men with hired labour to generate starting capital for a business. Income from women’s activities, such as providing labour on other people’s farms, is hers to spend. Most women said they were free to join any village group.

On land ownership, men expressed the view very strongly that while women have rights of access to land, they do not have full ownership or the right to sell. However, others said that although men have the right to sell land, the wife has to sign her agreement before the transfer can be complete. Men also viewed trees as their property. Women have access to trees for firewood, but cannot sell them. This view may explain why a widow was having problems with the clansmen of her late husband who were attempting to steal trees from her woodlot. However, women express their relationship with the land in rather different terms, referring to their individual decisions in acquisition and management of land. The actuality is more a matter of complex negotiation;

*“...Agricultural land belongs to the man and the woman only has access, but these days they claim land is theirs also. Trees also belong to the man, but the wife can have access, but not to cut or to sell. If she does you quarrel. As far as livestock are concerned, both the man and woman agree. For example, the husband takes to the market, gets the money and the wife keeps the money. However the husband has to get some share for drinking like 1000/= to sit with other men in the bar. But this depends on whether that man works at home and helps the wife.....”*

*Social networks.*

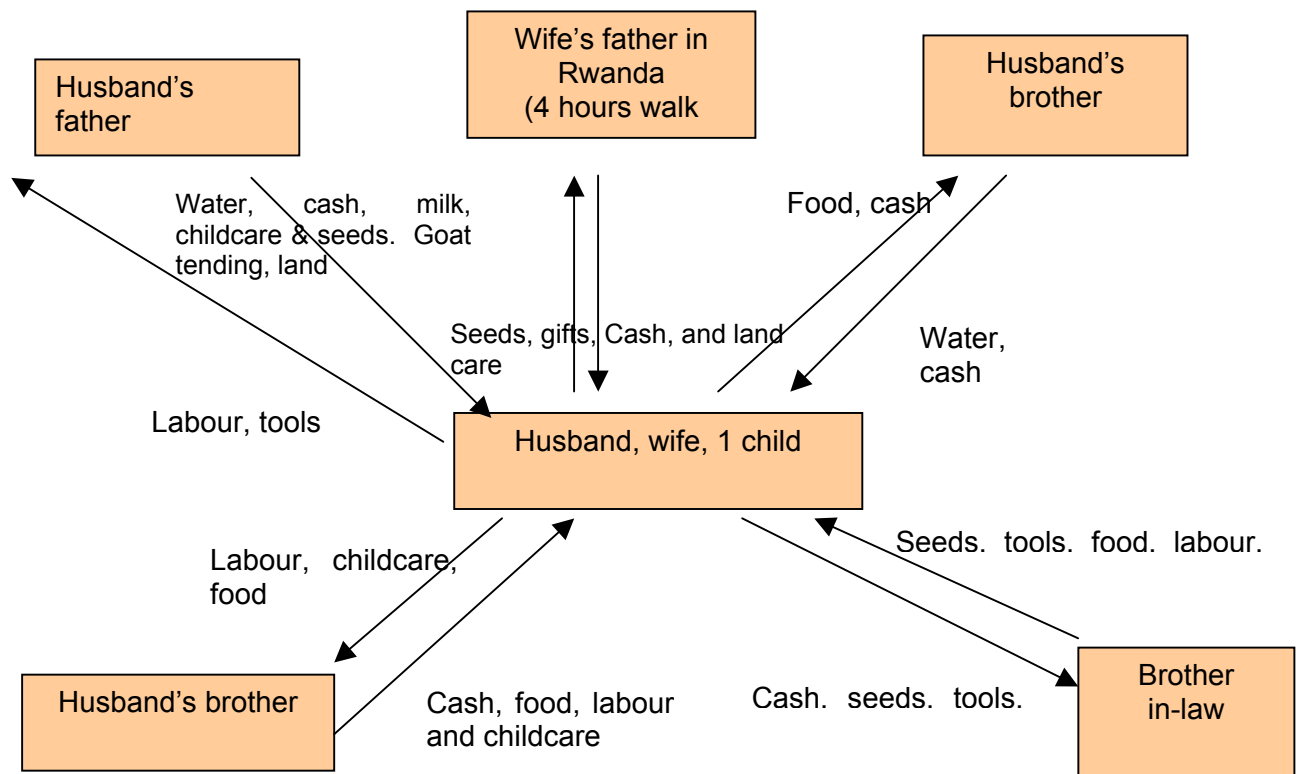
In addition to membership of village groups, the discussions focused on informal social networks and how they provided support for livelihoods. These informal networks, or bonding social capital were very significant for day to day management of household food and cash needs as well as coping with problems.

Networks of households where both husband and wife had clans people and close kin in the village reflected this, while those who had come more recently to the village networked more through friendship and relationship with neighbours.

The most frequent exchanges were of labour, cash, food, seeds and tools. In addition, land for cropping, grazing land and livestock herding services were secured through relationships with kinsfolk.

Households with members working outside received remittances of cash, often reciprocated with gifts of food. Children in two of the poorer case study households were supported by payment of school fees from relatives.

**Figure 2 Social network diagram, showing ties with immediate kin. (Household wealth rank 2, Kagyera village.**



Another household, female headed, in Kagyera shows a further extension of this pattern. The household head lives in the village of her birth and is surrounded by relatives. She receives significant help from her married children living outside the village.

**Figure 3 Social network diagram, showing ties with kin inside and outside the village.** (Household wealth rank 2, Kagyera village.

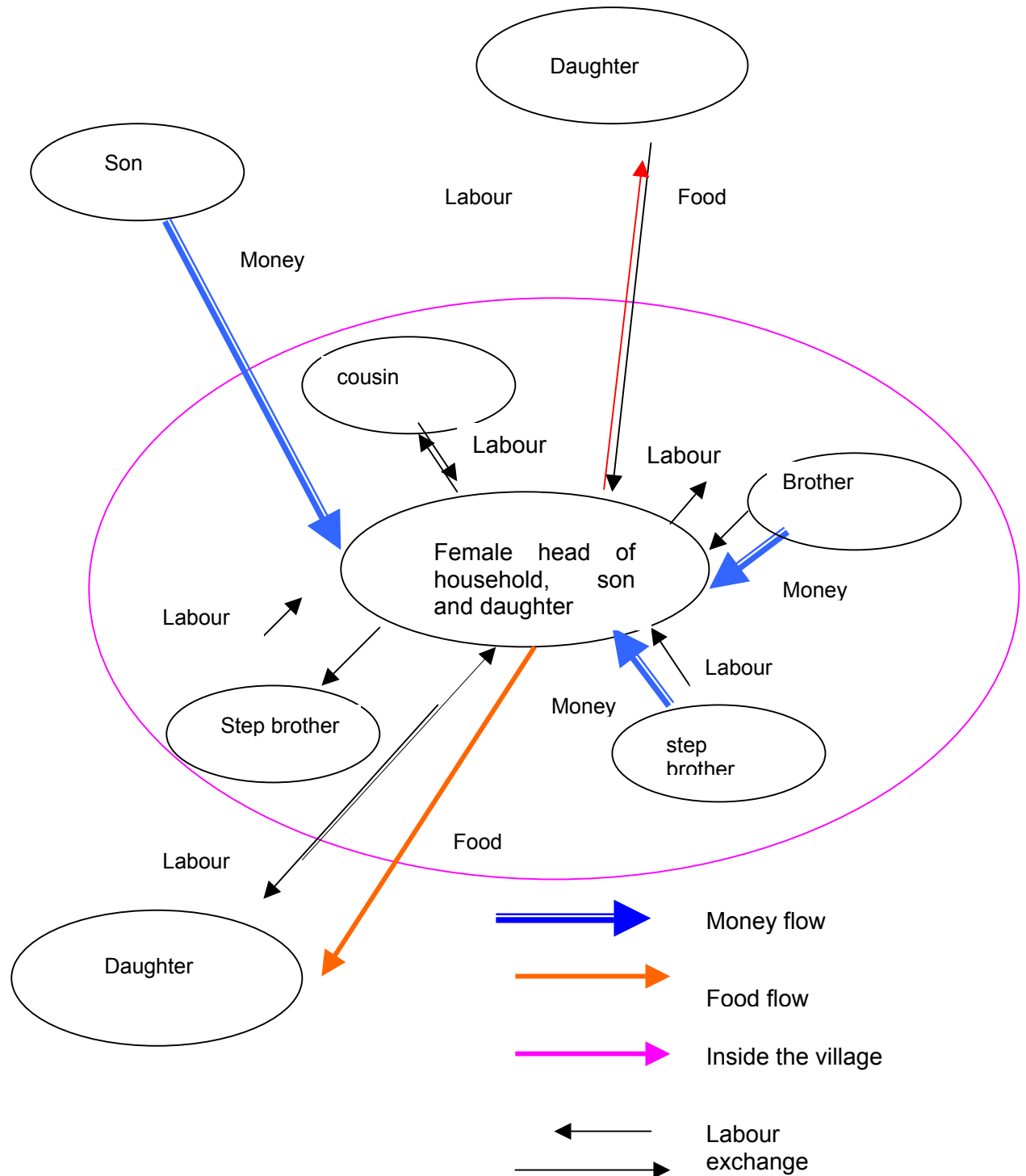
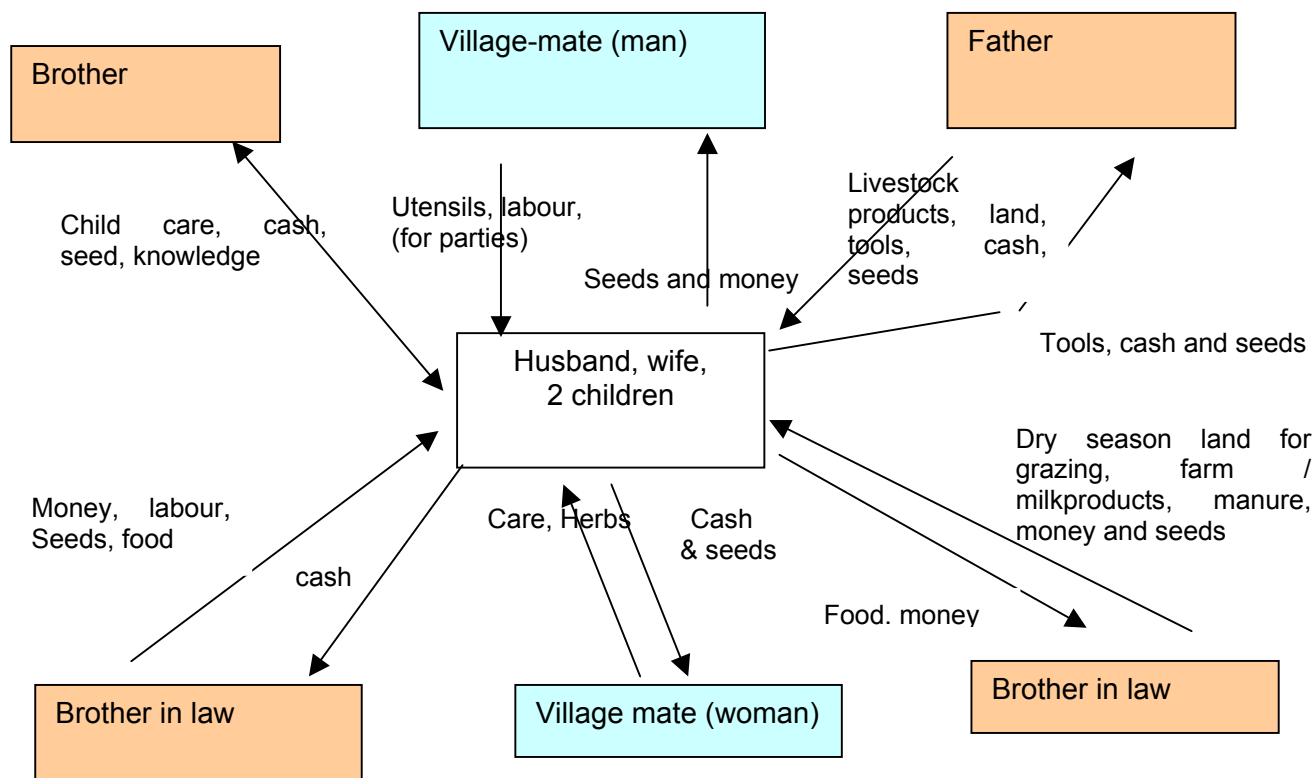


Figure 4 shows the pattern of a household with additional linkages with non kin.

**Figure 4 Social network diagram, showing ties with relatives and non relatives inside the village. (Wealth rank 2 – Muguli village)**



### 5.1 Vulnerability and strategies

Discussions on this topic was intended to explore the main causes of vulnerability as perceived by the different households, the strategies which they were following to hope to overcome them and their aspirations for the future. While there were some common themes across households of different wealth status, particularly with regard to problems of agricultural productivity, there were some important contrasts in strategies and aspirations. The examples below are illustrative of these.

#### Wealth rank 1

Muguli (M1) - This household, male headed, which derives its main income from both agriculture and business, felt that vulnerability was created by ;

- Exhausted soils which result in low yields, which lead to food shortages.
- Shortage of cash during harvest season when produce prices are very low.
- Cattle theft from Rwanda, especially when meat prices in Rwanda are very high.
- The after effects of the war in Rwanda which spilled over to their area – rehabilitation has not been an easy task.
- Cross- border trade has not been lucrative since its liberalization.
- Decrease in incomes due to the ever falling produce prices.

His strategy was to seek loans to start new business and then invest income from trade and loans in buying land. His aspiration is for his children to move from agriculture to salary earning through education.

Kagyera (K1) - The main sources of income for this household (also male headed) were crop sales and livestock trade. His focus was on vulnerability of agricultural production and ways to overcome this.

- Poverty in the area is caused by poor crop varieties and seeds which the communities plant like local Irish potatoes, tomatoes, beans, tobacco and cabbages which have low productivity and don't fetch high prices.
- Heavy rains, which destroy the planted crops, also encourage poverty among the local community
- Lack of money to buy pesticides.
- Lack of jobs and income generation is also another cause of poverty in addition to lack of markets for poor crops cultivated.

His suggested strategies were:

- To plant improved varieties, apply pesticides and use fertilizers and compost manures to increase the production.
- Look for NGOs to assist in looking for markets for our products, because the local markets are cheap.
- Borrow money from saving groups to begin livestock business
- Look for NGOs which can lend people money at low interest rates to begin business
- Join seminars/ workshops that sensitise people how to improve agriculture and how to develop business skills.

His aspirations were to have more livestock (20 cows and 10 goats), more plot (25 plots), invest in permanent housing and send his children to university.

Another wealth ranked 1 household, in Karambo village, had similar aspirations to the above – to have a permanent house in Kabale to do business, to keep zero grazing exotic cattle, to acquire more land, to go for further education and to buy a new car.

#### *Wealth rank 2*

Kagyera (K2a) This household depended on agriculture and the construction work of the household head. Vulnerability was explained in the following terms;

- The decline in crop harvests creates vulnerability for the household. When the harvest is low, almost all is kept for home consumption in order to avoid food insecurity and this means scarcity of money.

The family's priorities are to improve their agricultural production (beans, Irish potatoes and sorghum) to access improved seeds. *"socially, when you (have) food, you don't experience any problems in the community, and ...when you have a quality harvest, one is assured of a market which increases the flow of money in the household"*.

Their aspirations were to have a better house and kitchen and better seating in the house; more land sufficient for them and their children in future; to have more livestock and some cows for milk; to buy better clothes for household members; and to have food security throughout the year

Kagyera (K2b) This is a female headed household which derives most of its income from agricultural production. She considered that vulnerability was created by the following factors;

- Specialisation in agriculture
- Destruction of crops by weather i.e. both rains and drought
- Pests which destroy crops
- Lack of markets for agricultural produce
- Lack of loan schemes (*entandikwa*) from the government which would help to start self-help projects.

Her strategy is to go to credit groups for loans. She has tried grow a variety of crops so that if one does not do well, the other can compensate. She is looking to improve agricultural production by accessing improved seeds, agricultural inputs and markets with better prices. Her aspirations for the future are for her son to become a progressive businessman dealing with crops.

### *Wealth rank 3*

Muguli (M3a). The main sources of income of this household are agriculture and agricultural wage labour. Vulnerability was defined as follows;

- Food insecurity arising from land shortage due to the population pressure on land. Land fragmentation has accelerated food insecurity in the village
- Vagaries of weather including floods, hailstorm, heavy rainfall and prolonged drought
- Low agricultural yields contributed to cash shortage, there is no surplus for sale hence no cash realised in the household.
- Health problems have also contributed to shortage of cash in the household. The fact that most of the household members are sick, labour for production is very low.
- Lack of resources such as land and domestic animals has also limited cash flow in the household.

Their strategy is to invest in sheep and goat rearing; to plant fertility improving species; to use agricultural knowledge and skills to increase output and yields (beans, potatoes and sorghum) and to produce higher quality products. Their aspirations are to have enough food and a surplus for sale; to educate their sons and daughters, to buy more land and build a permanent house; to have more livestock and pay the bride wealth.

Kagyera (K3b) This household depends on crop sales, agricultural wage labour and beer brewing. Comments on vulnerability were;

- Crops are not productive because the soils are exhausted, and this, together with pests and diseases produces little to sell, leading to low incomes.
- Illness forces sale of crops at low prices, which encourages poverty.
- Shortage of land because of the increasing population - in one plot you can put in three different crops which all have to compete for nutrients, hence loss of fertility.

His strategy in case of urgent need is to go to a savings group, his father in law, father and neighbours for assistance, but paying back is a problem. He has become poorer and has sold every thing to pay medical expenses for his wife. He is planning to migrate. He used to have at least 80,000/= in his pocket every two months, but now he doesn't have even 50/=. He says "*Even if I work very hard, I will never get out of poverty*".

He intends to look for work as an agricultural labourer in Masaka; join savings groups and borrow money to begin a business - but still the interest and what to mortgage becomes a problem; increase agricultural production of beans and sorghum through hiring land; and experiment with new crops like pyrethrum.

His future aspirations are to build an iron-roofed house; have livestock (3 goats, cows and hens); have more land, pay bridewealth for his wife; see his children in school; and to stop drinking. *"I drink because of poverty. If I had some money I would do business."*

## **5.2 Social capital and NRM byelaws**

Detailed discussions with the case study households indicated a widespread awareness of changes in quality of their natural resources particularly over the last 10 years. Most frequently mentioned factors were the decrease in soil fertility, reduction in yields, drought, over cultivation and erosion. Several families mentioned a 30% reduction in yields over the last decade.

*"There is a shortage of land – there are too many people and land is exhausted. Our soils are taken by water when it rains heavily and we don't rest the land to gain fertility."* (farmer in Muguli).

### *Role of local leaders*

There were different perceptions of the role of local leaders, both clan leaders and local council members in NRM. Clan organisation and influence was reported as strong in some villages while in others such as Habugarama, people perceived that their influence was receding and the local councils were more important. In Muguli, one man reported that in the past, clan leaders were very influential on NRM, but that now it is mainly the responsibility of the owner of the resource. Clan elders also looked after special trees belonging to the ancestors. The role of clan leaders in demarcating land boundaries and in matters of inheritance was recognised, but there was no wider consensus on their role in NR management. It was also stated that in cases of someone encroaching on a neighbour's land, clan leaders are the ones who are called in to determine where the boundaries are.

LCs were said to implement government policies on access and NRM and local byelaws in addition to sensitisation about the set bye-laws. They were regarded as the community's main source of information concerning agriculture and natural resource management. They motivate people to implement soil conservation measures and look after water sources. They ensure that people do not quarrel over land. LCs give out information concerning community issues and local political issues with the help of both parish and sub-county chiefs.

### *Byelaws*

The majority of men and women in the case study households had detailed knowledge of past and present byelaws on burning, tree cutting, making terraces and the more recent discussions on controlling grazing on agricultural land, planting agroforestry species and grasses, and management of woodlots and swampland. The extent to which the more recent recommendations were being implemented varied between households and there were similarly different views on enforcement.

Most people felt there were benefits from the implementation of byelaws to stop soil erosion. Benefits identified included a reduction in some forms of soil erosion and flooding; reduced problems of crop damage by livestock and tree planting by community members has reduced theft of trees.



Some saw the need for more sensitisation for the community and more commitment to supervision and enforcement on the part of the local councils. "Local leaders should themselves set an example by abiding by the rules, especially on grazing on others land". *"Sensitisation should be in the hands of institutions like the Church since people still have faith in the church, unlike LCs who are corrupt"*.

Others emphasised that it was important for people who go for training to pass on the knowledge to others.

The need for participation in byelaw formulation was also mentioned. Rather than just instructions to follow rules there is a need for developing awareness of benefits of NR conservation; *"people just call us and tell us what to do – not to graze, not burn, to have a granary etc. but don't allow us to contribute to the byelaws (Muguli)*.

The constraints to adoption/compliance with byelaws were explored with different households. Poorer households with limited land, emphasised the constraints to accepting the rules. *"People do have not enough land and they cannot accept the lack of a place to cultivate and they end up destroying bunds and spilling agricultural activities into the swamps/wet land (Muguli)*. Also people see swampland as being very fertile compared to elevated and exhausted ground.

In contrast, richer and more powerful members of the community may take the view that the land is theirs; having bought it, they will use it the way they wish.

With respect to grazing – *"not all people have enough land and if you say 'graze on your own land' this will stop those who want to buy sheep or goats; people who may have no money to buy land – this encourages poverty"* (Kagyera).

Construction of terraces was also viewed as problematic by some ; *'because of lack of land, people don't want terraces; people end up hating those who are supposed to be implementing the law"*. Others pointed out the negative aspect of enforcement which brought the risk of increasing conflict with the village leadership.

This implies that in order to change practices, understanding of the processes of land degradation, participation in formulation of byelaws and finding mechanisms to overcome the constraints were more important than simple information on the rules. Women's participation was vital since their interests were significantly different to men's. Furthermore, there was a need to reach consensus around byelaws that have potential conflicts of interests and mechanisms to assist those who find it difficult to implement them.

## **5. CONCLUSIONS**

Through case study analysis, the existing patterns of social capital were identified and opportunities for building and extending its role in NRM management explored. The case studies have increased understanding of how social capital is activated in the pursuit of livelihoods, particularly how access to (or exclusion from) social capital can assist or impede access to other forms of capital and hence influence livelihood choices and outcomes. They have also provided important insights into the inter-relationship of gender, social capital and NRM/livelihood strategies. They allowed the examination of the hypothesis that men and women have different kinds of networks, experiences of collaboration and values associated with collaboration. Women were found to have a greater dependence than men on informal networks of everyday collaboration with neighbours and kinsfolk (bonding). Men had more formal networks across wider social groups (bridging) and more contacts outside the village (linking).

The main type of social capital characterising the household level was bonding social capital where relationship between kinsfolk, clan members and neighbours form a socially cohesive and mutually supportive network. Bonding social capital was important for clan based savings groups, for assistance between relatives and neighbours in accessing financial assistance, food tools, seeds labour sharing childcare, water firewood livestock grazing livestock products and land. These relationships were described in terms indicating high levels of trust and the values of mutual support and assistance to the poor (cognitive social capital) and were found across wealth ranks and age groups, although appear to be stronger in the lower wealth ranks. Bonding social capital was particularly important for the care of older people.

Bridging social capital involving relationships and networks which are not based on clan or kinship was expressed through membership of village based groups without exclusive clan memberships, such as savings groups and farmers' groups organised around a common interest, e.g. pyrethrum growing, fish farming, bee keeping. Fewer households were involved in these latter type of organisations and were mainly from among the richer households.

Involvement in linking social capital where people interacted with external agencies for resources or to influence policies was also found. Examples included membership of groups supported by NGOs . NAADS farmers' groups and political representation. Involvement in leadership positions in local councils was found in wealth ranks 1 and 2.

Women were found to have a greater dependence than men on informal networks of everyday collaboration. Women's networks through which they accessed land, labour and other support were founded on kinship and neighbourhood relationships, irrespective of wealth rank. Where women marry into a village where their own clans people are present, this conveys an advantage. Otherwise women who do not have clanspeople in the village developed relationships based on friendship and neighbourhood. Men had more formal networks across wider social groups (bridging) and more contacts outside the village (linking). Several men in the higher wealth ranks made regular visits to Rwanda both for business and to visit relatives there.

The informal social capital generated between kin and neighbours is very important for coping with poverty. However, from the case study households' experience it is the bridging and linking social capital that generates more dramatic and far reaching changes in livelihoods. One of the challenges for the project was to involve poorer households in the byelaw formulation process and the policy task force discussions as well as to ensure that the interests of the resource poor were not negatively affected. The evidence from the case studies shows the magnitude of the contrasts between the livelihoods of the rich and poor. This understanding assisted in discussions on the constraints to adoption/compliance with byelaws for different groups, particularly women, the elderly and the poor – those with limited access to land (small areas, limited rights of women and migrants) access to labour, time constraints etc.

In summary, the case studies of social capital and livelihood analysis contributed to:

- Finding creative approaches to byelaw formulation and implementation.
- Encouraging women's participation in policy domain.
- Reaching consensus around byelaws that have potential conflicts of interests
- Linking community groups with higher level policy institutions
- Developing sustainable institutional arrangements for NRM at different levels

## REFERENCES

- Murray, Colin. 2001. Livelihoods research: some conceptual and methodological issues. DSA conference 10-12 Sept 2001. Panel on Livelihood frameworks and poverty analysis.
- Bagchi, D.K., P. Blaikie, J. Cameron, M. Chattopadhyay, N. Gyawali and D. Seddon (1998), 'Conceptual and Methodological Challenges in the Study of Livelihood Trajectories: Case-Studies in Eastern India and Western Nepal', *Journal of International Development* 10, pp. 453-468.
- Bourdieu, Pierre. 1977. Outline of a Theory of Practice. New York: Cambridge University Press.
- Bourdieu, Pierre. 1986. "The Forms of Capital." Pp. 241-258 in Handbook of Theory and Research for the Sociology of Education, ed. J.G. Richards. New York: Greenwood Press.
- Cohen, Stephen S and Gary Fields, 1998. Social Capital and Capital Gains, or Virtual Bowling in Silicon Valley., working paper 132, Sept 1998. Berkely Roundtable on the International Economy.
- Collier, P. 1998. Social capital and Poverty. WB SC initiative working paper no 4.
- Coleman, James 1988. Social Capital in the Creation of Human Capital, *American Journal of Sociology*, Vol 94 supplement S95-120
- Coleman, James S. 1990. Foundations of Social Theory. Cambridge, Mass.: Harvard University Press.
- DFID Sustainable Livelihoods Guidance Sheets. [www.livelihoods.org](http://www.livelihoods.org)
- Farley, C.S. 1996. Smallholder knowledge, soil resource management and land use change in highlands of SW Uganda. PhD thesis. University of Florida, Gainesville.
- Fine, Ben 2001. Social Capital Vs Social Theory: Political Economy and Social Science at the Turn of the Millennium London: Routledge, 2001.
- Fine, Ben, 2002. It Ain't Social, It Ain't Capital and It Ain't Africa. From *Studia Africana*, No. 13, 2002, pp. 18-33.
- Granovetter, Mark (1995) "The economic sociology of firms and entrepreneurs" in Alejandro Portes (ed.) The Economic Sociology of Immigration: Essays on Networks, Ethnicity and Entrepreneurship New York: Russell Sage Foundation.
- Grant, E. 2001. Social capital and community strategies: Neighbourhood Development in Guatemala City. *Development and Change* 32: 975-997
- Grootaert, C. 1998, Social Capital, the Missing link. World Bank, Social Capital Initiative Working paper 3.
- Grootaert, C. and T. Van Bastelaer, 2001. Understanding and measuring social capital; synthesis of findings and recommendations from the social capital initiative. SC initiative working paper 24.)
- Grootaert, C., D.Narayan, V.N. Jones, M. Woolcock, 2004. Measuring Social capital; an integrated questionnaire. World Bank working paper 18.
- Guinand, Yves, 1996. Women, wealth and firewood in Kabake District, South West Uganda. A discussion paper. ICRAF/FORI Agroforestry Project, Kabale.
- James Coleman 1988 Social Capital in the Creation of Human Capital, *American Journal of Sociology*, Vol 94 supplement pp95-120

- Lindblade K., Tumuhairwe J.K., Carswell, G., Nkwiine, C., Bwamiki D, 1996, More people, more fallow. Environmentally favourable land use changes in SW Uganda. Report for Rockefeller
- Mayoux, Linda, 2001. Tackling the down side : social capital, women's empowerment and micro-finance in Cameroon, in *Development and change*, Vol. 32, no. 2
- Molyneux, Maxine, 2001. Gender and the silences of Social Capital. *Development and Change*, 2001. p167-188
- Narayan D and L Pritchett 1997 Cents and Sociability Household Income and Social Capital in rural Tanzania, World Bank Policy research Working Paper June 1997.
- Narayan, D. 1999, Bonds and Bridges. Social Capital and poverty. Poverty Group, PREM World Bank.
- Narayan D. and Michael F Cassidy, 2001. A dimensional approach to measuring social capital; Development and validation of a social capital inventory. *Current Sociology*, March 2001, Vol 49 (2) 59-102.
- North, D.C. 1990. Institutions, Institutional Change and economic Performance, Cambridge MA Cambridge University Press
- Olsen J. 1996 Initial results concerning the use of fallow in Kabale District, Uganda. AHI/ICRAF
- Olsen J.M. 1995. NR management by farmers in Kabale District Uganda. A report for the AHI research project. Analysis of Changing land use and soil productivity. ICRAF
- Purseglove, J.W., 1946. Land use in the overpopulated areas of Kabale, Kigezi District, Uganda, *E. African Agricultural Journal*, Vol XII no 1:3-10
- Putnam, R with Robert Leonardi and Raffaella Nanetti, 1993, Making democracy Work. Civic traditions in Modern Italy. Princeton NJ. Princeton University Press.
- Putnam R 1993, The prosperous Community – Social Capital and public Life. *The American Prospect* (13) 35-42)
- Putnam, R 1995, Bowling Alone, Americas declining Social Capital. *Journal of Democracy* 6 (1) 65-78
- Putnam, R 1996 The strange disappearance of civic America, *The American Prospect*, Winter 43-48
- Rose, Richard, 1997. Measures of Social capital in African Surveys. Centre for the Study of Public Policy. University of Strathclyde, Glasgow. <http://www.socialcapital.strath.ac.uk/>
- Rudd, Murray A. 2000. Live long and prosper: collective action, social capital and social vision. *Ecological Economics* 34 (234) 131-144.
- Siisiäinen, Martti 2000. Two Concepts of Social Capital: Bourdieu vs. Putnam. Department of Social Sciences and Philosophy, University of Jyväskylä. Paper presented at ISTR Fourth International Conference, "The Third Sector: For What and for Whom?" Trinity College, Dublin, Ireland July 5-8, 2000. <http://www.jhu.edu/~istr/conferences/dublin/workingpapers/siisiainen.pdf>
- Uphoff, N. and Mijayaratna, C.M. 2000. Demonstrated benefits of Social Capital: The productivity of farmers organizations in Gal Oya, Srilanka. *World Development* 28(11) 1875-1840
- Woolcock, Michael 1998, 'Social Capital and economic development: Toward a theoretical synthesis and policy framework'. *Theory and Society* 27: 151-208

Woolcock and Narayan, 2000. Social Capital: implications for development theory, research and policy. *The World Bank Observer*, Vol. 15 (2): 225-249

## APPENDIX 1 SELECTION OF CASE STUDY HOUSEHOLDS RUBAYA SUBCOUNTY.

### Muguli village, Mugandu Parish

Wealth rank	Male headed households	Selected	Female headed households	Selected	Total Households in village	% Households in category
1	2	1			2	3.2
2	11	1	1	1	12	19.4
3	32 <sup>1</sup>	3	14 <sup>2</sup>		46	74.2
4	1		1	1	2	3.2
	46	5	16	2	62	100.0

<sup>1</sup> Includes 1 widower and 1 disabled. <sup>2</sup> 5 female headed (husbands absent) and nine widows. The originally selected female headed, wealth rank 3 household was an old lady, supported by her son's household, which was substituted.

### Karambo village, Buramba Parish

Wealth rank	Male headed households	Selected	Female headed households	Selected	Total Households	% Households in category
1	4	1			4	7.5
2	17	1	3	1	20	37.7
3	21	2	8 <sup>1</sup>	1	29	54.7
	42	4	11	2	53	100.0

<sup>1</sup> 6 widows and 2 female headed.

### Habugarama village, Kitooma Parish.

Wealth rank	Male headed households	Selected	Female headed households	Selected	Total Households	% Households in category
1	3	1	1	1	4	7.1
2	23	1	3	1	26	46.4
3	12	1	14	1	26	46.4
	38	3	18	3	56	100.0

### Kagyera village, Mugandu Parish

Wealth rank	Male headed households	Selected	Female headed households	Selecte d	Total Households	% Households in category
1	10	1			10	22.7
2	11	1	3	1	14	31.8
3	17	2	3		20	45.5
	38	4	6	1	44	100.0

## APPENDIX 2 CHECKLIST FOR SOCIAL CAPITAL HOUSEHOLD CASE STUDIES – KABALE

### Physical assets

#### Observation/discussion

1) Description of house and other buildings & stores, housing for animals. Materials, roofing, number of rooms. Furniture and decoration.

Is house owned or rented? If rented, **from whom? Cost?** Other property owned – type, location, **used by whom. Conditions of use?**

2) Energy sources - cooking, heating, lighting (e.g. electricity, charcoal, kerosene, firewood etc. & costs

3) Water sources for drinking and washing. Type and location. Sanitation– toilet/latrine.

4) Ownership and access to tools and equipment – agricultural tools, craft/enterprise tools and equipment. **Owned by whom? Used by whom?**

5) Ownership and access to transport; bicycle, car, pick up etc. **Owned by whom? Used by whom? Conditions of use?**

6) Access to **communications** – radio, telephone, TV, internet etc **Owned by whom, used by whom? Conditions of use?**

#### EACH VISIT:

Any new property /physical assets (1-6) acquired or used? Any assets sold or given away (from/ to whom, conditions, payment etc).

### Financial assets

1) Sources of income of individual household members. (income from **salary, wage labour, rents, remittances, pensions, crops, livestock, trees, craft, home enterprises and services** etc.)

Which income sources are most important – by overall amounts and **at different times of the year?** (rank or quantify) Importance for different family members? Changes in income sources, for different family members over the last 10 years?

2) Any household member belong to a **savings group?** Membership fees, contributions. Details of the group, frequency of pay outs. Any Bank account? Link with other local financial institutions?

3) Sources of loans *received* in past year– (**relative, non relative, in/outside village, credit group etc.**). What was the loan used for? Interest rates or other arrangement and period? Has any household member still to repay a loan? **To whom? Where do they go for assistance in a financial crisis?**

4) **Who do they give financial assistance to?** (parents/relatives/friends etc). What amounts and conditions? Is any member of the household owed money from a loan given in past year? **Owed by whom? Given for what?**

#### EACH VISIT:

1) Since last visit – amount of income received by each family member from each activity (in cash and kind) **Income from crops trees, livestock (see natural capital)** Money sent by HH members

2) Payments received through savings groups. New financial groups joined?

3) New loans obtained (**from whom**, for what, period of loan. Interest or other arrangement.) Other financial assistance received (**from whom**, for what). Loans paid back to others.

4) New loans *given* to others – **to whom**, for what, period of loan. Interest & arrangements.) Loans *repaid* by others. Other financial assistance **given (to whom)**. USE OF THIS INCOME?

### Human Assets

1) Educational level of all household members. Literacy – local language, English Children currently in school and location. **How funded & by whom?** (including sponsors)

2) Training received and skills of household members. **Where were skills acquired and from whom?**

3) Occupations of household members. (Main occupation and all secondary occupations) What conditions or contract of work? Location of work. **How were these opportunities identified; through what contacts (in/out of village)?** What was the source of **starting capital** for home enterprises? **From whom?**

4) Labour employed by **household members, in agriculture**, enterprise, other – permanent, temporary, seasonal. **What relationship to household? Conditions of employment /payment?**

5) Health status of family members. Have children been immunised? Anyone with chronic illness or disability? Access to health care – source, location (including local medicine/herbs). **Who pays?**

6) **Who do household members consult for information** on health issues, on agriculture and natural resources, on technologies, on markets, on community issues and local politics?

#### EACH VISIT

Change in school attendance, new training, new occupations, **Labour employed**, health conditions and health care & costs, new information accessed.

## Social Capital

What is the significance of clan membership (of H and W) – does it bring any benefits? What kin relationships do they have in the village and outside - blood relatives and by marriage? Relationship to their immediate neighbours? (Use kinship/network diagrams to show where these give access to **labour, cash, food, land, livestock and livestock products, tools, seeds, collected products, employment opportunities, childcare. etc.**)

Membership of organisations by household members in and outside the village (self-help groups, labour sharing groups, **groups for natural resource management, crop production and livestock rearing**, cultural groups, church groups, political groups etc.)

Date of joining, through what contacts and sources of information? What are the conditions of membership, fees etc.

Details of organisation and activities, management of labour and production. Perceived benefits or disadvantages of group membership.

Leadership roles held by H and W (clan, LCs, committees) in village and beyond. Participation in community activities and collective work?

Relationships with neighbours. Extent of trust, exchange and mutual support? Contributions to welfare funds - ngosi groups

Changes in family relationships over the last 10 15 years, relations between the generations.

Frequency of visits to and visits from relatives and friends outside the village. Visits to markets outside the village. Meetings outside village.

### EACH VISIT

Any changes in household composition? Main social activities, kin/clan events since last visit?

Group activities by family member since last visit. New groups joined? Community work.

Leadership roles –any changes or new roles? Relations with family and neighbours – any help or assistance given or received? Welfare activities undertaken.

Visits to and from friends/relatives and absent household members. Visits to markets and Kabale town, outside meetings- by whom.

Any problems in relations within the household or between the household and the community?

## Natural Assets

What is the household's access to land? How many plots, in what different villages and locations?

*Record all plots owned, rented in or out, used/shared by household members on plot record sheet A, one sheet to be filled for each plot. For plots cultivated by members of the household complete **form B** for each crop.*

Has any member of the household ever sold or exchanged a plot of land in the village? Has any member of the household given up land because of contested ownership? Is there a home garden? Who manages it? What crops and uses?

Changes in farming patterns, yields and productivity over the last 10 years. Effect on **food security** and **income**. Proportions of different crops sold or retained for family consumption. Extent of household self-sufficiency in food production? Involvement in group storage for food security?

Involvement in experimentation new crops, species etc. as an individual or through group

Livestock (cattle, goats, pigs, chickens, rabbits etc)– owned by whom, numbers, how acquired? Looked after by whom (water, herding, fodder sources). Role of livestock in their livelihood? Home consumption and sales of livestock and livestock products, gifts given and to whom. Use of **income** from livestock.

**Income** from trees, timber, charcoal etc. used by whom?

Access to common pool resources by different household members – products and uses from forest/ trees, wetland, grazing. What are conditions of access. **Membership of society?**

### EACH VISIT (Fill plot forms).

Any land acquired or land sold/rented/shared out since last visit? (if acquired, fill plot form)

Any livestock bought, sold, slaughtered, born, died? Sales of livestock products? Use of **income** and by whom. Trees cut, sales. Use of **income** and by whom.

Following crop harvest - amounts sold of each crop, where sold, by whom, **to whom**, location and **price: Cost** of marketing/transport

Amount stored for home consumption. Amounts given as gifts and to whom? Use of income from crop sales, by whom, for what?

(cross refer to gender and decision making )



### **Sources of Vulnerability**

What creates vulnerability for household members- eg food insecurity, shortage of cash, etc pushing them into poverty?

(Are these seasonal or longer term? Can they be anticipated?)

Have they experienced any difficulties recently? How did they deal with the situation. To whom did they turn for help? (give relationship, location and nature of assistance)

In the event of a crisis who would they turn to for help?

### **Gender and Decision making processes**

Gender roles – what are household members (men, women and children's) tasks and time allocation in *cropping, livestock management, food preparation, water and firewood collection, social and leisure activities*. (Draw seasonal and daily calendars showing patterns of men and women's work and income. Don't forget children's work)

What ownership or access do women of the household have over agricultural land, trees, livestock. Who has rights to sell land, crops, livestock? Who is consulted? (*link this discussion to the management responsibility defined for each plot*)

### **Gender and decision making**

Who makes decisions in the household and who is consulted on the following: crop choices, crop management decisions, crop sales

Household food supplies and storage.

Gifts and assistance to others. consumption and sales of livestock and livestock products.

Who decides on choice of occupation?

Who decides about children's education?

Who decides on membership of groups and participation in community activities?

What are the responsibilities of husband, wife or other household adults, for managing **income**?

- income from crops and livestock

- income from non farm occupations.

### **EACH VISIT**

For each transaction involving crops, livestock, trees discuss who made the decision, who controls income from sales, who decides on use of the income.

Explore gender dimensions of decisions made under physical, social, human and natural capital

### **Policies and Institutions**

What is their understanding of the role of **clan leaders and LCs** in influencing **access to and sustainable management of natural resources**?

Are they aware of policies and local bylaws influencing and regulating use of farm land, grazing, forests and trees, swamps, livestock? ( e.g soil conservation, burning, grazing etc). Do they know when and how these were developed? What are the advantages and constraints of implementing these?

In what areas could NR policies be developed to better support their livelihoods?

Could other local institutions be more effective in supporting livelihoods? Which ones and in what ways?

### **Strategies**

For each household member –

What have been the main changes in livelihoods over the last ten years? What are their priorities to improve livelihoods and getting out of poverty?

What are their strategies for achieving these improvements? Why are these paths preferred?

(*note ways to increase financial benefits, benefits from natural capital - both short and longer term; skills and occupational choice, physical capital, social relationships and social security.*)

What changes in organisations or policies would be necessary to support these strategies.

### **Outcomes**

What are the aspirations of different household members for the future? What livelihood changes would they like to occur.

**APPENDIX 3 FORMATS FOR HOUSEHOLD AND PLOT RECORDING**

**HOUSEHOLD RECORD SHEET:**

Sub county \_\_\_\_\_ Village: \_\_\_\_\_ Date: \_\_\_\_\_  
 Household name \_\_\_\_\_  
 Wealth rank: \_\_\_\_\_  
 .

**Household Composition.**

List all household members by name, age, gender, marital status, relationship in household:

NAME	GENDER	AGE	MARITAL STATUS	RELATIONSHIP
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Any children deceased? \_\_\_\_\_

**Absentees** -location and relationship, reasons why away). Frequency of visits: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Tribe and clan** (H & W and other adults).  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Family history** – place of birth –husband & wife/s. Years in village. Previous place of residence  
 Reasons for coming to village – **through what personal contact?**

**A. PLOT DETAILS RECORD SHEET:**

**Household:** \_\_\_\_\_ **Village:** \_\_\_\_\_ **Date 1<sup>st</sup> interview** \_\_\_\_\_

**Plot Location** (village and local name): \_\_\_\_\_

Distance from the home: (mins walking time): \_\_\_\_\_

Exact situation: (Slope and position - hilltop, upper/middle slope, valley bottom, wetland/swamp etc

Direction facing (N,S,E,W etc) \_\_\_\_\_ Area of plot: (acres) \_\_\_\_\_

**How was the plot acquired**, (inherited, rented in, purchased, share crop, etc), \_\_\_\_\_

By which household member and **from** whom (note exact relationship)

When was it acquired?: \_\_\_\_\_

If rented or purchased from someone, what was the agreement and price? \_\_\_\_\_

Who was involved in the negotiation?

**Current use** – crops, trees, grazing, fallow, abandoned etc: \_\_\_\_\_

Who is the plot used by? (e.g. household member, rented out, shared, etc.)

If rented out, **to** whom (note exact relationship)

What was the agreement and payment? \_\_\_\_\_

**Soil** - description and local name (*If used by a household member, ask the person using the plot*)

Assessment of soil fertility and variation on the plot: \_\_\_\_\_

What, if any, measures have been taken to improve soil fertility? \_\_\_\_\_

Assessment of soil erosion (rills, gulleys, susceptibility to flooding) \_\_\_\_\_

What are the reasons for any problems. \_\_\_\_\_

What soil conservation measures are on the plot. \_\_\_\_\_

Who made them and when were they introduced? \_\_\_\_\_

Who maintains them? \_\_\_\_\_

Have you agreed with your neighbours on soil conservation measures?

Do you work collectively with your neighbours to construct soil conservation measures on your plots? \_\_\_\_\_

**Neighbouring plots**

How far is the plot from other household plots in the same location \_\_\_\_\_

Who owns and uses the plots surrounding this plot? (relative, clan member, neighbour etc.)

Are there any problems from neighbouring plots or their owners?

Has there been any competition for ownership or use of the plot? (from within or from outside the household)

**Notes: (cont. on separate sheet):** .....

*Ask the farmer to draw a sketch map or draw a map together on a plot visit.*

**B: CROP PRODUCTION DETAILS (to be filled for each crop by the person working)**

Location of plot (refer to Form A): \_\_\_\_\_

Household: \_\_\_\_\_ Member responsible \_\_\_\_\_

Current crop (or trees) and variety: \_\_\_\_\_

Planted when? \_\_\_\_\_

Intercrop (s)/agroforestry trees \_\_\_\_\_ Planted when? \_\_\_\_\_

Previous crop (1): \_\_\_\_\_ Yield (Kgs or other measure) \_\_\_\_\_

Previous crop (2) \_\_\_\_\_ Yield (") \_\_\_\_\_

***These questions to be asked for current crops and those planted on the plot during the course of the study at the appropriate time of the agricultural cycle***

***Land preparation***

Method: \_\_\_\_\_

Labour, number and gender, source (e.g. household members – who?/ hired/ labour group etc) \_\_\_\_\_

Payment for labour (cash/kind. Give wage rates & total) \_\_\_\_\_

Fertiliser used? \_\_\_\_\_ If yes, source, cost, quantity, labour source and payment \_\_\_\_\_

Manure/compost used? \_\_\_\_\_ if yes, source, cost, quantity, labour source and payment \_\_\_\_\_

Other inputs? (chemicals etc) \_\_\_\_\_

***Planting***

Source of seed/seedlings (from whom?) \_\_\_\_\_

Amount and cost of seed/seedlings: \_\_\_\_\_

Labour, number and gender, source (e.g. household – who?/hired/labour group etc) \_\_\_\_\_

Payment for labour (cash/kind, wage rates & total) \_\_\_\_\_

***Weeding (s)***

Labour, number and gender, source (e.g. household – who?/hired/labour group etc) \_\_\_\_\_

Payment for labour (cash/kind) \_\_\_\_\_

***Other activities*** on this crop (e.g. ridging potatoes, cutting trees, staking beans etc). Activity, labour, number and gender, source (e.g. household – who?/hired/labour group): \_\_\_\_\_

Payment for labour (cash/kind, wage rates & total) \_\_\_\_\_

***Harvesting.***

Labour, number and gender, source (e.g. household – who?/hired/labour group etc) \_\_\_\_\_

Payment for labour (cash/kind, wage rates & total) \_\_\_\_\_

***Yield***

Total amount harvested: \_\_\_\_\_

Amounts consumed before main harvest? \_\_\_\_\_ (indicate whether included in total)

Use of crop residues? \_\_\_\_\_

**Factors affecting the crops** on this plot? e.g. weather, erosion, pests, diseases, theft etc. Give date and problem: \_\_\_\_\_

**Notes: (cont. on separate sheet):** .....

## Appendix 4 – CASE STUDY HOUSEHOLD CHARACTERISTICS

Dec. = Deceased; Div. = Divorced; Sep. = Separated.

HHead = household head. M/H = Male household head or husband. F/W = Female household head or wife.

Dominant clan e.g. **Omyundo** in bold. Minor clan e.g. Omusigy underlined.

### VILLAGE: HABUGARAMA

Household	Wealth rank	Gender HH head	Age HHead	Current household size	Total Male	Total Female	Children <6	Children 7-18	M /H clan	F/W clan)	Years in village M/H	Years in village F/W
H1a	1	F (absent M)	58 (62)	2	1	1	0	0	<b>Omyundo</b>	Omurihira	Migrated as a family	Migrated as a family
H1b	1	M	42	7	2	5	3	2	<b>Omyundo</b>	Omuhimba	(missing)	(missing)
H2a	2	F	40	3	1	2	0	2	<i>(Omusigy) Div.</i>	<b>Omyundo</b>		Born
H2b	2	M	40	10	3	7	4	4	<b>Omyundo</b>	<u>Omusigy</u>	Born	On marriage
H3a	3	F	70	2	1	1	0	1	<i>(Omyundo) Dec.</i>	<u>Omukungwe</u>		On marriage (50)
H4a	3	M	84	7	2	5	0	0	Omuyangabo	<u>Omusigy</u>	63	On marriage

### VILLAGE: KAGYERA

Household	Wealth rank	Gender HH head	Age HHead	Current household size	Total Male	Total Female	Children <6	Children 7-18	M /H clan	F/W clan	Years in village M/H	Years in village F/W
K1	1	M	30	7	3	4	3	2	<b>Omuyangabo</b>	Omungara	Born	On marriage
K2a	2	M	22	3	1	2	1	0	<u>Omuhesi</u>	Omusinde	Since childhood	On marriage
K2b	2	F	<missing>	3	1	2	0	1	<i>(Omungura) Dec.</i>	<u>Omuhesi</u>	n/a	24 on return after husband's death
K3a	3	M	28	4	2	2	2	0	<u>Omuhesi</u>	Omuyundo	Born	1998 on marriage
K3b	3	M	23	4	2	2	1	1	<u>Omusigy</u>	Omusinga	Born	6 years on marriage

**VILLAGE: KARAMBO**

Household	Wealth rank	Gender HH head	Age HHead	Current household size	Total Male	Total Female	Children <6	Children 7-18	M /H clan	F/W clan	Years in village M/H	Years in village F/W
KR1	1	M	30	4	2	2	2	0	Omushogi	Omuyundo	6	6 – on marriage
KR2a	2	F	41	4	1	3	0	3	( <i>Omuzigaba</i> ) Dec.	<b>Omugyere</b>		1987 – on marriage
KR2b	2	M	33	6	4	2	3	1	<b>Omugyere</b>	<u>Omunyangabo</u>	Born	On marriage
KR3a	3	F	54	4	2	2	0	3	( <i>Omugyere</i> ) Dec.	Omuzigaba		26 years– on marriage
KR3b	3	M	20	4	2	2	0	0	<b>Omugyere</b>		Born	
KR3c	3	M	26	4	2	2	1	0	Omugyesera	Omungura	Moved to Karambo	On marriage

**VILLAGE: MUGULI**

Household	Wealth rank	Gender HH head	Age HHead	Current household size	Total Male	Total Female	Children <6	Children 7-18	M /H clan (Dominant clan in bold)	F/W clan (Dominant clan in bold)	Years in village M/H	Years in village F/W
M1	1	M	59	10	6	4	0	4	<b>Omusigyi</b>	<u>Omunika</u>	59 years	32 years – on marriage
M2a	2	F	63	3	0	3	2	0	( <i>Omunyangabo</i> ) Dec.	<u>Omukongoro</u>		c. 46 years –on marriage
M2b	2	M	29	4	1	3	1	1	<b>Omungara</b>	<b>Omusigyi</b>	Born	6 years – on marriage
M3a	3	M	35	4	3	1	2	0	<b>Omusigyi</b>	<u>Omurihira</u>	Born	On marriage
M3b	3	M	70	5	2	3	0	1	<u>Omunyangabo</u>	<b>Omusigyi</b>	>60 years	On marriage
M3c	3	M	39	9	5	4	3	3	<u>Omunyangabo</u>	<b>Omusigyi</b>	Born	19 years – on marriage
M4	4	F	60	3	1	2	0	1	( <i>Omusigi</i> ) Sep.	Omukimbii		Born – left and returned

## Appendix 5 – Plot records.

### MUGULI

Name	Plot situation (slope position)	Walking Distance from house	Relation with neighbouring plots	Acquisition-how, who and when.	Crop /fallow /Wood -lot	Managed by	Soil type, erosion/fertility	Soil conservation measures	Inputs used seed fertilise manure etc.	Labour source and payment	Yield
M1 Wealth rank 1 Male headed	Muguli A; 5 acres (A) and 2 acres (B); south facing hilltop	60 min	2 km; surrounding plots are owned by neighbours and people from other areas; destruction of boundary, his tree was cut	inherited 2 plots from father, bought the rest from local people, 1973	Crop	household	exhausted, reduced harvest, gullies, erosion, turned red	manure, trenches, agro forestry, contour ploughing, hedgerows	beans and sorghum from own seed if production is high, or from market at 500/= per kg; previously sorghum, beans	hired labour	290 kg beans, 3 bags sorghum
	Kasarara; 1½ acre east facing middle slope	3 min		bought 1992 from one returning to Rwanda	Crop	household	black loam mixed with brown rocky soil from road nearby due to erosion; more fertile at bottom than top; rills (not serious)	planted rows of grass across the plot	coffee (arabica) supplied free by agriculture enthusiast; intercropped with calliandra and grivellia; previously sorghum	hired labour	50 kg
M2a Wealth rank 2 Female headed	Mugandu; 7plots together on a slope with a valley down the middle			bought	Crop	herself	erosion of lower plots when the valley fills during rain	planted elephant grass but it was destroyed	beans and sorghum from own harvest; previously beans, fallow	hired labour	
	23 plots in Muguli, not consolidated										
M 2b Wealth rank 2 Male headed	Muguli B; east facing upper slope; ½ acre	5 min	15 min from other plot; surrounding plots owned by relatives	inherited from father 1986	trees	himself	Orucucu – Rwandese steal trees for firewood				
	Muguli; south facing middle slope, > 2 acre	1 min	neighbours are relatives;	inherited from father, 1995	crops	household members	Enombe – hard soil; average, no erosion; lost fertility due to over cropping	applies manure; planting trees (Calliandra); all who have plots on that hill dig trenches	beans from previous harvest; previously sorghum, Irish potatoes	family and hired labour	20 kg (4 kg consumed); affected by sunshine

	Nyamabare; east facing valley bottom, 4 acres	30 min	30 min from other plot; neighbours – only on the bottom is friend	purchased from someone migrating, 1998, 300,000/=	crops	household members	Sandy soil mixed with hard soil; fertile, good, no erosion, crops not affected by sunshine		sorghum, from previous harvest; previously beans, fallow	family and hired labour	3 sacks; prolonged sunshine <!>, wind, theft especially maize <!>
	Kitojo; middle slope facing east, 1 acre	120 min	neighbours are just neighbours	purchased from brother's friend, 1999, 260,000/=	crops	wife	Orushenyi and enombe; fertile, dries quickly in heavy sunshine; cold, because near the lake.	maintains the ridges; usually gives the plot time to rest (9 months) before putting it to use	beans – kacwekano from previous produce; previously sorghum, beans	family and hired labour	50 kg;
	Kabagara Kalungye; east facing upper slope, 1 acre	60 min	neighbours from Kalungye, unknown to him	rented from village mate, 2001, 10,000/= for 2 seasons	crops	himself	Sandy soil, a bit fertile; dries quickly in prolonged sunshine		wheat bought from neighbour, 6 kg at 500/= per kg; previously Irish potatoes, fallow	wife and hired woman	?
	Kakyerere; east facing valley bottom	20 min		rented from a friend, 2001. 30,000/= per year	crops	himself	Mixed Orushenyi and Onombe; fertile (benefits from erosion of nutrients from above); sometimes flooded		Irish potatoes (victoria and kemiza) from previous harvest; previously cabbages, fallow	family and hired labour	
M3a Wealth rank 3, Male headed  (Also land rented outside the village )	Mukahanga (valley); ¼ acre, slope side of the hillside, facing east	5 min	surrounding plots are owned by clan members, encroachment by neighbours; step-brothers wanted the land but the old mother made a written declaration	inherited from parents, 2001 <complex relationships?>	crops	household members	Good black soil with organic matter (Ririragura, mboneiro) , fertile at the ends, not in the middle	plans to apply manure; has dug trench and plans to plant calliandra tree	beans from market, 15 kg @ 500/=; banana intercrop from his own place; previously beans and maize, Irish potatoes	wife, husband and hired labour	7 kg; 10 kg consumed before; birds destroyed crop at flower stage; prolonged drought June-July 2002
									sweet potatoes from her own plot / harvest; previously sorghum, Irish potatoes	wife and exchange labour	400 kg (projected); consuming from the start
	Mwitaba; < ¼ acre, middle slope facing south	10 min	20 min from other plot; surrounding plots are owned by cousins and clansmen; demarcation disputes	inherited from grandmother, 2001	crops	husband and wife	One side black, the other side red Akanombe; exhausted, erosion, gullies; people above refuse to dig trenches	husband and wife have dug trenches; plan to plant trees; cooperates with one neighbour			



	Bakumbi; ¼ acre north facing hill top	15 min	20 min from other plot; surrounding plots are owned by step brother and neighbours	inherited from parents <?> grandmother, 1990	crops	husband and wife	black orucucu; infertile, exhausted; gullies and rills	fallowing	sweet potatoes from her own seed; previously millet, sweet potatoes	husband, wife and neighbour	theft during the night by neighbours
	Mukananga mixed soil; ¼ acre east facing middle slope	5 min	20 min from other plot	inherited from grandmother, 1990	fallow		mixed red and black enombe; fertile (given moderate rain)	fallow, dug trenches			
M3b	Omunsharo land; ½ acre, upper slope	120 min	2 hours from other plot; surrounding plots are owned by son, brother in law, uncles (2)	bought from a clansman long ago, 8,000/=	crop	daughter	Brown soils and orucucu; not all that fertile; a lot of soil erosion		sweet potato from her garden; previously fallow, sweet potato	household members	2 baskets; erosion took all the soil; too much sunshine
Male headed	Hakikorogyero ½ acre, middle slope	3 minutes	3 min from other plot; neighbours are brothers (2) and brother in law	purchased from brother in law 20 years ago; 2,000/=	crop	himself	Enombe (hard soil); lost fertility	animal droppings	bananas planted long ago; previously fallow, Irish potatoes	household members	some for home consumption, some for sale; too much sun, pests
	Bakemera; 1 acre, valley bottom	15 min	15 min from other plot; neighbours are brother in law, and son	purchased from step brother 20 years ago, 50,000/=	crop	himself	Enombe; no fertility because of erosion	Emingoti	sweet potato from another garden; previously sorghum, beans	household members	too much sunshine
	Bukumbi; 1 acre middle slope	60 min	one hour from other plot; surrounding plots are owned by brother in law, brother maternal cousin and neighbour.	purchased from someone unrelated 10 years ago for 120,000/=	crop	rented out to unrelated person.	orucucu; fertile; no erosion, some floods		sweet potatoes, previously wheat, fallow		
	Enyumayeko; ½ acre, middle slope	5 min	5 min from other plot; surrounding plots are owned by son and brother in law	purchased from maternal uncle 35 years ago, 50/=	crop	himself	enombe; fertile; gullies	emingoti (3ft trenches); kitchen rubbish	wheat from Rwanda, 5 kg at 800/=; previously peas, sorghum	household members	75 kg; too much sunshine
M3c	Muguli; 1 acre, east facing middle slope	10 min	< 60 min to other plot; surrounding plots are owned by relatives; <see note on parents' death>	inherited from father on marriage, 1984	crops;	household	enombe – mixed soils on one part; lost fertility due to over cropping, no fallow period; occasional rills due to everyone digging without katinkanking.	applies manure; plants trees (Calliandra);	wheat + beans + sorghum from previous harvest (beans from market 2½ kg at 500/=); previously beans + sorghum + beans, fallow + beans + fallow	household plus exchange labour	wheat 100 kg, beans 7 kg, sorghum 300 kg (5kg beans consumed previously); heavy rainfall caused pests

	Mukibungo; 1 acre east facing middle slope	60 min	30 min from other plot; surrounding plots are owned by relatives	inherited from father, 1983	fallow		orucucu; exhausted; only supports wheat; no erosion (not steep)		fallow; previously wheat, wheat		
	Bukubi; < 1 acre east facing middle slope	10 min	5 min from other plot; surrounding plots are owned by relatives, clansmen; destruction of plot boundaries, grazing on crops	bought from migrating father in law, 2002, 2 plots together , 250,000/= each	crop		enombe, exhausted; trenches now prevent erosion	manure; trenches (successful)	sorghum from market – 2,000/= bought 8 kg; intercropped with calliandra; previously sorghum, beans	household and exchange labour	300 kg; some consumed before
	Bukumbi; 1 acre west facing middle slope	10 min	13 min from other plot; surrounding plots are owned by relatives, clansmen; destruction of plot boundaries.	purchased from father in law 250,000/=	crop	household	enombe (stones on one part), infertile; rills, gullies – neighbours refused to dig trenches	manure; trenches	sorghum, 3 kg from market; previously sweet potatoes, fallow	household and exchange labour, hired labour	300 kg; some consumed before
	Muitaba; 1 acre east facing middle slope	3 min	2 min from other plot; surrounding plots are owned by relatives, neighbours; same problems as other plots	purchased for 250,000/=, 1989	crop	household	enombe mixed with stones; one part the soil is ded <?sic>, the other part mixed with sand; susceptible to erosion – some neighbours refused to dig trenches	manure; trenches	sorghum from market, 3 kg at 250/= per kg; previously sweet potatoes, fallow	household and exchange labour (clansmen)	300 kg
M 4 Wealth rank 4, female headed	Muguli land (residence); 1 acre, hilltop	0 min	50 min from other plots; surrounding plots are owned by family (co-wives, adoptive mother,	inherited 22 years ago from adoptive mother	crop	household members	Enombe, orucucu or omunyere – clay soils and light sandy soils; lost fertility through over cultivation; gullies, rills	has dug compost pit for rubbish to be spread; has tried to dig trenches	beans from previous harvest; previously beans, fallow	household members	7 kg ; pests, too much sunshine
									sweet potatoes from another garden; previously beans, sorghum	household members	
									sorghum from market, 7 kg at 400/= per kg; previously Irish potatoes, beans	household members	80 kg; fell down because of wind
									banana and beans from the Africare group; previously bananas Also veges	household members	8kg; too much sunshine
	Mwitabe; 1 acre, middle slope	30 min	30 min fro other plots Surrounding plot brother, adoptive mother, no relation.	inherited from adoptive mother 20 years ago	crop	herself	Otubale (murram like) i.e. soil with stones; infertile because of over cultivation and		beans from previous harvest; previously sorghum, Irish potatoes	household members	4 kg; pests and sunshine

							cultivation and erosion		sorghum from market, 3 kg at 400/= per kg; previously Irish potatoes, fallow	household members	20 kg, too much sunshine dried the sorghum
									sweet potatoes from another garden; previously sorghum, fallow	herself	
	Mukibungo; upper slope; 1 plan	120 min	2 hrs walk time to and from; surrounding plots are owned by brother, step brother and no relative	inherited from adoptive mother 20 years ago	abandoned	herself	orucucu infertile				
	Bukumbi Middle slope	120mins	2 hours	inherited from adoptive mother 20 years ago	abandoned	herself	orucucu infertile				
	Mubarimo B; ½ acre middle slope	30 min	30 min; owners of surrounding plots are not related	purchased by her son 20 years ago	fallow	herself	Amabaale – stone with soil; not fertile because of stones and over cultivation; a lot of erosion				
	Mubarima A; 1 acre hilltop	30 min	30 min; owners of surrounding plots are not related	purchased by her son 20 years ago	crops	herself	Amabare – stones mixed with soil; fertile; soil erosion	told to put trenches but does not have the power	sweet potatoes from another garden and one part fallow; previously sweet potatoes	herself and household members	too much sun
	Mukakiro; ¼ acre, hilltop	120 min		inherited from adoptive mother 20 years ago	abandoned		Orucucu; infertile	neighbours do soil conservation			

**VILLAGE: KARAMBO**

Name	Plot situation (slope position)	Distance from house	Relation with neighbouring plots	Acquisition-how, who and when.	Crop /fallow/ woodlot	Managed by	Soil type, erosion/fertility	Soil conservation measures	Inputs used seed fertilise manure etc.	Labour source and payment	Yield
KR1 Wealth rank 1 Male headed	Muhenvu, 3plots together; Valley bottom; facing south; 3 x ½ acre	10 min	no other plots; surrounding plots are owned by his father and brother; they usually change his boundaries; animals invade his land	purchased from brother in law, 2001 / 2, 850,000/=	all fallow		Loam soil (Eitaka ry'orweezo) meaning black fertile soil; overused, exhausted; some erosion from continuous cultivation on neighbouring plots	Left fallow; has dug trenches; plans to plant trees			
	14 plots in Karambo 4 other scattered plots 2 wetland plots			All purchased	Crop	himself	People above who do not conserve the soil, so there are threats of soil erosion		Sorghum Sweet potatoes Irish potatoes		16 bags sorghum  16 bags potatoes
KR2a Wealth rank 2 Female headed	Rwanganiiro; middle slope; east facing; < ½ acre	45 min	10 min from other plots; neighbouring plots are owned by relatives; encroachment by neighbours	inherited (gift) from father in law on marriage in 1987	Crop	herself	Enombe; exhausted due to over cultivation; rills	Carries rubbish to the plot	sorghum, 10kg from previous harvest; previously beans, fallow	herself and hired labour (although she says she is a widow and has no money for hired labour)	100 kg; dries quickly in sunshine; pests and diseases affect beans.
	Mugandu; Hill top, < 1 acre	120 min	5 min from other plots; surrounding plots are owned by clansmen and neighbours; they usually encroach on her plot	bought from someone emigrating in 1991 for 200,000/=	crops	herself	Enombe; The whole plot is exhausted. Less fertile; rills and gullies	too far from home to improve fertility	sorghum, 7 kg from previous harvest; previously beans, peas	herself and hired labour	1 basket (10 kg); pests and too much sun
	Rushabo; upper slope facing east; ½ acre	180 min	20 min from other plot; just neighbours around the plot	inherited from father in law, 1987	crop	herself	Orucucu; whole plot is exhausted (reduced yields); rills and gullies (steep slope and heavy rain)	ridge at the top of the plot, dug by herself in 2002	beans, bought 20 kg from market; previously sorghum, fallow	herself and children	Dried at flowering stage; She got about 1 Kg (fresh) only. What didn't dry after germinating, later dried before flowering

	Muguli; upper slope, east facing, < ½ acre	300 min (5 hours!)	surrounded by farmers of Muguli; plot is attacked by thieves	rented from relative (sister), 2001; 30,000/= for 2 seasons	crops	herself	Sandy soil, Orucucu; exhausted, dries quickly; rills and gullies (over cultivation season after season)		beans; bought 10 kg from market at 600/= per kg; previously sorghum, fallow	herself and hired labour	dried before the weeding stage; poor soils, weather and disease, pests (Obusimba)
	Kibande; valley bottom, facing west, 1 acre	240 min (4 hours!)	neighbours are mother in law and Kibande farmers	inherited from father in law, 1992	crops	herself	Enombe;. The lower part of the plot gives good yields while the upper part is fair; rills		kacwekano, 10 kg bought from market at 600/= per kg; previously sorghum, fallow	herself and hired labour	about 1.5 kg harvested fresh; no main harvest; Weather, sunshine, pests and diseases, all these affected the crop after germination
KR2b Wealth rank 2  Male headed	Mukakiro A; Middle slope; ½ acre	10 min	20 min from other plot; surrounding plots owned by relatives	bought from uncle, 1998, 100,000/=	fallow	husband	Enombe mixed with Orucucu; lost fertility due to over cultivation; erosion when it rains heavily	left fallow			
	Mukakiro B; Middle slope, ¼ acre	15 min	20 min from other plot; surrounding plots owned by relatives	inherited from father, 1993;	crops	husband	Orucucu (light soils); medium fertility - not all that fertile but not barren; a lot of soil erosion - top neighbours do not use 'katikankingo' (long terrace across)	He applies local manure (cow dung)	Beans from market – 10 kg at 500/= per kg; previously millet, sorghum	household plus hired labour	There are pests called Obusimba
	Muruhanga; Valley bottom; ½ acre	3 min	3 min from other plot; surrounding plots owned by relatives	inherited from father, 1993;	crops	household	Black soils (riragura); fertile; no erosion; floods (flat valley bottom)		Beans from market – 15 kg at 500/= per kg; previously Irish potatoes, beans	household plus hired women	Pests Obusimba ... –
									Sorghum; 20 Kgs from market at 200/= per kg; previously Irish potatoes, beans	household plus hired women	Too much sunshine ...
Kihira; ½ acre, valley bottom	20 min	20 min from other plots; neighbours are not related	hired from a friend, 1986, 45,000/=	crops	husband	Rirurukura – brown soil; Not all that fertile; floods during rains	trenches, (emifuhegye). dug by husband, 1986	sorghum; 20 Kgs from market at 200/= per kg; previously wheat, Irish potatoes	household plus hired women	Too much sunshine ...	
KR3a Wealth rank 3	Karambo; south facing, valley bottom, < ½ acre	5 min	3 min from other plot <missing info?>; neighbours are not related	got the land from her husband <read the story>	crops	herself	Clay mixed with sand; not fertile; flooding, no erosion	dug trenches with the farmers' group	sorghum and Irish potatoes from the clan group; previously beans, beans	herself and son	?

Female headed									Sweet potatoes (Kisozi) from relatives who were uprooting; previously the same	herself and son	?
KR3b Wealth rank 3 Male headed	Rushambo A; Middle slope; ½ acre	30 min	30 min from other plot; surrounding fields are owned by neighbours	inherited from parents 20 years ago	crops	house hold members	light and dusty (Orucucu) fertile at bottom, infertile at top; gullies but no floods – water from woodlot flows into his land at the top		beans from market – 4 kg at 500/= per kg; previously sweet potatoes, fallow	household members	The crops grow badly because of infertility of the land
									trees, planted long ago; previously sweet potatoes and fallow	himself	doing well
	Rushambo B; Middle slope; ½ acre	30 min	30 min from other plot; surrounding fields are owned by neighbours	inherited from parents 20 years ago	crops	himself	Enombe (hard soils); fairly fertile; No soil erosion and no floods		sorghum from previous harvest; previously beans, sorghum	household members	lack of rain ...
									sweet potatoes from their other garden; previously fallow, beans	household members	crops affected by too much sunshine
	Karambo (home plot); middle slope, 1½ acre	0	30 min from other plot; surrounding fields are owned by neighbours	inherited from parents 20 years ago	crops	house hold members	hard soils (Enombe); comparatively fertile; no erosion		sorghum from previous harvest; previously Irish potatoes, beans	household members	too much sunshine
									beans from market, 3 kg at 500/= per kg; previously fallow, sorghum	household members	pests...
								bananas and beans from market, 3 kg at 500/= per kg; previously bananas and tobacco, climbing beans	household members	pests ...	
								trees planted long ago	himself		

	Mukakiro; hilltop, 1 acre	20 min	20 min from other plot;	inherited from parents 20 years ago	trees	house hold members	Orucucu light and dusty soils; exhausted.(Kucukuka); no erosion because of trees	trees – no natural growth	trees – natural growth; previously millet, sorghum		
KR3c Wealth rank 3 Male headed	Kahungye; east facing, middle slope, ½ acre	120 min	father owns plots above and below; neighbours do not care about water trenches	inherited from his grandmother (before they were married)	crop	wife	Enombe; less fertile due to over cultivation; rills and gullies;	No soil conservation measures because the plot is situated in the middle of other people's plots who do not care about conservation	beans from market, cost 15,000/=; previously peas, sorghum	family, sisters and friend	20 kg; late planting; beans were affected by sunshine from mid April to July.
	Karambo; east facing middle slope, ½ acre	10 min	neighbours own surrounding plots	rented from a village mate, 2001, 50,000/= (he gave the man something like a mortgage)	crop	wife	Orucucu – sandy soil; very exhausted;	No conservation measures; she can not do anything on the land because it is not hers	sweet potatoes from her garden; previously sorghum, beans and peas	family	piecemeal for current consumption
	Karambo; south facing middle slope, < 1 acre	3 min	relatives own surrounding plots	purchased from a neighbour, 2002	trees	house hold	enombe, not fertile	planted eucalyptus trees	trees		

## HABUGARAMA

Name	Plot situation (slope position)	Distance from house	Relation with neighbouring plots	Acquisition - how, who and when.	Crop /fallow/ woodlot	Managed by	Soil type, erosion/ fertility	Soil conservation measures	Inputs used seed fertiliser manure etc.	Labour source and payment	Yield
H1a Wealth rank 1 Female headed	Bwiriri; valley bottom, 2 acres	60 min	n/a	inherited from husband's parents, 1961	crop	herself	black soil; fertile; some flooding; no erosion		beans from previous harvest; previously sorghum, sweet potatoes; too much sun	hired women	1 sack (100kg)
									sweet potatoes from other garden (?); previously sorghum, sweet potatoes.	hired women	
									sorghum from previous harvest; previously sweet potatoes, sorghum.	hired women	150kg
H1b Wealth rank 1 Male headed	Habugarama; middle slope; west facing; ¾ acre; 3 fields consolidated	20 min	Less than 1 km from other plots; neighbouring plot owned by brother who destroyed the hedges.	purchased from clan member / relative; 1997/8; 380,000/=	beans	wife	Enombe – clay soil; fertile, if sufficient rain	compost / animal manure; hedges at bottom	Beans – Kacwekano Nambale (80kg bought from Kabale, 32,000/=); intercrop – Orubingo; previous: sorghum, irish potatoes; Compost manure from his livestock	relatives / clansmen and women (paid); family	50kg harvested (20kg consumed prior to harvest); affected by witchdoctors (herbicide / medicine) and excess sunshine
	Nyabitabo; hilltop; south facing, 1 acre	10 min	15 min from other plots; surrounded by plots owned by clansmen	bought from clansman in 1987 for 150,000/=	fallow		Enombe and orucucu; not fertile – poor cultivation methods in the past, no hedges; erosion (not high: 13%) by heavy rain	manure			
	Karengutuko; hill slope facing south; 16 yards(?)	15-30 min	60 min from other plots; neighbouring plots owned by clansmen; problem with neighbour at the bottom – digging / soil erosion.	bought by H from stepbrother, 1999, 120,000/=	fallow	wife	Not good – akanombe / niritukura; not fertile (part black, part red); gullies / erosion – all dig at once, no contour hedges.		fallow; previously sorghum, potatoes, peas		



	Bushonga; hilltop facing north, ½ acre	15 min	< 1 min; surrounding plots owned by a clansman; people cut trees for charcoal / building	purchased from clansman, 1984, 60,000/=	Trees – Entusi and Burikoti	Husband	Brown soil; infertile (--> trees)					
	Karunya; valley bottom, north facing, 8 yards(?)	60 min	< 60 min; neighbours are relatives / clansmen; some destruction of boundaries leading to court action.	purchased from stepbrother, 1998, 80,000/=	sorghum	wife	Sand and stones mixed; more fertile at bottom than top; some erosion because it is steep and those higher up dig poorly.		Sorghum Kyatanombe, 15kg from market, 300/=; previously sweet potatoes, beans; too far to carry manure	clansmen / neighbours (paid)	100kg	
H2a	Kirwa I; valley bottom, south facing, 1 acre	60 min	30 min from other plots; surrounded by relatives	inherited from father, 1977	beans	Son	clay / sand mix; fertile, productive; liable to flood.	trenches dug in 1995 were not effective (everyone digs trenches)	Beans Kacwekano, 15kg from previous harvest; previously Irish potatoes, beans	family and hired labour	16kg	
Wealth rank 2	Kirwa II; middle slope, facing south; > 1 acre	60 min	30 min from other plots; surrounded by relatives	inherited from father, 1977	sorghum		clay / sand mix; fertile, on one side only; subject to erosion		sorghum, 30kg from previous harvest; maize intercrop; previously beans, sorghum; affected by the sun	family and hired labour; mutual labour	100kg sorghum; 30kg maize	
Female headed	Kirwa II; hilltop, facing south; < 1 acre	30 min	30 min from other plots; surrounded by relatives	inherited from father, 1977	woodlot	son	clay / sand mix; fertile; erosion where there are no trees	trenches dug by son				
	Kamwezi			purchased 460,000/=	fallow	children						
H2b	Habugarama; from hilltop to the bottom; 8 acres	3 min	3 min from other plots; surrounded by relatives and friends	part inherited in 1994, part purchased in 1996 (90,000/=)	trees for charcoal burning	husband	Orucucu – light sandy soil; not fertile (--> trees; no erosion)	tree planting	trees since 1996; previously fallow, sorghum; problems with thieves and livestock damage	family and hired men	150 sacks of charcoal per year plus some firewood	
Wealth rank 2	Mukabungo; valley bottom; ½ acre	10 min	10 min from other plots; surrounded by relatives and friends; near the path and so damaged by people leaving the path in the rainy season.	purchased from a clansman, 1991, 160,000/=	crops	husband	Murram like ("Otubale"); fertile	trench at top (new this year)	sorghum from previous harvest; previously sorghum, fallow; problem with excess sunshine	family and hired labour	3 baskets	
Male headed												

	Bwiriri; middle slope; 3.4 acre	30 min	30 min from other plots; surrounded by relatives and clansmen	rented from cousin for 20,000/= until December 2002	crops		Poor soils with stones down and enombe (hard soil) on top; not fertile – only suitable for sweet potatoes; erosion in rainy season (all neighbours grow crops at same time)		sweet potatoes from his garden	family and hired labour	3 sacks
	Kagugu; middle slope; ¼ acre	30 min	30 min from other plots	rented from cousin, 2002	crops		Brown hard soils (Enombe); infertile due to over cultivation; no erosion		Peas 15kg from market at 700/= each; previously sorghum, fallow;	family and hired labour	none; all dried up or destroyed by pests; 3 kg consumed previously
	Karengutuko; valley bottom, ½ acre	15 min	15 min from other plots; surrounded by relatives and others	purchased from clansman 1992, 20,000/=	crops		Orucucu – light soil; infertile because of over cultivation		Sorghum from previous harvest; Animal droppings (goats) are taken to the plot.	family and hired labour	3 baskets
	Kagyasha – Toooha; valley bottom; ½ acre	30 min	30 min from other plots; surrounded by relatives and clansmen	inherited from parents	crops	husband	waterlogged, infertile, no erosion	trenches were dug 5 years ago	sugar cane since 1995; stems from friends' gardens; previously sorghum, beans	family and hired labour	4 lorries per year (after theft, pests, diseases, excess sunshine); one lorry consumed before harvest
	Rwabihindu – Kashoga; middle slope; ½ acre	30 min	30 min from other plots; surrounded by relatives and clansmen; encroachment by neighbour	purchased from brother in law 1994 60,000/=	crops	husband	brown hard soils – enombe – with stones; rain passes through; not very fertile – only beans grow; much erosion because everyone grow crops at same time – no fallow to prevent erosion	elephant grass planted along terraces (not effective)	(sugar cane (??)) beans 40 kg from market at 500/= per kg; previously sorghum and maize, beans	family and hired labour	1 sack (100 kg); 50 kg consumed previously; too much sunshine
H3a Wealth rank 3 Female headed	Kagugo, middle slope, ¾ acre	15 min.	All owned by stepsons; no problems	purchased from step son c.25 years ago	beans, peas	herself	Orucuucu (murrum); lost fertility due to over cultivation; no erosion; floods at bottom		beans (12kg at 500/= per kg) from market; previously sorghum, beans	herself / hired labour	< 1 kg

									peas (10kg at 600/= per kg) from market; previously sweet potatoes, peas	Herself / family / hired labour	6kg!
	Kabindi 1; near the house; upper / middle slope; facing east; ½ acre	2 min	4 min from Kabindi 2; neighbouring plots owned by relatives	bought from a relative 50 years ago	beans, peas, Irish potatoes	family members	hard brown –Enombe; Soil fertility has lessened; crops are stunted; no erosion; floods at bottom; terraces	Rubbish (no manure available )	beans from market (1,200/=) formerly sorghum	Family / hired labour	37 kg
									Irish potatoes from her garden; previously sorghum	Family / hired labour	2 sacks
									peas from market (1,200/=) formerly sorghum	herself / hired labour	18kg
	Kabindi 2; gentle slope near hill top; facing west; < ½ acre	4 min	A few metres from Kabindi 1; neighbouring plots owned by relatives	bought from someone who was migrating, 23 years ago.	sorghum	herself	Light soils, “Orucucu” and one side, the soil is mixed with stones; lost fertility; no erosion; floods at bottom; terraces	Rubbish	sorghum from previous harvest, previously potatoes	herself / hired labour	2.2 sacks
H3b Wealth rank 3 Male headed	Habugarama: the whole hill: west facing: > 3 acres	N.R.	The farmer has one consolidated piece of land. Neighbouring plots owned by ‘village mates’; no problems.	Purchased by H from Lt Kateba, 1946; paid cash in full; friends and family involved.	Sorghum, Irish potatoes, beans	House hold member	Enombe: no erosion; the soil is fertile because formerly, it was a compound- it had enough time to rest.	?	Beans, 10kg from previous harvest (previously peas, Irish potatoes); animal waste and rubbish	Family / hired labour	100 kg
									Sorghum 5kg from previous harvest (previously Irish potatoes); animal waste and rubbish	Family / hired labour	200kg
									Irish potatoes (with beans) ½ sack from previous harvest (previously peas, wheat); manure	Family / hired labour	3 ½ sacks
	Okukwata – 8 plots?	Kyogo				Rented to George a neighbour freely			Potatoes, sorghum		

## KAGYERA

Name	Plot situation (slope position)	Distance from house	Relation with neighbouring plots	Acquisition-how, who and when.	Crop /fallow/ woodlot	Managed by	Soil erosion/ type, fertility	Soil conservation measures	Inputs used seed fertilise manure etc.	Labour source and payment	Yield
K1 Wealth rank 1  Male head	Kitojo land near the lake; valley bottom; 3 plans	60 min	60 min from other plots; surrounding plots are owned by relatives	purchased from a friend, 1992, 400,000/=	crop	household	black soils (eriragura); fertile but with deposition of soil eroded from the hill above; floods in rainy season	husband and wife have dug trenches, as have their neighbours	beans from previous harvest	household members	200 kgs; 30 kg consumed before; some theft
	Kitojo land; middle slope; ¼ acre	90 min	1 min from other plots; surrounding plots are owned by relatives and others	purchased in 1993 for 80,000/=; the vendor was not a relation	crop	household	enombe; somehow fertile; no erosion		sorghum from previous harvest; previously beans, fallow	hired men	too much sunshine
	Mikibungo; hilltop ½ acre	90 min	1 min from other plots; surrounding plots are owned by relatives and others	inherited from parents in 1986	fallow	household	orucucu; infertile (-> fallow)				
	Kitojo land; valley bottom; ¼ acre	60 min	surrounding plots are owned by relatives	purchased from a friend 1993 40,000/=	crops	household	black soil (eririgina); fertile but with deposition of soil eroded from the hill above; floods in rainy season; stagnant water	husband and wife have dug trenches, as have their neighbours	beans from previous harvest and purchased (15 kg @ 50 = 7,500/= (sic)); previously maize, beans	household members and hired labour	the plot is affected by erosion and pests like aphids
	Kitojo Hanergo; middle slope; ¼ acre	60 min	1 min from other plots; surrounding plots are owned by relatives and others	purchased 1993 100,000/=	crops	household	Rijwagize le Rivatulana ladi Rivegagura; a bit fertile		beans from previous harvest; previously sorghum, fallow	hired labour	too much sun
	Mwitongo; middle slope; ¼ acre	10 min	surrounding plots are owned by relatives	purchased 1985	crops	household	Murram (amabare); erosion in rains due to slope of hillside		sorghum from previous harvest; previously beans, fallow	household members and hired labour	too much sun
	Mumuinga, valley bottom, ½ acre	5 min	surrounding plots are owned by relatives and others	inherited from parents, 1986	trees	household	Black soil (Rineragma); infertile (--> trees)		trees since 1984		

	Munengo; middle slope; ¼ acre	60 min	surrounding plots are owned by relatives and clan members	inherited from parents, 1989	crops	sister (rented)	Light soil (Orucucu); fertile but low productivity; erosion in rainy season (in hilly area)		beans		
K2 a Wealth rank 2 Male headed	Kigarama; upper slope; facing east; big enough to plant 20 kg of beans	30 min	surrounding plots are owned by father and village mate	purchased from a village mate, 2002 for 200,000/=	crops	wife	sandy soil – orucucu; parts Ok, parts less fertile; soil exhaustion due to overcropping	Manure (animal waste); water trenches and trees	millet from market (3 kg at 500/=); previously beans and peas, fallow	wife with hired labour	80 kg
	Kagyera; middle slope facing east; ½ acre	1 min	surrounding plots are owned by relatives; neighbours' animals destroy crops; children steal	inherited from father, 2000	crops	wife	mixed sand and black soil (Orucucu enombe); average fertility; rills and gullies	Animal waste; trench and water pond	Beans – misingiriro; from market, 3kg @ 500/=; previously Irish potatoes and fallow	husband and wife	15 kg
									Irish potatoes – victoria; 3 tins (about 30 kg) at 4,000/= each; previously maize and beans, sweet potato	wife and one hired woman	1½ sack (150 kg)
	Rwentongo; valley bottom, facing east, 1½ acres	60 min	10 min from other plots; surrounding plots are owned by relatives	inherited by wife from father-in-law on marriage	crops	wife	Enombe; fertile; rills due to heavy rains	Katikankingo	Beans – Kacwekano from the group; previously sorghum, fallow	wife, hired labour, labour group	150 kg (1½ sacks)
	Rwentongo; middle slope, 1 acre		surrounding plots are owned by relatives and a neighbour	inherited from father, 2001	crops	wife	Enombe; still fertile; no erosion but floods because plot above is fallow (sic)		sweet potatoes; stems from her garden; previously peas, fallow	wife with one hired woman	
	Kagyera; middle slope facing east; 1½ acres	1 min	1 min; surrounding plots are owned by relatives	purchased from father for 50,000/= 2002	crops	wife	Orucucu; exhausted; no erosion; theft due to being near road	manure; katitankingo	Wheat – kinhibe – from previous harvest; previously Irish potatoes, fallow	wife, hired labour	30 kg
	Mumuengyere; hilltop	120 min		rented from mother-in-law; 10,000/= for one season	crops	wife	Orucucu; fertile; no erosion or floods		peas from previous harvest; previously millet	wife with hired labour	15 kg; affected by prolonged sunshine after germinating.
	Kagyera; west facing upper slope	20 min	surrounded by relatives	purchased from uncle, 2002, for 60,000/=	trees		Enombe				

K2b Wealth rank 2 Female headed	Ryakwizire; hilltop; ½ acre	20 min	20 min from other plots; surrounding plots are owned by relatives and neighbours	purchased from a man of Rutare 23 years ago. 15,000/=	crop	herself	Enombe (hard soil); poor soil, over cultivated; erosion and gullies	katikankingo (natural terrace) made by previous owner	Wheat from previous harvest; previously peas, sorghum	household members	50kg; too much sun
	Murahanga Ryakwizire; valley bottom; ¼ acre	20-30 min	20-30 min from other plots; surrounding plots are owned by relatives and neighbours	purchased from stepbrother, 1990s. 20,000/=	crop	herself	Enombe (hard soil); lost fertility through erosion; many gullies and rills		sorghum from previous harvest; previously beans, sorghum	household members	130 kg; too much sun
	Mubende; valley bottom; ¼ acre	40 min	40 min from other plots; surrounding plots are owned by relatives and neighbours	purchased from stepbrother, 23 years ago. 8,000/=	crop	herself	Orucucu (light soil); lost fertility through erosion and floods; now only stones;		beans from previous harvest; previously sorghum, beans	household members	30 kg; pests due to too much sunshine
	Mukibungo Kigarama; hilltop; ½ acre	40 min	40 min from other plots; surrounding plots are owned by neighbours	purchased from 2 people not related; 30,000/= + 100,000/=	crop (woodlot)	herself	Orucucu na mabale (light soil and stones); poor soil – no crops grown	trees planted on upper part to reduce erosion by herself one year ago	trees from the wild; previously millet	son	people grazing in the woodlot
	Hakanikamo; middle slope; ¾ acre	5 min	5 min from other plots; surrounding plots are owned by relatives	inherited 23 years ago from parents	crop	herself	Orucucu (light soil); lost fertility through erosion due to runoff from houses	katikankingo made by herself when she first used the land	sorghum from previous harvest; previously maize, sorghum	household members	100 kg; too much sun
	Hanombe; middle slope	10 min	10 min from other plots; surrounding plots are owned by relatives	inherited from parents	crop	herself	Enombe (hard soil); much erosion due to runoff from houses; plants do not grow well		beans from previous harvest; previously sorghum, peas	household members and 2 women who came to help her just	90 kg; too much sun
	Hakyempuni; hilltop; ½ acre	20 min	20 min from other plots; surrounding plots are owned by relatives	bought from stepbrother 4 years ago for 70,000/=	crop	household members	Enombe (hard soil); some crops (sorghum) grow better than others (beans); too much erosion due to exposed hilltop position		sorghum from previous harvest; previously sweet potatoes, beans	household members	180 kg; too much sun

K3a Wealth rank 3 Male head	Kagyera; middle slope; east facing; ½ acre	5 min	3 min from other plot; surrounding plots are owned by relatives; there was competition for this fertile plot from outside but grandmother wanted Julius to have it.	bought for him by his grandmother, 2000, for 100,000/=	crops	wife	One side enombe, the other side orucucu. The soil has lost fertility, more so on the orucucu side; rills and gullies due to lack of katikangingo	She puts on animal waste and rubbish; during weeding, stacks weeds at top and bottom of plot as a water barrier.	sweet potatoes, 10 bundles from the sweet potato garden; formerly sorghum, peas	Wife with hired labour	> 4 sacks
	Kagyera; valley bottom towards the middle slope; west facing; 1 acre	10 min	3 min from other plot; surrounding plots are owned by relatives owner of plot above refused to conserve his soil, causing erosion problem	inherited from father, 1999	crop	wife	enombe, still fertile; rills, gullies from being on the slope		sorghum, 10kg from previous harvest; previously fallow, sorghum	Husband, wife	2 sacks; reduced by prolonged sunshine and animal grazing
	Rwanyana; hilltop, north facing ¼ acre	120 min	30 min from other plot; surrounding plots are owned by just neighbours; sometimes the neighbours encroach on the plot	bought from village mate, in 2000, for 50,000/=	crops	wife	black soil – orucucu; still fertile and productive; very flat and susceptible to flooding		millet, 2 kg from the market at 1,000/= per kg; formerly wheat, Irish potatoes	wife with one hired woman	6 kg; lost some by animals grazing on the flowers
	Rwanyana; hilltop, east facing ¾ acre	180 min	There is no other plot; father owns the plot above, other neighbours are local people	rented from father in 2001 at no cost	crops	wife	enombe – exhausted soil; no erosion on hilltop	too far from home to work on improving fertility	beans from labour group;	wife and hired women	7 kg; 3kg consumed before; affected by weather, sunshine, pests, diseases and animals (being far away)
	Rwanyana, ½ acre, middle slope, east facing	180 min	30 min from other plot; surrounding plots owned by father and unknown neighbours	inherited from father	crops	wife	enombe, fertile		sweet potatoes		

K3b Wealth rank 3 Male head	Kagyera; middle slope, east facing ½ acre	10 min	10 min from other plot; surrounding plots are owned by relatives	inherited from father, 2002	crops	husband and wife	Orucucu – exhausted; rills, gullies; ridges sometimes washed away	animal waste and rubbish; ridges planted with elephant grass	beans – kakwekano, mamesha, kilmura; from previous harvest and from group to refund after harvest; formerly sorghum, beans	husband, sisters, women from the labour group, hired women	60 kg; affected by erosion, pests, diseases, prolonged sunshine
									Irish potatoes intercropped with banana plants – ½ basket (5 kg) from previous harvest; previously beans and maize, beans	husband and wife	pests weather, sunshine; crop dried and was abandoned
	Kagyera, ¼ acre, east facing valley bottom, part swamp	15 min	5 min from other plot; neighbours are all relatives; plots separated by trees	purchased for 70,000/= in 1993 from grandfather	crops	husband	Orucucu in upper part, exhausted; enombe mixed with clay (Gibumba) near the swamp, still fertile; rills due to poor farming methods – digging from top to bottom of the slope without a field in the middle	weeds are put on the upper part to help regain fertility; water trenches on the bottom to prevent flooding	sorghum – kyatanombe, engufu, kanyeyerere, 10kg from previous harvest; previously beans, fallow	husband and wife with hired labour	2 sacks
	Kigarama; 1 acre, north facing middle slope	120 min	120 min from other plot; surrounding plots are owned by neighbours; destruction of boundaries, crops, tree by grazing animals	rented for one year, 20,000/=	crops	husband and wife	alkanombe above, somehow fertile below; erosion from lack of trenches		beans from the savings group; previously sorghum, beans	self help group; a group that works for money; hired women	1 sack; affected by prolonged sunshine