ECONOMIC AND SOCIAL RESEARCH FOUNDATION (ESRF)

The Impact of HIV/AIDS on Food Poverty in Rural Tanzania: The Case of Ludewa District

Final Draft

Submitted to the International Labour Organization (ILO) and United Nations Development Programme (UNDP)

May 2004

Table of Contents

LIST OF TABLES

RESEARCH TEAM

The International Labour Organization (ILO) in collaboration with United Nations Development Program (UNDP), commissioned the Economic and Social Research Foundation (ESRF) to undertake a study on ***"The Impacts of HIV/AIDS on Food Poverty in Ludewa District."*** The research team comprised of 4 Researchers. In addition, 8 Research Assistants were recruited for fieldwork. The core research team was comprised of:

Dr Oswald Mashindano
Senior Research Fellow, Economic and Social Research Foundation.

Dr Flora Kessy
Research Fellow, Economic and Social Research Foundation.

Dr Peter Mamiro
Researcher, Sokoine University of Agriculture, Morogoro.

Ms Rose Aiko
Research Assistant, Economic and Social Research Foundation.

ACKNOWLEDGEMENTS

The Research Team is extremely grateful to ILO and UNDP for financial support to undertake this important study.

We would also like to extend out sincere gratitude to all the respondents from the households, and Non-Governmental Organizations, sampled in the study area. The research team also acknowledges receipt of valuable data and information from the Ludewa District Officials such as District HIV/AIDS Coordinator, District Administrative Secretary, District Agriculture and Livestock Development Officer, and District Community Development Officer.

Acknowledge must also be made for the field assistance received from the following research assistants: Monica Kimaro, Joyceline Mkilima, Karolius Misungwi, Jonathan Mpuya, Gladness Amulike, Jolly Wapalila, Nuru Kaoza, and Isabella Mgimba. Lastly, we would like to thank Mr John Kajiba and his team of two Research Assistants for facilitating data entry and organization.

LIST OF ACRONYMS

ACC	-	Administrative Committee on Coordination
AIDS	-	Acquired Immune Deficiency Syndrome
ARV	-	Anti Retroviral Therapy
ASPS	-	Agricultural Sector Program Support
BNPL	-	Basic Needs Poverty Line
CBN	-	Cost of Basic Needs
CBHC	-	Community Based Health Care
CBO	-	Community Based Organization
CEDPA	-	Centre for Development and Population Activities
CCS	-	Christian Community Services
ESRF	-	Economic and Social Research Foundation
FABAHECA	-	Family Based Health Care
FANR	-	Food, Agriculture and Natural Resources
FAO	-	Food and Agriculture Organization
FP	-	Food Poverty
FPL	-	Food Poverty Line
HIV	-	Human Immunodeficiency Virus
HPAs	-	High Prevalence Areas
IDYDC	-	Iringa Development of Youth, Disabled, and Children Care
IFPRI	-	International Food Policy Research Institute
ILO	-	International Labour Organization
LECAPOA	-	Ludewa Environmental Conservation and Poverty Alleviation
LGAs	-	Local Government Authorities
LPAs	-	Low Prevalence Areas
LU	-	Labour Unit
LUDEA	-	Lusala Development Association
LUYOSO	-	Lupanga Youth Society
MDAs	-	Ministries, Departments and Agencies
MISO	-	Milo Sayuni Orphanage
MLADEA	-	Mlangali Development Association
MoH	-	Ministry of Health
MTP	-	Medium Term Plan
NAPC	-	National AIDS Control Program
NDMU	-	National Disaster Management Unit
NGOs	-	Non-Governmental Organizations
NMSF	-	National Multi Sectoral Strategic Framework
PLWHAs	-	People Living with HIV/AIDS
PRSP	-	Poverty Reduction Strategy Paper
RTI	-	Research Triangle Institute
RVAC	-	Regional Vulnerability Assessment Committee

SADC	-	Southern African Development Community
SCN	-	Sub Committee on Nutrition
SIDA	-	Swedish International Development Agency
STIs	-	Sexual Transmitted Infections
TACAIDS	-	Tanzania Commission for AIDS
TB	-	Tuberculosis
TBA	-	Traditional Birth Attendant
TZS	-	Tanzanian Shilling
UNAIDS	-	Joint United Nations Program on HIV/AIDS
UNDP	-	United Nations Development Program
UNICEF	-	United Nations Children Fund
UNU	-	United Nations University
URT	-	United Republic of Tanzania
UVIKI	-	*Umoja wa Vijana wa Kikristo Kanisa la Anglikana*
VAC	-	Vulnerability Assessment Committee
VCT	-	Voluntary Counselling and Testing
VSHP	-	Voluntary Sector Health Program
WHO	-	World Health Organization

EXECUTIVE SUMMARY

This study set out to examine the impact of HIV/AIDS on household food security situation in Ludewa District in Tanzania. Specifically the study intended to establish the impact of HIV/AIDS on the pillars of food security i.e. food availability and accessibility; investigate the cereal gap resulting from reduced productive labour, reduced remittances, and increased expenditure on HIV/AIDS related problems; explore the changes in sources of labour and labour utilisation patterns in securing household livelihoods and their implication to the overall welfare of the household; document any anti poverty and/or anti HIV/AIDS interventions implemented in Ludewa Districts and examine the effectiveness of these interventions and actions in addressing food security issues; and finally, look on the coordination of various anti poverty and HIV/AIDS mitigation in the district and comment on the effectiveness of the coordination in terms of optimal use of resources and avoidance of duplication of efforts.

The study findings revealed that HIV/AIDS related variable have had significant negative impact on the pillars of food security in Ludewa. More than 90% of the households that were surveyed depend on farming as their main source of food. Food availability is reduced because of the loss of time that would have been spent on productive farming activities, due to own illness, taking care of the sick and attending funeral.

The aggregate labour (economically active population) defined according to their potential labour contribution to the farm household i.e. man equivalent labour units, constitute 69 percent of the total population. The sampled households' labour units are estimated at 2.7 per household. The economically active age group 16 and 65 years, represents 69 percent of all household members in the total sample. Economically non active segment of the population therefore consists of 31 percent of the total population, most of which are young people particularly children below 10 years of age and old people above 65 years.

The overall mean household consumer unit is given as 4.0. The district dependence (Worker – Consumer) ratio using aggregate labour and consumer units are 0.69, implying that every labour unit, individual capable of working fulltime 8 hours a day in Ludewa district supports 1.5 consumption units. Dependence ratio in Ludewa district may be even higher than 1.5 given acknowledged weaknesses of the approach used to compute the ratio. Nevertheless, the findings reflect the importance of household labour in agriculture and therefore food security and poverty reduction in the rural areas. The higher the dependence ratio, the lower the family labour available for undertaking agricultural related activities aiming at producing food as well as cash crops.

HIV/AIDS pandemic in Ludewa district has affected the performance of agricultural activities in different ways. The potential labour force in the sector has generally lost the ability to perform agricultural activities following loss of man-days due to long illness, death,

time spent to cope with the pandemic. One of the coping mechanisms common in the study area is to deplete the wealth and/or assets accumulated by most farming households, both in terms of cash as well as physical assets. These measures while effective in sustaining the households in the short run, in the long run they significantly curtail the amount of investments going into economic activities and development of human capabilities.

Labour productivity measured through indicators such as chronic sickness or death of members of the households and loss of working man-days (or simply, loss of labour) has been affected negatively. Lost labour due to HIV/AIDS is measured in terms of duration individuals could not work because of illness within 30 days (one month) prior to the present field survey; time spent visiting HIV/AIDS ill persons within 30 days prior to the field survey; time spent on attending a HIV/AIDS patient within the last 30 days (in hours) prior to this survey; time taken to attend a funeral of an AIDS death within the last one year. Table 4.6 presents the findings on the loss of man-days due to HIV/AIDS.

The findings show that, within 30 days prior to the survey duration of HIV/AIDS illness covered a total of 966 man-days out of which 877 man-days were total loss equivalent to loss of labour force of approximately 12.5 households.

Note also that within 30 days prior to the survey a total of 579.9 man-days were used to attend and/or care for HIV/AIDS patients, 593 man-days were spent for funerals of AIDS related deaths in the last one year while 383.3 man days were used to visit the HIV/AIDS sick persons. In terms of household labour productivity this is respectively equivalent to 15.5 households losing total available labour force due to time spent to attend the HIV/AIDS patients in the last one month; 16.94 households' loss of the total available labour force, due to time spent to attend funerals of an AIDS death in the last one year; and 11 households' loss of the total available labour force for productive activities due to time spent to visit HIV/AIDS sick persons. Taken together, 20 percent of the surveyed households could not undertake their economic activities due to various circumstances posed by having HIV/AIDS ill people in or outside the households. Furthermore the death of household members also had a significant toll on household potential labour force. Deaths in the households in the last one-year robed the surveyed households labour units equivalent to a loss of labour force for 13.85 households in the last one year.

These findings are alarming and therefore call for urgent corrective measures. Ludewa district is primarily agriculture dependent, and in Tanzania agriculture is a labour intensive economic activity particularly for smallholder farmers in rural areas. Depletion of productive potential due to illness, taking care of the sick and eventual death of household members poses a challenge for poverty reduction efforts. Agriculture accounts for close to 50 percent of GDP, and is also still contributing to a large share of foreign exchange earnings.

Because most households produce for subsistence and depend almost entirely on their farm produce for food, the result of a reduction in farm output is an increase in the cereal gap (difference between harvests and sales of household crops). From the projections made based on the average value of food left after selling, each household is estimated to remain with an average of 613 Kg of cereal per year for consumption. This is translated to 125 Kg. Per year per capita. Thus each household member was estimated to have only about 343 gm of cereals per person per day. The average cereal Gap was found to be 357-gm/person/per day without HIV/AIDS. This shows that even before accounting for the negative impact of HIV/AIDS the amount of food available in the households for each individual member is extremely below what is recommended by both the food and nutrition centre and FAO/WHO/UNU and worsens with HIV/AIDS. They recommend food requirements to be 700gm/person per day and 600-gm/person per day respectively.

The increase in expenditure on illness and funerals further aggravates the situation and households are forced to sale some of their household assets to finance these expenditures. Increase in these expenditures also result in decrease in investment in agriculture, and thus decreases agricultural production, and as a corollary decreases food availability and income. Due to the reduced family labour, which is the major source of labour in the household farms, households with HIV/AIDS cases are forced to reduce the amount of land under cultivation, or change the farming system to one that they can easily manage. Because most households have small plots, it is not very common for them to change the type of farming system; instead there is a tendency to reduce the size of farm under cultivation if the resources for investment and labour available fall drastically. The decrease in investment in economic activities and the reduced labour participation lead to reduction in incomes and therefore purchasing power of households.

While there have been a number of interventions designed by the government and other stakeholders in mitigating the impact of HIV/AIDS, the pandemic is still a threat that needs to be redressed effectively. HIV/AIDS and poverty are complex and intertwines problems but the outreach of the current initiatives is very limited. The current interventions by the government NGOs and religious organisations include: support to orphans and widows and youths; setting and financing budgets for HIV/AIDS campaigns, establishing HIV/AIDS programs, counselling and testing services. At the community level the interventions include setting of by laws, formation of village/ward HIV/AIDS committees, social and economic arrangements to support orphans, and socio-economic arrangements to support each other during funerals.

These efforts, according to the responses of district authorities and village/ward elders are much better coordinated now within the framework of the Joint Umbrella Committee than it was in the past. CARE International is particularly commended for assisting in coordination of these HIV/AIDS related activities and other health related activities as well. CARE formed a Voluntary Sector Health Program (VSHP) which concentrates on safe delivery

motherhood; maternal and child health services, and HIV/AIDS support, which the Joint Umbrella Committee of NGOs in the area oversees. This has reduced duplication of activities and concentration of NGOs in one area, while increasing cooperation among the NGOs in undertaking activities that augment each other efforts. The level of transparency among the NGOs has also increased, thus further enhancing their accountability to their stakeholders

Despite good coordination of the efforts, only about 24 percent of the households indicated that they have access to one or another form of social support for widows, orphans and/or the elderly operated by the NGO community. The rest majority of the respondents either did not have access to the support/or were not at all sure whether such support existed anywhere within their community. This could be due to the financial constraints aced by these institutions that in turn affect the extent of their outreach efforts. Due to the limited support available from NGOs and other institutions, the coping mechanisms employed by households are largely family based and include sale of household assets, sale of farm produce, borrowing and requesting support, taking children out of school, acquiring or relocating labour and reducing the number of working hours. All these point to the need to widen the outreach of both HIV/AIDS prevention and impact mitigation campaigns. It further stresses the need to ensure that mitigation campaigns incorporate efforts to empower households economically so as to improve their sources of livelihoods and increasing social support/safety nets for the poor.

1.0 INTRODUCTION

1.1 Background and Rationale

A number of attempts have been made to define and clarify dimensions and the key features of Food Security, and Poverty. The World Bank (1986) in Makundi (1996) defines food security as *access by all people at all times to enough food for an active and healthy life*. Its essential elements are said to be food availability, adequacy, stability (sustainability of food supply) and accessibility. While food availability is referred to as sufficient production or imports to meet the food needs of the population, food access refers to the ability of people to obtain food. In addition, food stability refers to the sustainability of the food supplies. The World Bank (2000) emphasizes another component named food utilization, a component related to the nutrients intake. While food security is associated with food consumption, nutrition security refers to the adequacy of the diet and/or nutritional intake as measured by body size and shape and the mortality rate (World Bank, 2000).

In the attempts to define poverty many authors feel secure to associate it with the causes or manifestations of poverty. This is because of the complexity and multi-dimensions of poverty. Thus, one can hardly find it defined uniquely (Likwelile, 2000). Indeed there are variations and/or different views on how poverty should be defined and what it means to be poor. Poverty is caused by lack of adequate resources and capabilities to acquire basic needs. This problem has tended to increase food insecurity including malnutrition, ignorance, and prevalence of diseases, squalid surroundings, high infant, child and maternal mortality, among other effects. However, the most commonly used definition emphasizes the income dimension of poverty because all the manifestations listed earlier, for instance, food insecurity and malnutrition, are translated through inadequate income flow. In other words, income is regarded as a relevant welfare indicator and therefore poverty occurs when one is *unable to attain a minimum standard of living*. Following this definition it is more or less conventional to measure poverty by income or expenditure level that can sustain a bare minimum standard of living (Msambichaka, et al., 2003).

The multi-dimensional characteristics of poverty has prompted scholars to the construction of two poverty lines namely Food Expenditure Poverty Line and Basic Needs Poverty Line. Food Expenditure Poverty Line is associated with expenditure on food (consumption) and/or Food Poverty, which is generally defined as a condition of lacking the resources necessary to acquire a nutritionally adequate diet. The Food Poverty Line is therefore the minimum amount of food an individual must consume to stay healthy. The Food Poverty Line is the estimated cost of acquiring the recommended calorie and/or nutritional requirements. The Basic Needs Poverty Line is related to the Basic Needs Poverty, which specifies a consumption bundle deemed to be adequate for basic consumption needs, and then estimates its cost for each of subgroups being compared in the poverty profile. It defines the minimum

nutritional requirement, which is converted into minimum food expenses, to which some considered minimum non-food expenditure is added.

The minimum cost of living that specifies consumption bundle deemed to be adequate for basic consumption needs is considered as a poverty line based on cost of basic needs (CBN). Note that, while food expenditure poverty line considers only food items, the CBN approach goes beyond that to incorporate non food items such as education, clothing materials and income.

Nationally, there has been a modest decline of about 3 percentage points in food poverty over the last decade. In addition, due to ongoing poverty reduction measures, the proportion of rural population who are food poor has decreased from 23.1 percent in 1991/92 to 20.4 percent in 2000/01 (URT, 2002). Nevertheless, these achievements could be reversed if the spread of HIV is not halted. HIV/AIDS epidemic has rapidly been spreading to rural areas in Tanzania and hence crippling the livelihood systems in those communities. The pandemic is continuously affecting human health and threatening social and economical development in both rural and urban centres in developing countries (UNDP/FAO, 2002). This is mainly due to the fact that the epidemic results in increase in morbidity (illness) and mortality (death), particularly among productive adults and children who will be the next productive group. Growing links between rural and urban areas through trade links and large government projects taking place within rural communities/settlements such as improved transportation networks, mining activities and migration appear to be important conduits for the spread of infection (Brown, 1990; Mohamed, 2003).

The agricultural sector that is the pillar of food security in many rural communities has been hit just like the other sectors of the economy. A study by ESRF (2004) on the impact of HIV/AIDS on agricultural performance in Ulanga and Kilombero districts reveals that the death in the household and time taken to take care of HIV/AIDS related problems have negatively impacted on agricultural productivity. Duration of HIV/AIDS related illness covered a total of 479 man-days, which were equivalent to a loss of agricultural labour force of 20 farming households. Putting it differently, 20 farming households could not attend their farming activities at all in the last 6 months prior to the survey due to illnesses related to HIV/AIDS pandemic. Further, a total of 533 man-days were used to attend and/or care for HIV/AIDS patients. This is equivalent to a loss of productive labour force of 23 households in 6 months.

Thus, there is an imperative need to establish the link between household food security in rural Tanzania as the pandemic continues to encroach those areas so as to inform the poverty reduction process. It is worth noting that some rural households have experienced several weather and pest related shocks that have traumatized the pillars of food security. However, as Baylies 2002 noted, HIV/AIDS can on one hand be treated in its own right as a shock to

household food security, but on the other it has such distinct effects that it is a shock like none other.

1.2 The Objectives of the Study

The broad objective of this study is to determine the impact of HIV/AIDS on household food security in Ludewa District, Tanzania.

Specifically, this study intends to:

(a) Establish the impact of HIV/AIDS on the pillars of food security, specifically food availability, and food accessibility.

(b) Investigate the cereal gap resulting from reduced productive labour, reduced remittances, and increased expenditure on HIV/AIDS related problems.

(c) Explore the changes in sources of labour and labour utilization patterns in securing livelihood and their implication to the overall welfare of the household.

(d) Document any anti-poverty and/or anti-HIV/AIDS interventions implemented in the district and examine the effectiveness of these interventions in addressing food security issues.

(e) Look on the coordination of various interventions and actions in anti-poverty and HIV/AIDS in the district and how effective the coordination have been in terms of optimal use of resources and avoidance of duplication.

1.3 Theoretical Framework

Food poverty is one aspect of poverty that has been affected by HIV/AIDS. It is commonly agreed that HIV and AIDS have contributed to the depth of food insecurity especially of rural households as it affects the three pillars of food security, that is, food availability, food accessibility, and food stability through variables such as household agricultural production, income and expenditures. Income earned from both on-farm activities allows households to access food through exchange entitlement as differentiated from direct food production (production entitlement). HIV/AIDS has direct and negative effects on households' production and exchange entitlements by decreasing the quantity, quality, and stability of agricultural production and income earning activities.

Regarding quantity, HIV/AIDS affected households have less working members in relation to non-working members. Productive working hours among caregivers is reduced as they divert time away from income earning activities to care for ill household members. HIV/AIDS

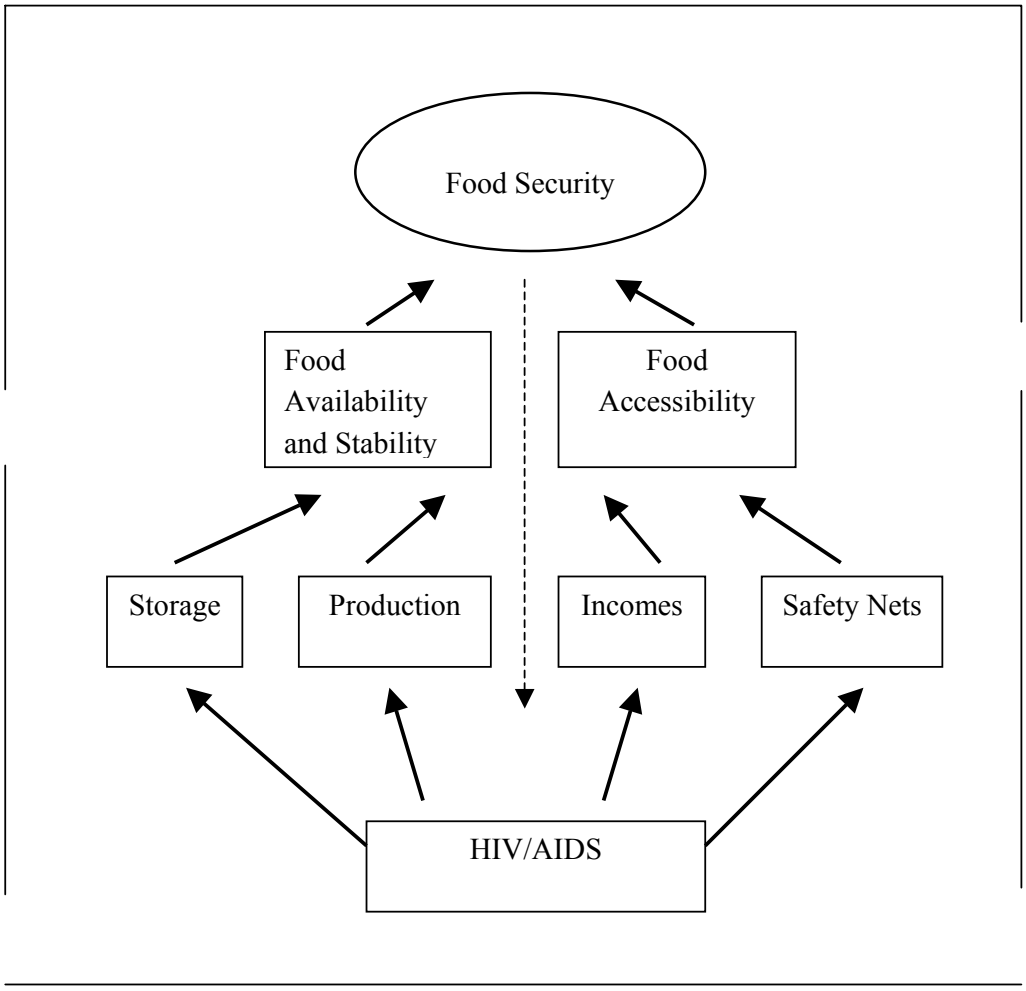
affected households also experience reduction in economic returns per unit of labour referred to as quality of labour. Quality of agricultural produce is also affected due to decreased labour supply and when households opt to cultivate less labour intensive and less nutritious crops. Stability of income sources that refers to the reliability of any given income source is also affected. HIV/AIDS affected households need to rely on children and elderly for a greater proportion of their income. On food stability, households have to deplete their food storage in order to carter for the sick.

Poverty is associated with weak endowments of human and financial resources, such as low levels of education associated with low levels of literacy and marketable skills, inadequate housing, generally poor health status, absence of assets, insufficient command over commodities (low income), low social status and dignity. Consequently, the poor face double jeopardy, as they are already vulnerable and HIV/AIDS adds to the deprivation. The household is caught in a bind of needing more resources and at the time when the production capacity of the household is low. While richer households may be able to meet the increased expenditure on medical costs and reduced labour income, poorer households may apply other strategies that may exacerbate the situation, for instance, selling of productive assets.

There is evidence that HIV/AIDS has pushed some non-poor households to absolute poverty, especially when the breadwinner dies and the laws and regulations do not exist or operate in favour of the survivors (Barnett and Whiteside, 2002). On the other hand, poverty has perpetuated the spread of the virus as exemplified with data from commercial sex workers. Thus, poverty and HIV/AIDS are interdependent with double causation meaning, while poverty is an important factor in spreading the deadly virus, HIV/AIDS also causes and/or intensifies the spread of poverty. On the same thinking, the linkages between HIV/AIDS and food security are bi-directional, that is, HIV/AIDS is a determining factor of food insecurity as well the consequence of food and nutrition insecurity[1]. However, this study focuses on the direction specified by bold arrows only (Figure 1.1)

[1] HIV/AIDS and malnutrition often operate in tandem. Poor nutrition increases the risk and progression of diseases. In turn, diseases exacerbate malnutrition. However exploration of the impact of HIV/AIDS on nutritional security is beyond the scope of this study.

Figure 1.1: Analytical Framework



This study has identified various economic and social variables through which the HIV/AIDS pandemic impacts one aspect of households' welfare, that is, household food security (Figure 1.1).[2]

For example, HIV/AIDS has a severe impact on household economic performance through declining agricultural productivity, which is an outcome of reduced man-hours and capital resources allocated for production caused by HIV/AIDS mortality and morbidity. Following HIV/AIDS pandemic, more time and financial resources are spent to take care of the sick and seeking for medical services thus reducing the purchasing power of the affected households and infected individuals. In addition, stored food and community safety nets are depleted as households' and communities struggle to cope with medical expenses and funeral costs.

[2] In this report, Food Poverty and Food Insecurity are used Interchangeably.

2.0 LITERATURE SURVEY: CHALLENGES OF HIV/AIDS ON FOOD SECURITY

2.1 Epidemiological Situation of HIV/AIDS

HIV/AIDS is a disaster that is currently challenging humanity. It claimed more than 3 million (2.5 – 3.5 million) lives in 2003, and an estimated 5 million (4.2 – 5.8 million) people acquired HIV in 2003 bringing to about 40 million (34 - 46 million) the number of people globally living with the virus (UNAIDS, 2003)[3]. It is estimated that about 25-28 million of people living with HIV/AIDS (PLWHAs) are residing in Sub-Saharan Africa.

The Tanzania Government Poverty Reduction Strategy Paper cites HIV/AIDS as one of the impoverishing forces that leads to poverty (URT, 2000). This is so because HIV main mode of transmission targets the main segment of the productive and reproductive sector of the population, that is, those who are aged between 14- 45 years. Estimates for Tanzania using blood donors for the year 2002 reveal that a total of 1.9 million individuals aged 15 years and above are living with HIV/AIDS (about 790,000 males and 1.1 million females) [URT, 2003a]. Contrary to the previous years where increasing or static prevalence estimates have been noted for both sexes, during 2002 there has been a decrease in prevalence. For female, prevalence decreased from 13.7 percent to 12.3 percent for years 2001 and 2002 respectively. The corresponding figures for males were 10.4 percent for 2001 and 9.1 percent for 2002. The decrease in prevalence for both sexes is statistically significant. The main mode of transmission of HIV infection in Tanzania is heterosexual standing at 82 percent and mother to child is 6 percent (UTR, 2003a).

As the pandemic continues to sway, Iringa region is not spared. Statistics for Iringa region indicate that there has been a rapid increase in HIV/AIDS prevalence among blood donors from 0 in 1983 to 5,318 in 2002. Table 2.1 shows the prevalence of HIV/AIDS among blood donors by district in 1999-2002. The age groups 25-34 and 35+ have shown consistently high prevalence rate compared to age group 15-24. According to the HIV/AIDS/STI Surveillance Report Number 17, Iringa Regional prevalence rate was 18.7 percent in 2001 and the region ranked the third after Kagera (22 percent) and Dar-es-Salaam (18.8 percent) [URT, 2003a]. Year 2002 statistics rank Iringa the second with 14.8 percent prevalence rate after Kagera (18 percent).

[3] The ranges around the estimates define the boundaries within which the actual numbers lie, based on the best available information.

Table 2.1: HIV/AIDS Prevalence in Iringa Region by District[4]

Year/District	1999	2000	2001	2002
Iringa Municipality	14.3	14.7	21.4	16.6
Ludewa	**22.1**	**15.2**	**18.4**	**17.6**
Mafinga	-	-	10.4	-
Mufindi	8.1	8.9	3.2	6.6
Njombe	15.7	16.6	13.9	13.7
Iringa	**14.7**	**14.6**	**18.7**	**14.8**

Source: URT, (2003a).

2.2 The Link Between HIV/AIDS and Food Security

Literature has documented several conventional causes of food insecurity. These include: inadequate rainfall, lack of income, limited farm size, family size and composition, dependency on single preferred staple, outdated traditional food wasteful practices, poor management of available food stock, and loss due to pest and diseases (Mamiro, 1991; Makundi 1996; UNICEF, 1998; White and Robinson, 2000; World Bank, 2000; FAO, 2001; Itika, 2002; Fox et al., 2003 among others). HIV/AIDS has added to this burden by crippling the livelihood sources of the poor through HIV/AIDS related morbidities and mortalities. Gillespie et al., (2001) and Gillespie and Haddad, (2002) identified some of economic and social impacts of adult morbidity and mortality due to HIV/AIDS, which are likely to be experienced by agriculture dependent households that encounter HIV/AIDS. They include; loss of labour, loss of capital, changes of farming system, loss of income, decrease in remittance, loss of opportunities and increased household expenditure. These impacts are translated to household food insecurity through decreased labour availability and productivity.

HIV/AIDS has continuously attacked and reduced one of the most important components of agricultural potential, that is, labour force. AIDS has killed around 7 million agricultural workers since 1985 in the 25 hardest-hit countries in Africa (Mohamed, 2003). In Tanzania the first three AIDS cases were reported in 1983 in Kagera region and by 1986 all the regions in Mainland Tanzania had reported HIV/AIDS cases. Estimates of the year, 2002 show that over 2 million people were infected with HIV/AIDS, whereby about 71 percent of these were in the 25 – 49 years age bracket while 15 percent were in the 15 – 24 years age bracket (URT, 2003a). This age bracket is the most economically productive and biologically reproductive, in which case partial or total paralysis of this population has a very significant negative effect on the economy. Due to the fact that, HIV has a relatively very long incubation period between infection and full blown symptoms, opportunistic diseases such as tuberculosis and

[4] National AIDS Control Program (NACP) has not been able to compile prevalence figures for Makete District. However, anecdotal evidence revels that, the prevalence figure is quite high in this district.

pneumonia continues to incapacitate individuals living with HIV/AIDS (Morris *et al*., 2000) and hence significantly reducing their capacity to perform productive activities.

A study conducted by Tibaijuka (1997) in Tanzania showed that labor supply was severely affected in household that contained an AIDS patient. On average, 29 percent of household labour was spent on AIDS related matters including care of patient and funeral duties. Two recent studies by ESRF (2003 and 2004) show that substantial financial and non-financial resources have been deployed in the household to take care of HIV/AIDS patients compared to other reported illnesses and those resulted to negative impacts on agricultural performance. The ESRF study (2003) noted that within 30 days prior to the survey, duration of HIV/AIDS illness covered a total of 5399 man-days out of which 3848 man-days were total loss equivalent to 35 average farming households' loss of agricultural labour. In addition, within 14 days prior to the survey several household members spent time to attend and/or care for HIV/AIDS patients, attended funerals of AIDS deaths, and visited the HIV/AIDS sick persons. In terms of agricultural labour productivity this is respectively equivalent to 5 farming households losing total available labour force due to time spent to attend the HIV/AIDS patients, 8 farming households' loss of the total available labour force due to time spent to attend funerals of an AIDS death and 2 farming households' loss of the total available labour force for agriculture due to time spent to visit HIV/AIDS sick persons.

A study on the impact of HIV AIDS and labour productivity in Kenya revealed that, HIV positive workers plucked significantly less tea leaves in the 18 months preceding death and used significantly more paid leave in three years preceding death showing that HIV/AIDS has a significant negative impact on productivity (Fox *et al*., 2003). In Ethiopia it was estimated that AIDS affected households spent 50-60 percent less time on agriculture than non-affected households (Qamar, 2001). Bollinger *et al* (1999) reported that in Tanzania an adult death is mourned for about 7 days and child's death up to 3 days whereby during this time no one does any agricultural work. The overall effect of this absenteeism is decline in food production with time and hence household food insecurity.

Labour loss especially in rural households, which depend on agriculture for their livelihood contribute to food insecurity as a result of the following factors:

Reduction of Cultivated and Planted Land

Rural areas rely on labour for production and given the nature of activities involved, good health is crucial. An individual suffering from HIV/AIDS continues to grow weak day by day due to variety of diseases, such as opportunistic diseases and/or diarrhea (IFPRI, 2002). The epidemic erodes the most crucial required human capital (Van Liere, 2003). The general effect is that an individual fails to utilize all his land for crop cultivation as it was the case before the disease, and therefore some land is left fallow. The ESRF (2004) study show that 42 percent of the households surveyed cultivated less land than they own due to a number of

reasons including death/illness of household member and as a corollary they are likely to harvest less.

Equally, when a household member is chronically ill, the other members won't work in the fields to their full capacity because some of the time will be set aside to take care of the sick member. According to the Committee on World Food Security (2001) it is estimated that, approximately 2 person-years of labour are lost by the time one person dies of AIDS, due to their weakening and the time others spend giving care. In Zambia, households in which the head of household was chronically ill had planted 53 percent less area in 2002/03 crop season than households without a chronically ill person (Southern Africa Development Community, Food Agriculture and Natural Resources—Vulnerability Assessment Committee [SADC-FANR-VAC], 2003). Equally, 55 percent of households with extremely high dependency ratio intended to plant less area compared to 30 percent of households in the low dependency ratio category.

Poor Management of Cultivated and Planted Land

Weeding or pest control measures may be neglected due to weakened physical strength or labour shortage (Rugalema, 1998). Some households may abandon traditional practices such as green manuring and mulching which replenish soil fertility, as they are labour demanding activities (Lwihula, 1998).

Change of Cropping Pattern

Labour shortage due to death or chronically ill household members may result into households changing cropping pattern such as shifting from cash crop production to subsistence crops or crops that require less capital and labour such as cassava, sweet potatoes yams and pulses. Rugalema (1999) narrates the same story of people reducing crop production and shifting to less labour-intensive cropping systems in Kagera region in Tanzania.

The changed crop pattern reduces purchased inputs such as fertilizers, resulting in declining yields. Equally, families may shift from labour intensive beef and dairy cattle keeping to rearing chicken and beekeeping. The food supply chains are therefore directly vulnerable to the AIDS pandemic in the medium and long term (IFPRI, 2002; Odenya, 2003).

AIDS afflicted households may reduce the number of crops under cultivation. Crop diversification with regard to the range of crops in the cultivated fields declines as a result of labour shortage. According to Kwaramba (1998), the phenomenon of affected households reducing production was very apparent in Zimbabwe. As a result, food supplies are less varied with a negative impact on the nutritional quality of the diet because the cultivated crop might be high in carbohydrates, but low in proteins and thus nutritionally inadequate (Administrative Committee on Coordination/Sub Committee on Nutrition [ACC/SCN], 2001).

Disrupted Intergenerational Transfer of Knowledge and Skills

Severe illness and death of adults in their prime ages by HIV/AIDS abbreviates the ability of individuals to transfer knowledge both within their generation and from their generation to the next. Both verbal and role model mechanisms are interrupted by HIV/AIDS (FAO, 2001). New generations are less able to draw on the body of knowledge that dies along with the parents. They are deprived of "learning by doing" under guidance of someone experienced (ACC/SCN, 2001; Mohamed, 2003). The effects are noticeable and harsh in the rural areas where farming households headed by orphans have little knowledge of agricultural production (Okello-Uma, 2003). A study in Kenya showed that only 7 percent of agricultural households headed by orphans had adequate knowledge on agricultural production (FAO, 2001). The ability to acquire and use information is also impaired by HIV/AIDS as younger generations are pulled out of school to bolster the family's ability to provide care to the ill and to maintain its current livelihood or to develop new ones. This is an example of an ultimately destructive "coping strategy." Today's livelihood needs are fulfilled but at the expense of Tomorrow's (ACC/SCN, 2001).

Reduced Financial Capital

Financial capital is damaged by HIV/AIDS in a number of ways. Drugs, burial and related transport expenses become major items in budgets. At the same time families need to find ways to maintain current consumption levels. In Tanzania a study of adult mortality found that 8 percent of the total household expenditure went to medical care and funerals in the households that had an adult death in the preceding 12 months. In households without adult death the figure was 0.8 percent. However, on average households with an AIDS death spent nearly 50 percent more on funerals than they did on medical care (Over *et al*., 1996; Tibaijuka, 1997; Lwihula, 1998). This is supported by findings by ESRF (2003) that the amount spent on funeral is on average higher than the amount spent on illnesses.

Another study done in Lesotho showed that the cost of caring for a patient and meeting the subsequent funeral expenses exceeded the average annual farm income (Mohamed, 2003). As a result poor rural households sell their productive assets including their livestock to care for the sick and payment for the funeral expenses (ACC/SCN, 2001).

Asset rundown leaves individual families and communities more exposed to future shocks, children pulled out of school to help with labour needs and young women often forced to become commercial sex workers (Rugalema 1998; IFPRI, 2002).

2.3 Gendered Impacts of HIV/AIDS

HIV/AIDS have had gendered impacts. Women by nature of their biological susceptibility and their socio-economic/socio-cultural status in society are more adversely affected and impacted by the disease. As mentioned earlier, about 1.1 million individuals living with HIV/AIDS in Tanzania are women (58 percent). Traditionally, they play a major role in subsistence production and on commercial farms as sources of cheap labour. A number of studies have shown that women are more encumbered with the responsibility of giving care to AIDS patients than their male counterparts. A study by UNAIDS, (2000b) cited in Isaksen et al., (2002) reveals that a woman with a sick husband spent 60 percent less time on agricultural activities than she would normally do. As a result, women tend to be overburdened as these chores are in addition to their normal duties as housewives. Another negative effect is that women automatically assume full responsibility for the welfare of the family, including agricultural production, which is also adversely affected by other competing demands on womenfolk. In some circumstance, daughters may miss school in order to work as substitute and/or take care of the sick person.

The role of women in supporting social and economic nutritional needs of households in developing countries cannot be emphasized. HIV/AIDS tends to add on this burden by reducing both the time on productive and other reproductive roles such as the caring role.

2.4 National Responses to HIV/AIDS Pandemic

Tanzania is making every effort with strong support from the international community, voluntary organizations, and the private sector, to intensify the fight against the HIV/AIDS epidemic. In the last sixteen years, Tanzania has undertaken a number of interventions in an attempt to slow the spread of HIV infection and minimize its impact. National responses have developed into phases of program activities. In 1985 a National AIDS Control Program (NAPC) was created in the Ministry of Health (MoH) with the support of the Global Program on AIDS of World Health Organization (WHO). NAPC formulated the Short Term Plan (1985-86), and three 5 year Medium Term Plans (MTP); MTP-II (1987-1991), MTP-II (1992-1996) and MTP-III (1998-2002).

Initially, HIV/AIDS was perceived purely as a health problem and its campaign involved the health sector only through NAPC. The national response concentrated on developing strategies to prevent, control and mitigate the impact of HIV/AIDS epidemic, through health education and community participation. It has however, been recognized that HIV/AIDS is more than a health problem. It is indeed a sustainable development concern. Impacts of HIV/AIDS are broad, touching different socio-economic spheres, thus, a compelling reason for a Multi-Sectoral approach. In this cognisance, in December 1999, the Government declared HIV/AIDS pandemic a National Disaster. Following that, the Tanzania Commission

for AIDS (TACAIDS) was established under the Prime Minister's Office in 2000. Its mandate is to provide leadership and coordination of Multi-Sectoral responses.

Further, the National Policy for HIV/AIDS was inaugurated in November, 2001 (URT, 2001), and in May, 2003, a National Multi Sectoral Strategic Framework (NMSF) on HIV/AIDS 2003/07 was launched (URT, 2003b).

NMSF translates the National Policy of HIV/AIDS by providing strategic guidance to the planning of program, projects and interventions by various stakeholders in the fight against HIV/AIDS. It spells out the basic approaches and principles, which guide the national responses, and identifies goals, objectives and strategies for the period 2003-2007. The NMSF is intended to guide all future programs and interventions by different stakeholders. In order to do so, the NMSF identifies four thematic areas as follows: cross cutting issues; prevention; care and support; and impact mitigation.

Through the National Multi-Sectoral HIV/AIDS Strategic Framework the rate of HIV/AIDS infection is to be reduced through a well-coordinated national response program that ensures comprehensive and effective community based HIV/AIDS interventions. All Ministries, Departments and Agencies (MDAs), and Local Government Authorities (LGAs)—are required to incorporate HIV/AIDS activities in their plans. LGA plans are to begin from the communities. Gradually the Government has been involving the public, Non-Governmental Organizations (NGOs) and other Community Based Organizations (CBOs) in efforts to combat HIV/AIDS.

2.5 The Knowledge Gap

This section has reviewed some available studies on impacts of HIV/AIDS and linked them to household food security. It is observed that most of these studies are qualitative in nature, as they have not quantified the impacts of the pandemic on the pillars of food security, that is, food availability, accessibility and stability. Since agriculture is the backbone of the Tanzanian economy, and the pillar to household food security for most agricultural communities, the impact of HIV/AIDS is gradually becoming noticeable as the epidemic spreads to rural communities. Production of food and cash crops is bound to suffer as the labour force gets sick and dies from AIDS. This study fills the knowledge gap by establishing the link between the lost labour time and income due to the pandemic on household food availability and accessibility. In addition, it documents the households' and community responses to the pandemic.

3.0 THE RESEARCH APPROACH AND METHODOLOGY

3.1 The Study Area, Target Groups and Duration of the Study

3.1.1 The Study Area

This study was conducted in Ludewa District, which is located in Iringa Region. Ludewa District is generally endowed with rich soils and therefore is one of the few agricultural potential Districts in Tanzania. Ludewa District has been selected for several reasons. Like many other districts, Ludewa is among the major producers of mainly food crops in Tanzania. As mentioned earlier, in terms of the spread of HIV and AIDS, Iringa Region and Ludewa District in particular have recorded relatively high prevalence rates (URT, 2002). Year 2001 HIV/AIDS statistics for Iringa region ranked Ludewa District the second with 18.4 percent prevalence rate after Iringa Municipal, which had 21.4 percent prevalence rate (Table 2.1). However, year 2002 statistics ranks Ludewa the first with 17.6 prevalence rate. It is therefore against this background that Ludewa has been selected to permit this analysis to estimate the impact of HIV/AIDS pandemic on food security. In other words, Ludewa District possesses the necessary and adequate characteristics for the analysis. The following is the profile of Ludewa district:

Ludewa district is one of the 6 districts constituting Iringa region. Others include Mufindi, Iringa Rural, Iringa Municipal, Njombe and Makete. Ludewa is boarded by Njombe district in the North and Ruvuma region in the South and East and it covers a total of 6,325 Sq Km. It has 5 divisions, 20 wards, and 50 villages of which 5 were chosen for this study. The total population recorded in the 2002 Population and Housing Census is 128,155 (60,477 males and 67,678 females). Females comprise 53 percent of the total population (URT, 2003c).

About 95 percent of the people live in rural area and depend on agriculture as their main economic activity. Main food crops cultivated include maize, sorghum, wheat, beans, and cassava. Cash crops include coffee, sunflower, tobacco, and pyrethrum. Livestock keeping is not very widely practiced but few households rear cattle, goats, sheep and donkeys.

3.1.2 The Target Groups and Respondents

A good number of respondents in the agricultural and rural sector were households' heads. Understanding that, agricultural households were sampled for our study. At the household level, households' head or any other well informed person was interviewed. In most cases more than one person was interviewed in order to collect all the information related to household expenditure and time allocation on HIV/AIDS related activities. In addition to the households, HIV/AIDS related NGOs, district and community leaders were also interviewed.

3.1.3 Study Duration

This was a four-month study of which ten days were devoted to fieldwork. The fieldwork was conducted from 14th to 24th December 2003.

3.2 Definition of HIV/AIDS Case and Orphans

Identifying HIV/AIDS cases is not an easy task because of the stigma associated with the disease, which makes the majority of the population reluctant to go for HIV testing. This study employed three different methods to identify HIV/AIDS cases. These are:

- People living with HIV/AIDS: These are individuals who have undergone HIV testing and tested HIV positive. They were identified through interviews with household and community leaders.
- Verbal Autopsy: Respondents were asked if they know of HIV/AIDS cases in their household, or community. Any case reported was treated as a HIV positive case even if the mentioned individual has not undergone the HIV test.
- Assessment on the basis of opportunistic diseases associated with HIV/AIDS, for instance, Tuberculosis (TB), pneumonia, frequent fever, diarrhea etc.

The second and third approaches to judging HIV/AIDS cases are not devoid of bias as they may result to underestimation or overestimation of the HIV/AIDS cases. However, these two crude approaches save the purpose given that just a fraction of the population in the study area has gone for HIV test.

In this study an orphan was defined as someone who was 16 years old or below and has lost his/her mother (maternal orphan), father (paternal orphan), or both (dual orphan) for any reason. An AIDS orphan was an orphan who has lost both, or one of the parents due to AIDS.

3.3 Data and Data Collection Techniques

3.3.1 Type of Data and Data Sources

The overall objective of the study is to investigate on the impacts of HIV/AIDS pandemic on food security in Ludewa District. Owing to the theme of the study and the approach used in the analysis, it was necessary to collect detailed data on household characteristics (age, sex, education etc), illness and deaths in the household, wealth indicators, time allocation (time spent on productive activities, time spent to care for the sick, lost working man-days due to sickness of members of the households, and time spent on funerals). Information related to economic activities performed by members of household (crop production, livestock keeping), faming systems, income flows, expenditure on diseases, social capital, and mitigation and coping mechanism was also sought. From NGOs and leaders, data on

HIV/AIDS and poverty related interventions and programs and their perceived impacts were collected.

Secondary information was also utilized to supplement primary data. Most of the secondary data were collected from official statistical publications and past reports and publications related to HIV/AIDS. Relevant and HIV/AIDS related reports were mainly collected at the district level, libraries, and Internet.

3.3.2 Data Collection Instruments [5]

During the fieldwork, three instruments were used to facilitate data collection. These are structured questionnaire, interview guide and/or interview checklist and documentation (and/or review of literature). The structured questionnaires were administered to the head of the households, and other members of the households. The interview guides were used to hold discussion with officials at different levels (village, ward and district) and NGOs.

3.3.3 Sampling Techniques and the Sample

Overall, the study employed three different sampling techniques, namely the stratified-random sampling, random sampling, and purposive sampling. These techniques were employed from the highest level (Ward) to the lowest level (household). Stratified random sampling was used to categorize Wards into High Prevalence Areas (HPAs) and Low Prevalence Areas (LPAs) based on HIV/AIDS prevalence profile compiled by the Ludewa District AIDS Control Programme. Stratified random sampling was inevitable to ensure that both the two major categories are represented in the sample. The purposive sampling was also important in cases where the target group, that is, households with a HIV/AIDS case, or NGOs dealing with HIV/AIDS related issues were to be sought. Random sampling was important to capture good representation of Wards, Villages and households and minimize biased estimates.

Statistically, in order for a sample to be representative of the total population, it must represent at least 5 percent of the total population in question (Boyd et al., 1981). However, the sample of households in this study does not necessarily represent 5 percent of the total population of the study area. This is because, the vigour of this study does not recline on representation but rather on having essential data on HIV/AIDS related variables so as to be able to estimate the impacts of HIV/AIDS on food security. Nonetheless, due to heterogeneity of rural agricultural communities, the results could be applicable to a wide range of areas with the same characteristics as the studied districts.

A total of five Wards were purposively sampled (Ludewa, Lugarawa, Madope, Mawengi and Mlangali) from which a total of five villages were also purposively selected. The villages

[5] The survey instruments are appended.

include Mawengi, Madope, Lugarawa, Kitundu, and Madope. Table 3.1 presents the actual sample size for each group of respondents interviewed.

Table 3.1: Total Number of Administered Questionnaires

Sn.	Respondents	Total Sample
1.	Households	208
2.	NGOs/religious organizations	6
3.	Leaders	12

3.4 Framework of Analysis

3.4.1 Analysis of Labour Units

A set of indicators for both HIV/AIDS as well as agricultural performance were developed to gauge the impact of HIV/AIDS on agriculture and thus household food security. The indicators for HIV/AIDS in this analysis were grouped into three categories namely, morbidity variables, mortality variables and demographic load variables. Each of the three indicators used at least two variables as follows:

- Illness of household head and other adults between 18 and 64 years was used as indicator for morbidity.
- Recent death of household member was used as indicator for mortality.
- Presence of orphans, and elderly were used as indicators of demographic load.

The Household Labour Units (LU) were calculated based on the active labour force and the time available for productive activities. Estimation of the stock of labour (available labour) were performed based on the analysis of sex and age composition using weights established by Tibaijuka (1984) which are reproduced in Table 3.2.

Table 3.2: Weighting Scheme for Aggregating Household Labour into Man-Days Equivalent

		AGE GROUP IN YEARS							
	Sex	0 – 7	8 - 10	11- 13	14 -15	16- 55	56 - 65	66- 75	76 <
1.	Male	0	0.2	0.4	0.5	1.0	0.6	0.3	0.2
2.	Female	0	0.2	0.4	0.5	0.8	0.6	0.3	0.2

Source: Tibaijuka, (1984)

The assumptions are that in the main economically active group of age 16 to 55 years males have greater physical strength to undertake most of the farm operations faster than women. Thus, the weights reveal the greater ability and/or strength men have over women. Men between 16 and 55 years of age are assigned a standard unit 1 and women a weight of 0.8 (man equivalent). Children above 7 years are assigned a positive weight which is less than one as shown in Table 3.2 because they are known to perform important domestic duties such as cooking, fetching water and baby sitting. Note that, in defining labour supply (available labour) or Labour Units in a household, weights rather than number of household members

are used. For example, a household with 3 members, that is, a child aged 9 years, a man aged 31 years and a woman with 48 years has a total of 2 Labour Units while a household with 2 men both aged 22 years also has a total of 2 Labour Units.

3.4.2 Analysis of Expenditures Related to HIV/AIDS

This analysis examined the expenditures on HIV/AIDS related cases that directly affect investment in activities related to food production and accessing food from the market. These include time cost, remittances/incomes, medical and funeral expenditures.

3.4.3 Regression Analysis

Analysis of labour units lost due to pandemic and financial expenses is supplemented with regression analysis that is conducted to determine the relationship between different variables and food availability at the household level. Agricultural production, which is the main pillar of food security for majority of rural communities, is impacted by several factors including weather and non-weather factors. Holding the weather conditions constant, agriculture is impacted by the availability of inputs such as land, labour, income, and fertilizer. In addition, characteristics of the head of the household such as gender, age, literacy, and education may also impact the agricultural productivity. For instance, educated or literate head of household has a high probability of accessing and using information regarding good crop husbandry compared to uneducated or illiterate head of household.

HIV/AIDS have impacted these non-weather factors in several ways as described in section 2.0. Given data collected from the households, the regression equation is specified as follows:

$$\text{Yield} = \beta_0 + \beta_1\text{MaleHead} + \beta_2\text{HHSize} + \beta_3\text{LiteHead} + \beta_4\text{ExpHIV} + +\beta_5\text{HoursHIV} + \beta_6\text{HoursFuneral} + \beta_7\text{LandCult} + \beta_8\text{Death} + \beta_9\text{Orphan} + \beta_{10}\text{Tapwater} + \beta_{11}\text{Improvwall} + \beta_{12}\text{Radio} + \beta_{13}\text{Income} + \mu \ldots (1.0)$$

The variables in equation 1.0 are defined in Table 3.3[6]. We expect variables that lead to reduction in expenditure on activities related to food procurement, for instance, expenditure on HIV/AIDS related problems and decrease in labour due to HIV/AIDS related illness and deaths to have negative impact on agricultural productivity and thus food availability. Variables such as education, size of land, and wealth variables are expected to have positive impact on agricultural production. We have no *a priori* expectations about the size of household as it may have positive impact (consider big household size as source of labour) but it may also have a negative impact if the age structure is composed of too young/too old population (resources to agricultural production could be diverted to other consumable needs). Presence of orphans in the household may also have a negative or positive impact on

[6] Several alternative regressions were run including several other independent variables such as having an ill member of the household, education of the head of the household etc but the best model with higher explanatory power is the one presented above.

productivity because they may be used as source of labour or if too young they will increase the dependence load.

Table 3.3: Description of Variables Used in the Regression Analysis

Variable	Definition of the Variables
Yield	Continuous variable showing total agricultural produce per household in the past one year (Kg)
MaleHead	= 1 if the head of the household is a man; else=0
LiteHead	= 1 if the head of the household could read and write; else=0
ExpHIV	Expenditure on HIV/AIDS related problems in the last 12 weeks (TZS)
HoursHIV	Time spent on visiting/taking care of HIV/AIDS related problems in the past 4 weeks (Hours)
HoursFuneral	Time spent on attending HIV/AIDS related funerals in the past one year (Hours)
HHSize	Household size
LandCult	Size of cultivated land (Acres)
Death	= 1 if the household experienced death in the last year prior to the survey, else = 0
Orphan	= 1 if the household had an orphan during the time of survey; else=0
TapWater*	= 1 if the source of water was piped water; else = 0
Improvwall*	= 1 if wall material was processed clay bricks, concrete or cement bricks, else = 0
Radio	= 1 if the household had a radio or radio cassette; else=0
Income	Estimated total income per household per year (TZS)

* Wealth Indicators

3.4.4 Per Capita Cereal Gap

Per capita Cereal Gap aims at capturing the annual grain shortfall for each household. Thus, the daily minimum and standard cereal requirement of the household is established and projections for annual requirements are made. The projections generate the household annual cereal needs, which are then compared with the available cereals after factoring HIV/AIDS in. Assumptions used in the calculation of cereal gap are presented in section 4.3.4.

3.4.5 Qualitative Analysis

Qualitative data obtained from leaders and NGOs were used to supplement quantitative data. In addition, the information is used to document present anti-poverty and anti-HIV/AIDS interventions and assess the effectiveness of these interventions and awareness campaigns.

3.5 Limitations of the Study

The following are the major limitations encountered in conducting the fieldwork.

A: Identifying HIV/AIDS Cases

The survey set out with the objective of undertaking purposive sampling to ensure that we cover as many HIV/AIDS affected households as possible. As such the home based care facility staff at Ludewa Districts Hospital who are involved in providing care for HIV/AIDS affected individuals were contacted to guide interviewers to the households that have already been identified as HIV/AIDS affected. Nevertheless, their coverage is very small (restricted to Ludewa ward only). In other wards households were selected for interview without necessarily having a proof that they were actually affected. As a result of this approach we cannot overrule the possibility of misclassification of some of the households into either non-HIV/AIDS affected or HIV/AIDS affected categories. The use of self reported physical symptoms, description and duration of illness as proxies for making a diagnosis of particular illnesses and identifying individuals living with or who died of HIV/AIDS may not always produce error free results. It is therefore possible that there might be some over/underestimation of prevalence of HIV/AIDS and cost figures at the household level.

B: Recalling Problems

Some of the data analysed in this report are comprised of respondents' views to questions about the past. Respondents for instance were asked about the time taken to visits the sick, attend funerals, the total farm produce harvested etc. Their responses are based on recall methods. Clearly, this is a very difficult task for respondents to do and in a questionnaire based approach, there is little opportunity for good triangulation.

4.0 STUDY RESULTS AND DISCUSSION

As mentioned earlier, agriculture is the mainstay of the Tanzania economy as more than 80 percent of Tanzanians live in rural areas and are predominantly engaged in, and depend on agriculture. It also contributes about 50 percent of GDP growth. The main producers in the agricultural sector are smallholder farmers who are poor. In Ludewa district, agriculture accounts for nearly 95 percent of the districts' source of livelihood. However AIDS epidemic has rapidly been spreading to rural areas in Tanzania, including Ludewa, crippling the livelihood systems of these rural communities and thus, negatively affecting the performance of the agricultural sector which is the pillar of rural household food security.

This section presents the main findings of the research. It presents findings on the situation of the food poverty in the study area; the financial and non-financial (time) expenditures on HIV/AIDS related activities; the impact of HIV/AIDS on household food security; and HIV/AIDS interventions and copping mechanisms adopted in the study area.

4.2 Situation Analysis of Food Poverty in Ludewa District

As mentioned earlier, the multi-dimensional characteristic of poverty has led to the construction of two major poverty lines. These are Food Expenditure Poverty Line (FEPL) and Basic Needs Poverty Line (BNPL). FEPL is associated with expenditure on food (consumption) and/or Food Poverty (FP), which is generally defined as a condition of lacking the resources necessary to acquire a nutritionally adequate diet. The Food Poverty Line (FPL) is therefore the minimum amount of food an individual must consume to stay healthy. The FPL is the estimated cost of acquiring the recommended calorie and/or nutritional requirements. Thus, using this definition, all individuals falling below the FPL are considered Food Poor. Note that, while FPL considers only food items, the BNPL approach goes beyond that to incorporate non-food items.

Agriculture is the main livelihood engaging almost all the villagers in the sampled villages. Other livelihood strategies include petty trading, casual labour and paid employment. Maize is the main food crop grown in the area. Irish potatoes, wheat, paddy, millet, sorghum peas, beans, pyrethrum, tea and timber are also sold out as cash crops. Judging from the field responses and particularly the sampled households' responses, maize forms a bulky of cereals in Ludewa district (about 79 percent). Millet and sorghum are considered inferior crops and therefore not grown by the majority of the population. The share of wheat is insignificant and due to scarcity of wetlands, paddy is not grown in large quantities as it is for maize.

The analysis on household expenditure on food and the extent of poverty in Ludewa is therefore based on maize alone. Other food crops are left out for two major reasons. Firstly, they are insignificant in terms of share of total cereal in the sampled villages. Secondly, the

responses (on how much was produces and sold) for other crops are very scanty with close to 70 percent missing information.

The total maize harvested during the 2002/03 has therefore been translated into monetary value, out of which the value of total maize sold was deducted and the value of maize purchased for household consumption was added to establish the household total expenditure on maize.

Monthly per capital expenditure on food was computed using the average household size of 4.9 divided by 12. Table 4.1 presents monthly individual expenditure on food.

Table 4.1: Monthly Individual Food (Maize) Expenditure in TZS

Sn	Individual Consumption Expenditure (TShs)	Frequency	Percentage
1.	1—3000	145	84
2.	3001—5000	19	11
3.	5001—9000	6	3
4.	9001—12000	3	2
	Total	173	100

The findings are based on the 173 sampled households that provided sufficient data for such estimation. As can be depicted from the table, out of 173 households, 164 are below the National Food Poverty Line for rural areas as presented in the 2000/01 Household Budget Survey (URT 2002). The 2000/01 Household Budget Survey reports the National Food Budget Line for the rural areas as TZS. 5,107. Therefore the proportion of food poor households in the sampled village communities of Ludewa district is about 95 percent of the total households, which is disquieting.

This proportion is extremely high. It is far above the national average of 23.1 percent in 1991/92 and 20.4 percent in 2000 (rural areas). Obviously, since the method used has considered maize alone, excluding many other cereals that are grown and consumed by some villagers in the district, individual household expenditure has recorded low rates thus pushing most of them to the poverty region.

4.2 The Public Awareness Initiatives

As noted earlier, HIV/AIDS and food insecurity are real and serious problems in Ludewa district. The High Prevalence Areas in the district includes places like, Mlangali, Lupingu, Ludewa town and Manda. Others are Mundindi (Amani), Madope, Lugarawa and Mawengi. The field responses reveal a number of HIV/AIDS prevalence factors. They include easy accessibility and emergence of economic activities and/or nature of the economic activities within the respective areas. For example, Mlangali, Mawengi and Lugarawa are commercial

centers (and markets), easy to access and all of them used to be stations for road works in the past.

Likewise, since Lupingu and Manda are major ports and fishing stations along Lake Nyasa, they are congested with high population thus making them vulnerable to HIV/AIDS infections. Madope and Mundindi (Amani) are Tea Estate and gold mining areas respectively, which also attract high population. Commercial (market) activities, road works, ports, fishing stations and gold mining are known to attract participants from different places searching for better opportunities. The mixture of people of different backgrounds who have been away from their families for long period is said to encourage unethical practices and spread of HIV/AIDS in the respective areas. Similarly husbands leave their households for a couple of years to seek employment elsewhere, often establish new relationships and even get married and have families. On their return, they bring back infections including HIV. Equally, the women who remain behind often engage in new relationships, which sometime end up with similar infections.

Following the government's decision to create a National Disaster Management Unit (NDMU) under the Prime Minister's Office, Ludewa District has been initiating awareness campaigns and programmes aimed at sensitising the public and attracting participation of the private sector (NGOs and CBOs) in the war against HIV/AIDS and hunger. The district has launched HIV/AIDS Control Programme and appointed a full time coordinator with adequate and reliable means of transport to access remote areas. One of the impacts of the ongoing district's initiatives is the positive response of private sector in the district.

The biggest ingredients fuelling the spread of HIV/AIDS according to the views by the respondents in the sampled households include *alcoholism*, *abject poverty, unemployment, cultural believes* and *lack of legal authority at village or ward level*. Alcohol is said to be the most destructive factor. Once people are drunk, they become rough, unethical, not shy any more and adamant and are compelled to practice unsafe sex. As noted earlier, poverty is a serious problem in Ludewa and has been a significant driving force towards the spread of HIV/AIDS and food insecurity in the district. Women and particularly the young ones are forced to accept unsafe sex primarily not because of love but rather because of the assurance of short-term survival through the token income they earn as payment for the services offered. Unemployment particularly among the youth has driven most of them towards illegal and risk businesses such as prostitution.

Some cultural believes act as impediments to the ongoing initiatives to fight HIV/AIDS. For example, majority of the communities in Ludewa believe that when an individual falls sick for a long period he or she has been bewitched. Because of this as soon as the person dies there is usually someone who is ready and willing to inherit the remaining spouse. People do not easily accept and use condoms distributed to them, because cultural norms do not allow them to do so without feeling uneasy about what others would think about their using

condoms. Cultural beliefs and norms have also tended to keep some members of the village communities away from attending HIV/AIDS related training and campaigns. Some of the respondents pointed out that, just as it is in many African cultural settings, it is a taboo for them to discuss sex in the community, particularly between different age groups and between different sexes. For them children/youths and adults, and men and women should be handled differently when it cones to giving advice about HIV/AIDS. Nevertheless they are normally forced to mix with different age groups (or different sex). The older folks also do not easily yield to advice from young peer educators.

Some older folks who are also village elders pointed out that on moral grounds it is very difficult to stop the spread of infections because even when the village community and/or village authority have all the evidence that a particular village member is HIV positive, they can not stop him or her from running around or getting married to any other member of the village who is not HIV positive. Legally they do not have a mandate to stop anyone from doing what they want when it comes to sexual relations, and this in addition to other problems is contributing to the spread of the infections among innocent young people.

4.3 The Link between HIV/AIDS and Food Poverty and/or Food Security

HIV/AIDS impacts dramatically on poor households through depletion of both financial and non-financial resources. One of the obvious impacts of HIV/AIDS is the duration and the number of illness the individual experiences before death. Studies have shown that an AIDS patient is likely to suffer more and frequent episodes of opportunistic infections than a non-AIDS patient, other things being equal. This also means that a lot of household financial resources and time is likely to be diverted towards treatment and care of the infected persons. The social conditions within the household eventually increase the level of vulnerability of members to infection, to food poverty and food insecurity, while also sapping the meagre resources they have, through the resulting, loss of income from less labour-time, or from lower remittances of the person with HIV/AIDS (who is frequently the main breadwinner); increase in household expenditures for medical expenses; decrease in household savings; other members of the household, usually daughters and wives, may miss school or work in order to take care of the sick person and or increase the household labour capacity; death resulting in permanent loss of an income, and funeral and mourning costs, all of which have significant impact in terms of exacerbating the loss of future earning potential.

4.3.1 Household Labour Supply

Estimation of stock of labour in the households (Household labour supply) is made based on the analysis of sex and age composition using weights presented in section 3.4 – Table 3.2. Table 4.2 gives the sampled households' demographic characteristics for assessing household labour supply, and dependence ratio.

The average household size of the surveyed households in terms of household members ranges between 2 and 16 with an average of 4.9 persons per household. Each household has an average of 2.7 Labour Units i.e. productive members capable of working for 8 hours each day of the week. Assuming that each active labour unit works for 26 days in a month, each household in the surveyed sample in Ludewa has an average potential of 70.1 man-days[7] of productive labour.

Table 4.2: Household's Composition—Aggregate Labour, Consumer Units and Dependence Ratio

Sn	Age Group			
	Age Category	Household Member	Consumer Units	Labour Units
1	0 - 7	175	87.5	0
2	8 - 10	114	57	22.8
3	11 - 13	105	78.8	42
4	14 - 15	67	50.3	33.5
5Male	16 - 55	201	201	201
6Female	16 - 55	299	299	239.2
7	56 - 65	27	27	16.2
8	66 - 75	16	16	4.8
9	76 ‹	6	6	1.2
10	Total	1010	822.5	560.7
11	Mean	4.9	4.0	2.7
12	Dependence Ratio (Labour Units/Consumer Units)			0.68 (1:1.5)

Note: aggregate Consumer Units are based on WHO weights in Tibaijuka (1984); aggregate Labour Units are based on weights by Tibaijuka (1984)

In calculating the household consumption units we make use of Standard WHO weights of 0.5 for children below 11 years, 0.75 for children below 16 years and 1 for all above 16 years of age. The mean household consumer unit stands at 4.0. Thus the dependence ratio (Defined as Household Labour Units/Consumer Units) is 0.68 or 1:1.5 implying that every adult in Ludewa district supports 1.5 consumption units. These results relate to the findings by Sankhayan (1994) who has established a ratio of 1.4 (144 farm households) in Ruvuma region, and 1.2 in Kilimanjaro region (154 farm households). Likewise, the consumer – worker ratio for Kagera region is given by Tibaijuka (1984) as 1.7 which is also not significantly different from Ludewa's 1.5.

These findings may however not portray a realistic picture. Dependence ratio in Ludewa district may be even higher than 1:1.5. The method used to compute the ratio deliberately

[7] We assume that one month has 26 working days.

attaches more weight to potential labour rather than actual labour engaged in production. The weight of 1 unit assigned to men and 0.8 assigned to women (on assumption that men have greater strength compared to women) may understate the estimate of dependence ratio. This is because even though men have greater strength compared to women, in practice women work more than men. Tibaijuka (1994) for example observes that while rural women work for 12 – 16 hours a day all year round, men sometimes cannot even manage a half of this labour input. Nevertheless, the findings reflect the importance of household labour in agriculture and therefore food security and poverty reduction in the rural areas. The higher the dependence ratio, the lower the family labour available for undertaking agricultural related activities aiming at producing food as well as cash crops.

4.3.2 Financial and Non Financial Cost of HIV/AIDS

HIV/AIDS pandemic in Ludewa district has affected the performance of agricultural activities in different ways. The potential labour force in the sector has generally lost the ability to perform agricultural activities following loss of strength due to long illness and lack of nutritious food. For most poor faming households, one of the coping mechanisms is to deplete the wealth and/or assets accumulated from past savings in cash as well as physical assets. While the measures do help poor families to cope with the impact of the pandemic in the short run, their impact in the long run is more adverse because they tend to significantly curtail the amount of family investments going into both agricultural activities, and children education.

The Impact of HIV/AIDS on Labour productivity (morbidity) is measured through indicators such as chronic sickness or death of members of the households and loss of working man-days (or simply, loss of labour). After identifying cases of illnesses by type including HIV/AIDS in the households in the last three months, loss of labour is measured through estimating duration that the individual was not able to work due to illness in one months (30 days) prior to the present field survey; work days lost by type of illness (including HIV/AIDS) within four weeks prior to the field survey; time spent on attending and visiting a HIV/AIDS patient within the last 4 weeks (in hours) prior to this survey; and time in hours taken to attend a funeral of an AIDS death within one year prior to this survey. Tables 4.3 and 4.4 presents the findings on the financial costs as well as the non-financial costs, i.e. loss of man-days due to HIV/AIDS.

In terms of illness 24 percent of the members of surveyed households reported having had an illness in the 12 weeks prior to the survey. The responses revealed further that among the persons who had been ill 21.8 percent suffered from HIV/AIDS related illnesses, 28.8 percent suffered from malaria, 10.6 percent suffered from respiratory related diseases, 4.4 percent suffered from diarrhoea, 2.5 percent had tuberculosis, 1.3 percent suffered from injuries and other diseases accounted for 31.25 percent of the cases (Table 4.3)

The duration of the illness in the last four weeks was highest for HIV/AIDS cases confirming the hypothesis that people with HIV/AIDS will suffer from opportunistic infections for longer periods of time compared to those with other diseases other things remaining equal. In this case households reported a total of 966 days of illness in total in the last one-month, which is the highest, compared to days accounted for by each of the other illnesses in the same period.

Table 4.3 Illnesses in Households by Type, Cost of Treatment and Duration of Illness

Disease	Number of Ill Household Members	Percent of total Ill Members	Duration of Illness in Days in the Last 4 weeks	Work (Man) days Lost Due To Illness in the Last 4 weeks	Total Medical Cost for illness	Medical cost per household	Range
Malaria	46	28.75	357	239	184050	5,413	0-98,000
Diarrhoea	7	4.38	45	41	2000	400	0-2000
Respiratory Related Disease	17	10.63	259	212	108300	6,769	0-80,000
Tuberculosis	4	2.50	46	42	3100	775	0-2500
HIV/AIDS	35	21.88	966	877	539,140	16,338	100-300,000
Injury	2	1.25	60	52	152000	76,000	200-151800
Other Health Problems	50	31.25	776	438	672810	17,706	0-300,000
Grand Total	165	100	2527	1841	1661400	12,586*	

*Average medical cost for all households with ill members

About 27.8 percent of the households also reported a death in the household in the last one year prior to the survey. Of those who died, 61percent died of HIV/AIDS, 13 percent died of malaria, 7 percent died of diarrhoea, 5 percent died of tuberculosis and 2 percent died of respiratory diseases while other health problems took 8 percent while injuries accounted for about 5 percent of the deaths. In terms of age groups of people who died of HIV/AIDS, further analysis reveals that 92 percent of those who died of the pandemic in the last one year prior to the survey were within the most productive age (16-55) [Table 4.4].

Table 4.4: Death In the Household and Their Causes

Age Group	0—7	8—10	16—55	56-65	66-75	76→	Total	Total Deaths %
Malaria	0	1	4	1	0	2	8	13
Diarrhoea	0	0	4	0	0	0	4	7
Respiratory Related Disease	2	0	1	0	0	0	3	5
Tuberculosis	0	0	1	0	0	0	1	2
HIV/AIDS	2	0	34	0	1	0	37	61
Injury	0	0	2	0	1	0	3	5
Other Diseases	0	0	5	0	0	0	5	8

Total Deaths	4	1	51	1	2	2	61	100
Labour Units Lost	0	0.2	45.6	0.6	0.6	0.4	47.4	

Treatment of ill household members and eventual burial expenses to be incurred after death forces households to divest their incomes, tangible assets and savings for medical care, transportation, funeral expenses, and other immediate expenses. AIDS affliction thus leads to accelerate consumption of household cash, mainly in the process of seeking treatment and in attempts to restore health (Rugalema, 1999). In addition, AIDS illness in the household leads to disposal of other productive assets. In terms of cost of treating the diseases, HIV/AIDS also appeared as the largest single medical expenditure item in the illness cases, taking as much as 32.5 percent of the expenditures (Table 4.3). Furthermore, as a result of deaths related to HIV/AIDS, each household that experienced death of member spent an average of TZS 64,669 (total sum of TZS 362,150), which is also very high for the average household.

Analysis of non-financial cost of HIV/AIDS in terms of loss of labour due to morbidity and mortality is in this case based on number of days the sick households members were unable to carry their usual economic activities due to illness in the last 4 weeks; the time households members spent attending and/or visiting to take care of HIV/AIDS sick members in the last 4 weeks, time spent attending funerals of a person believed to have died of HIV/AIDS and the household labour stock lost due to death in the household in the last one year. The findings reveal that people suffering from HIV/AIDS loose a large number of working days as compared to people suffering from other health problems.

Table 4.5: Estimated Loss of Labour due to Morbidity and Mortality

Sn	Cause of Loss	No of Man-Days	Equivalent Number of Farming Households Loosing Agricultural Labor
1	Duration of HIV/AIDS illness in the last 30 days	966	-
2	Work days lost due to HIV/AIDS within the last 30 days	877	12.51
3	Time spent on attending a HIV/AIDS patient within the last 30 days	579.88	16.54
4	Time taken to attend a funeral of an AIDS death within one year	593.9	16.94
5	Time spent to visit a HIV/AIDS sick person within the last 30 days	383.26	10.93
6	Loss of Labour Units due to Death in the Household in the Last One year	11,652.2	13.85

As can be noted, within 30 days prior to the survey duration of HIV/AIDS illness covered a total of 966 man-days out of which 877 man-days were total loss equivalent to 12.5 average households' loss of labour. This means that due to HIV/AIDS related illness, 12.51

households out of the surveyed 208 could not perform their agricultural activities at all in one month prior to the survey.

Note also that within 30 days prior to the survey a total of 579.9 man-days were used to attend and/or care for HIV/AIDS patients, equivalent to 16.54 households losing agricultural labour force in a month so as to take care of the ill. Furthermore, the time taken to attend funerals of persons believed to have died of HIV/AIDS in the one year prior to the survey was 383.26, which is equivalent to loss of labour force of 16.94 households, whereas about 10.93 households labour force could not work due to the need to visit HIV/AIDS ill person in or outside their households in the last 30 days prior to the survey. In total about 44.4 households (21.3 percent) of the surveyed households did not attend their usual agricultural activities in the last 30 days prior to the survey so as to take care of the HIV/AIDS sick, visit the HIV/AIDS sick or attend funerals of persons believed to have died of HIV/AIDS. This is not the only loss of labour but it occurred in addition to the loss of labour force due to HIV/AIDS deaths in the last one year that had already imposed a loss of labour units in households equivalent to a loss of 13 households labour force. These findings are clear testimony that productivity has been adversely affected by HIV/AIDS pandemic through loss of man-days as well as physical labour force.

What we see here is therefore an alarming situation, which calls for urgent corrective measures. This is particularly so because Ludewa district is primarily agriculture dependent. Furthermore, agriculture is an important sector not only to the district but also to the entire economy. It accounts for more than 50 percent of GDP, is the main source of food and therefore the cushion for food insecurity and poverty is currently contributing about 30 percent of foreign exchange earnings and is still the largest employer. In addition it is a labour-based sector, yet it is the same labour force, which is currently under serious threat.

4.3.3 Regression Analysis Results

This section presents findings from estimation of equation 1.0. Tables 4.7 and 4.8 present the descriptive statistics of the variables used in the regression analysis whereas Table 4.9 shows the regression results.

Table 4.7: Descriptive Statistics of Dependent and Continuous Independent Variables Influencing Agricultural Production

Variables	Mean	Minimum	Maximum
Yield (Kg)	1379	18	13,680
Expenditure on HIV/AIDS related illness (TZS)	16,338	100	300,000
Time spent visiting/caring HIV/AIDS ill person (Hours) in the Last one month	87	0.5	540
Time spent attending HIV/AIDS related funerals (Hours) in the last one year	41	1	238
Household size	4.9	1	14

Total land cultivated (Acres)	3.6	0.25	40
Household yearly income (TZS)	208,539	20,000	2,789,000

Table 4.8: Frequencies of Independent Dummy Variables

Variables	Percent
Households with HIV/AIDS cases	15.9
Literate heads	83
Households headed by males	50
Households experienced death in the past year	45
Households having orphans at the time of survey	44
Households using tap water	74
Households having houses with improved wall	50
Households having radio or radio cassette	9

As expected, total land cultivated has a positive and significant impact on agricultural productivity. Increasing land devoted to agricultural production will result to increased yields holding other factors constant. Income, having a radio and improved wall (wealth indicators) were found to be positively and significantly related to agricultural production. This could be explained by the fact that, wealthier households have a high probability of harvesting more as they have more resources (financial and non-financial) to devote to agricultural production. Non-financial resources include time of hired labour.

One would expect the income and wealth indicators to be collinear. To test for multicollinearity problem, we used the VIF command in STATA to examine VIF values and 1/VIF values also called tolerances. A general rule is that a VIF in excess of 2, or a tolerance of 0.05 or less is an indication of a multicollinearity problem. However, for this regression, the VIF and tolerance values ranged between 1.05-1.37, and 0.73-0.94 respectively. Thus, multicollinearity among these variables is not evident. This might be explained by the fact that the indicated wealth was accrued sometimes back whereas income variable measures the current financial state of the households.

The HIV/AIDS related variables have negative impact on food availability. Hours spent on attending funerals have a negative and significant impact on agricultural production so does hours spent on taking care or visiting HIV/AIDS ill person. However, the impact from hours spent on taking care or visiting sick individuals is not significant.

What these results entail is that, productive time is used on unproductive activities such as funerals and thus the bastion of the people suffers. HIV/AIDS illness is different from other illness as more time is dedicated to take care of the individual before death. In addition, with frequent deaths, more time is devoted on mourning and funerals. In some societies, a bereaved wife may stay for up to 40 days during which she does not perform any serious productive activity.

Expenditure on HIV/AIDS related illness was also found to be negatively related to agricultural production but the relationship is not significant. Deaths in the household have a negative, significant impact on agricultural productivity. Increased expenditure on HIV/AIDS related problems results to less investment in agriculture and thus decreased agricultural production and as a corollary decreases food availability, and deaths results to decreased manpower for the same.

Table 4.9: Regression Analysis Results

Variables	Coefficient	Standard Error	t statistic
Total land cultivated	0.083***	0.028	2.93
Household size	-0.015	0.049	-0.32
Hours spent on visiting/caring individuals with HIV/AIDS related problems	-0.018	0.466	-0.04
Hours spent on HIV/AIDS related funerals	-0.006***	0.003	-2.37
Expenditure on HIV/AIDS related problems	0.000	000	-0.07
Death in the household	-0.195*	0.243	-1.80
Improved wall	0.505**	0.233	2.17
Tap water	0.216	0.258	0.84
Orphans	-0.225	0.258	-0.87
Male head	0.174	0.268	0.65
Literate head	0.252	0.329	0.77
Radio	0.005*	0.003	1.79
Income	0.0006**	0.0004	2.31
Observations = 174 Adjusted R^2 = 21.15			

* shows significance at 0.1 level.

** shows significance at 0.05 level

*** shows significance at 0.01 level

The dummy variable that shows if the head is literate was found to have positive probability on agricultural production but the relationship is not significant. We expect literate heads to be able to access extension services and information related to improved agricultural husbandry compared to illiterate head. However, the relationship is not significant. Having an orphan in the household was found to have insignificant negative impact on agricultural productivity.

It is worth noting that the variables included in the model explain only 21 percent (Adjusted R-squared) of the variation in agricultural productivity. Nevertheless, with cross-sectional data, that is, data from surveys that is not unusual. Agricultural productivity is affected by many factors such as quality of soil, timing of rainfall, skills and industriousness of farmer, pest burden, etc which cannot easily be captured in the independent variables.

The unexplained variation is due to the fact that there are many factors that affect the dependent variable that were not included in the model.

In order to investigate further the impact of HIV on agricultural performance, we estimated changes in probabilities in agricultural production (yield) associated with a change in some independent variables related to HIV/AIDS menace. Hours spent on HIV/AIDS related funerals, and death in the household were chosen for the simulation because they were statistically significant in Table 4.9. The mean probability of increased agricultural production is calculated using the estimated[8] coefficients obtained from estimating equation 1.0 for all households and when the variable in question is set to the minimum (for instance the number of deaths in the household for the past one year was set equal to zero for the death variable). Then the predicted probabilities for the sample are recalculated after increasing the variable in question to its maximum value or any other desired value. Table 4.10 presents the simulations results.

Table 4.10: Predicted Change in Agricultural Productivity by Low and Higher Values of Some Independent Variables[9]

Variable	Predicted proportion	Percentage change
Hours spent on HIV/AIDS related funerals in the past one year prior to the survey = 0 Hours spent on HIV/AIDS related funerals in the past one year prior to the survey = 50	1399.4 1178.2	-18.7
Death in the household in the past one year prior to the survey = 0 Death in the household in the past one year prior to the survey = 1	1404.9 1222.4	-14.9

Given the results of this model, reducing the hours spent on attending funerals would increase agricultural productivity by about 19 percent. Decreasing HIV/AIDS related deaths from 1 to 0 per household per year resulted in an increase in agricultural production by about 15 percent.

Indeed, these results together with the results in sections 4.3.1 and 4.3.2 confirm to the fact that HIV/AIDS is a threat to agricultural production. The need for more efforts to combat the spread of the virus and combat its impact is unprecedented.

4.3.4 Estimation of the Cereal Gap

The following assumptions are used in estimating the cereal gap that has resulted from the pandemic:

[8] Percent increase is calculated as final predicted probability (when the variable is set at a desired value) minus the initial predicted probability (when the variable is set at zero), divided by the initial predicted probability times100.

[9] These results are only "partial" results. They assume a change in one variable while holding others constant.

(i) The consumed food at the household level is assumed to be the food produced minus the food, which was sold.

(ii) The gap is estimated for maize because maize is the dominant cereal in the study area and thus forms the bulk of the food consumed by the household members everyday. Very few respondents mentioned cultivating wheat, paddy, millet or sorghum.

(iii) Due to the agricultural potential of the study area and poor agricultural markets, the main source of food is from households' own produce.

(iv) Cereal availability per person per year is calculated as: Food available for consumption/12*Household size

(v) Estimation of the cereal gap caused by HIV/AIDS is estimated taking into account the market value of maize at the time of survey (TZS 150 per Kg), the household size, which is estimated to be 4.9, the financial expenses on HIV/AIDS related problems and value of labour. One man day is assumed to have 8 hours and it is valued at TZS 1000 (Rweyemamu and Kimaro, 2004).

Basing on the average value of food left after selling, each household remained with an average of 613Kg of cereals per year for consumption. This is translated to 125Kg per year per capita. Thus, each household member had an average of 343gm of cereal /per day (range 10-2,415gm/per day/per capita). Basing on the assumptions presented above, the average cereal gap without HIV/AIDS was found to be 357g/person/day. This is less than what is recommended by both Tanzania Food and Nutrition Centre (TFNC) and FAO/WHO/UNU. They recommend food requirements to be 700gm/person/day and 600gm/person/day respectively. The TFNC figure assumes a post harvest loss of 17 percent. It is even less to what is recommended by TFNC for children aged 8 – 15, which is 500 gm/person/day

The HIV/AIDS pandemic adds to the burden of food accessibility by reducing the purchasing power of the infected, affected households, and community at large. Basing on the assumptions made above, and by factoring in the financial and time implications of the pandemic, sampled households were found to have lost about TZS 54, 953 in three months prior to the survey, which is worth 366 Kg of maize. Thus, per capita cereal lost based on maize is 75 Kg.

4.4 HIV/AIDS Interventions and Coping Mechanisms

As the pandemic continues to erode the pillars of the household and community welfare in Tanzania, different response mechanisms have been devised to combat the impacts. The literature on the impact of adult illness and death on the household copping strategies suggests that individuals and households go through processes of experimentation and

adaptation as they attempt to cope with immediate and long-term household demographic changes (see White and Robinson, 2000). The combination of coping strategies affects individual or household health-seeking behaviour, resource base, investment patterns working time, social relations, etc. However, some of the affected households do not really cope in the sense that they take an irreversible downward trajectory especially if the household loose its bread earner. Some households' break up and their members, for instance, orphans, widows and the elderly join other households as exemplified by the following narration.

"We were born four in my family, two sisters and two brothers. My elder sister died six months after the death of her husband and left with me three kids. After about eight months, my brother died and left with me his four kids. I have two children of my own, a son and a daughter. My parents are old and living with me. One of my brothers is retarded and stays with me. My husband and I have a 2 acre plot which we mostly plant maize. The burden of taking care of this large family is becoming unbearable to us especially when they fall sick and the school supplies required. It has been quite difficult for us to engage in any future investment since our daily survival has become a priority than any thing else." (A mother, 27 years old in Mawengi village)

Similarly, government and other stakeholders have responded by designing policies, guidelines, interventions and programs to fight the killer disease and to mitigate the impacts. Since it was not easy to get a respondent who is living with HIV/AIDS in the study area, we present only the interventions by government, NGOs, Religious organizations, and community at large and copping strategies adopted at household level (Table 4.11). This section outlines and examines the different interventions in place at the study area.

Table 4.11: Interventions and Copping Strategies Adopted at Different Levels

Interventions and Copying Mechanisms		
Households With a Sick individual/Lost a Household Member	**Community**	**Government, and NGOs, Religious organizations**
Selling assets Selling of agricultural produce Borrow or request for help Taking children out of school Acquire or reallocate labour Reduce working hours Seek support from NGOs and other institutions	Setting by laws Formation of ward/village HIV/AIDS committees Social and economic arrangements to support orphans Social and economic arrangements for funerals	Support orphans, widows, and youth Setting budgets for HIV/AIDS campaigns. Establish HIV/AIDS programs Provide counselling and HIV Testing services Provide treatment

4.4.1 Community Responses on HIV/AIDS and Poverty

At village and hamlet level, community initiated strategies and programmes are also present. Although some villages have not abided, NMSF requires HIV/AIDS to be mainstreamed in community plans. Each hamlet is supposed to form the HIV/AIDS Control Committee of 3 to

4 members chaired by the hamlet chairman. Apart form HIV/AIDS Control Committee, the villages (and therefore wards) are also required to form Disaster Management Committees (Food and HIV/AIDS). The major role of these committees is to facilitate and provide support to the activities meant to fight HIV/AIDS pandemic and hunger in the area. The grassroot committees are extremely useful to NGOs and CBOs because they have been responsible for logistical support, which also provides good access to the target groups.

Although it is difficult to measure because of its qualitative nature, the public awareness on the pandemic has been growing in the district. The response from the grassroots is generally positive. Members of village communities are currently better off in terms of awareness and knowledge on HIV/AIDS. They also acknowledge the knowledge they pick up from posters and films organized under different programmes. Members of all the sampled households (208 households) in 5 villages have heard of HIV/AIDS pandemic and Disaster Management Committees (HIV/AIDS and Food) in their respective villages. They have also heard of various initiatives by the government as well as the private institutions in their respective villages. About 83 percent have attended HIV/AIDS related campaigns at least once. However, little is known on whether they really understand what is meant by HIV and AIDS, modes of transmission (some people still believe that one time unprotected sex can not results to HIV infection), and as well as preventive measures.

As far as poverty alleviation is concerned, seminars on farming techniques, marketing and agricultural credits are organized, aimed at improving the skills and income generating capacity of smallholder farmers. They nevertheless don't target affected households specifically, and moreover their coverage is limited to a few well-informed people who can take advantage of information they get. Most poor households have not participates in these kind of seminars and they don't even know whether they are sometimes organised in their localities.

Information regarding presence of social economic arrangements to support widows, elders or orphans was also sought because these social groups are mostly vulnerable and marginalized groups in the society. The social economic arrangements were in place but they were found to be limited. Out of the total households surveyed, only 24 percent of the households indicated to have economic and social arrangements for widows, orphans and/or elders in their respective communities. Majority of the respondents were either not sure whether such arrangements existed or were not involved at all.

In discussing with Catherine about how she copes with her illness and her plans concerning her children's education following her husband's death, She says.

"My husband was a business man and because he had money my deceased sister's children were studying in international school. The fee thee is 600,000 shillings for each child. My sister died in1998 and we were married to the same husband. Now my husband is dead also and he died with his business! When he was alive I did not take part in his plans because he did not want me to get

involved at all. I have just been a housewife since I married him in 1997. We had two children, and now that he is dead all seven children depend on me.
But I am already weak with this illness. I have been sick since 2001, but I did not know that I had AIDS until after my husband died. I wanted to go and test but my husband would not allow it. He told me that if I decide to test for HIV/AIDS without his permission I should also consider packing and leaving because he would not consider me his wife again. I was appalled by his reaction but there was nothing I could do so I did not test for HIV/AIDS until after he died three months ago.
*I don't have a job or a business that could give me money to keep the children in international school. So they will not go to international school next year. But even if they get admission in public school I know I will not be able to support them for long because with this illness I know I won't live for long. I know that these children will suffer a lot when I die, but there is nothing I can do about that. My father in law has been the only person we can depend on. He has been assisting us sometime, bringing us food or money, but he is very old and after all he has his own family to look after"(*Catherine is a widow and mother of 7 at Ludewa village*)*

Households have to device some coping mechanisms, but most of the time survivors end in despair. Death of the breads winder essentially disrupts the entire households plans for survival in the short run and for the future as well. In the first place, funerals draw a lot of household resources in terms of time, reserve food and money. These funeral expenses include transport, burial and other rituals. And when the funerals are over the remaining household head has to think about what to do. There are some informal community arrangements where relative, or households residing in the same community assist each other to meet costs of funeral or other social celebrations. Nevertheless household have to meet illness expenses on their own, or with meagre assistance they manage to from close relatives. Both HIV/AIDS affected and unaffected households take part in these arrangements. Over 74 percent of the interviewed households were in such arrangements. This was observed to be an effective way of mitigating the impact of the pandemic for poor households as it provides affected households with something to fall back on at least in the short run. Workability of such arrangements in the long run is however limited.

4.4.2 Responses by NGOs and Religions Organizations

The research team identified the NGOs, religious organizations, and community based organizations operating in the study area. A total of 11 local NGOs were found to be operating in the study at the time of survey but only 9 had HIV/AIDS component in their programs. There are 10 CBOs and 3 Family Based Organizations (FBOs) but they mainly deal with economic activities. CARE International was the only international NGO that was found to have HIV/AIDS related activities in the study area. Communities were found to be very receptive on HIV/AIDS related interventions. However, some poverty related interventions especially those aimed at promoting cash crops are received with caution due to lack of market for agricultural produce such as pyrethrum.

A number of NGOs and CBOs are currently implementing their programmes and provide prevention and mitigation services to the grassroots communities of Ludewa district. These programmes are however currently concentrated in three out of five divisions[10]. This is possibly because geographically, the three divisions namely Liganga, Mlangali and Mawengi are better placed compared to Masasi and Mwambao, which are difficulty to access due to poor road condition.

A total of 11 NGOs and CBOs are operating in Ludewa district under the coordination of a Joint Umbrella Committee housed and supported by Care International, which also funds some of the activities through the respective, NGOs and CBOs[11] (Table 4.12).

Table 4.12: HIV/AIDS Related NGOs and CBOs in Ludewa District

Sn	Name	Abbreviation and Category	Location
1	Ludewa Environmental Conservation and Poverty Alleviation	LECAPOA (NGO)	Ludewa Town
2	Iringa Development of Youth, Disabled and Children Care	IDYDC (NGO)	Ludewa Town
3	Milo Sayuni Orphanage	MISO (NGO)	Ludewa Town
4	Christian Community Services	CCS (NGO)	Ludewa Town
5	Ludewa Education Trust Fund	LUDET (NGO)	Ludewa Town
6	Umoja wa Vijana wa Kikristo Kanisa la Anglikana	UVIKI (CBO)	Ludewa Town
7	Mlangali Development Association	MLADEA (NGO)	Mlangali
8	Lupanga Youth Society	LUYOSO	Mlangali
9	Family Based Health Care	FABAHECA (CBO)	Lugalawa
10	Community Based Health Care	CBHC	Mlangali
11	Lusala Development Association	LUDEA (NGO)	Lupanga

The role of coordination by the Joint Umbrella Committee has been satisfactory according to the district authorities and members of the village communities. A total of 6 NGOs under the umbrella were surveyed. HIV/AIDS related activities supported by the surveyed NGOs are presented in Table 4.13. NGOs were found to be playing a great role in combating poverty and HIV/AIDS through interventions such as:

- Condom distribution.
- Conducting trainings and seminars to reduce stigma and discrimination and create awareness on prevention.
- Income generating activities.
- Support schooling for orphans' and youth from very poor families
- Helping the community to eradicate harmful traditional practices.

[10] Ludewa district is made of five divisions namely, Liganga, Mlangali, Mawengi, Masasi and Mwambao.

[11] The Joint Umbrella Committee is a Partnership Body for different NGOs and CBOs implementing HIV/AIDS and Poverty related programmes in Ludewa District

- Sensitization, advice people to attend Voluntary Counseling and Testing Center (VCT).
- Support construction of community secondary schools

Table 4.13: NGO Supported Programs to Combat the Spread of HIV and Mitigate the Impacts

Organization	Description	Prevention	Care & Support	Impact Mitigation	Treatment
2. Milo Sayuni Orphanage (MISO)	Support educational supplies for some orphans enrolled in primary and secondary school, and vocational training	√			
3. Iringa Development of Disabled Youth[12] and Children Care (IDYDC)—Ludewa branch	Prevention of youth infection through sports Peer education on effects of HIV/AIDS, drugs, and the bad form of child labour Provide soft loans for vocational training	√ √		 √	
4. Christian Community Services (CCS)	Conduct seminars for different community groups including leaders Use some Church forums for sensitizing people about HIV/AIDS Provide support on counseling and testing	√ √ √			
5. Ludewa District Education Trust Fund (LUDET)	School programs on prevention of new infections Provide support for orphans at primary and secondary schools	√		 √	
6. Mlangali Development Association (MLADEA)	Prevention focused seminar to different community groups especially petty business men and traditional birth attendants (TBAs) Support to orphans	√		 √	

The Agricultural Sector Program Support (ASPS) have mainstreamed HIV/AIDS related activities into the program. The program however only supports prevention activities that are demand driven. Communities are therefore expected to develop such activities themselves. Activities supported are mainly related to HIV/AIDS education and counselling on HIV/AIDS victims.

[12] Disabled youths are defined as youths from very poor families.

Several anti-poverty strategies/activities are also been implemented by these NGOs in addition to HIV/AIDS related activities. These include:

(a) LECAPOA

- As far as combating poverty is concerned, LECAPOA has been promoting community based bee project. The benefits accrued from this project are used to help orphans.
- Supplying mosquito nets at Masasi and Manda wards, and disseminating knowledge about how the community could prevent itself from contracting malaria.
- Tree planting for timber, firewood and charcoal
- Agricultural education and extension. They advice farmers to plant short-term crops especially during dry season. Planting fruit trees is also encouraged.
- Animal husbandry—the community is educated on the importance of keeping diary cattle because milk is a rare commodity at Ludewa.

(b) IDYDC

- This NGO was supporting primary school supplies for 150 orphans at the time of survey. They expect to support 20 students in 2004 (10 at secondary school level and 10 at vocational training centers such as VETA).
- The NGO intends to provide soft loan for buying fishing nets

(c) CCS

- Promotion of good nutritional practices especially for women and children.
- Provide knowledge on safe delivery and family planning
- Provide HIV testing services and offer certificate to infected individuals. With HIV/AIDS certificate, infected could get treated for free at government health facilities.
- Promotion of animal husbandry activities, for instance, improved chicken and rabbit. However, programs on promotion of keeping small animals have not been very successful because households do not see the importance of keeping for instance rabbit.
- Tree planting for environmental conservation and firewood
- Promotion of sustainable fishing practices

(d) LUDET

- Provide knowledge on family planning. This program has been very successful. In 2003 they were able to recruit 175 women and 3 men.
- The NGO has a bee-keeping program (50 bee hives in each ward they are operating). The benefits from selling honey are used to support orphans.

- Participated in the construction of community schools. LUDET was established in 1988 and to date they have constructed 6 secondary schools and three are in progress[13].

(e) MLADEA

- The NGO promotes good plant and animal husbandry practices. The association promote the production of coffee for cash earning. It encourages the community to join the coffee production program supervised by MLADEA.

As with the case of Government's interventions, the **main area of focus as far as HIV/AIDS is concerned has been prevention.** It is however encouraging that, NGOs and religious organizations have slightly diversified to other thematic areas, including care and support and impact mitigation. All in all, it is surprisingly noted that, in societies that are predominantly agricultural, there are no specific programs, which provide direct agricultural related support to farmers and people living with HIV/AIDS, or who are in one way or another affected by HIV/AIDS. It should be however pointed out that the issue is very complex. While denial of reality, and stigma related complexities, hinder people from disclosing their sero zero status, lack of motivation for one to disclose his/her status augment the state of affair. Means to identify and thus to have proper records on HIV/AIDS victims complicate the situation even further. Unethical practices and non-confidentially of ones sero zero status also discourage people from testing and attending counselling sessions. Great efforts have to be put on addressing the stigma through counselling, seminars and awareness campaigns so that PLWHAs do not feel discriminated in the communities in case they reveal their sero zero status

There are several problems that hinder successful fight against the HIV/AIDS pandemic and poverty in the study area. The most striking problem is the poor road infrastructure to remote areas. Even under VSHP, marginalized areas like Manda are not frequented as the nearby areas. This, coupled with poor market for agricultural produce makes poverty endemic despite the agricultural potential of the area.

Another NGOs perspective was in relation to breaking the silence about the scourge. Doctors are blamed for not disclosing the sero zero status of the infected to his/her relatives. This makes the relatives use a lot of resources in seeking alternative care for instance by visiting which doctors. This is also a problem because household members involved in taking care of the affected do not take necessary preventing measures because they do not know what their relative is suffering from. This is exemplified by the following quote from one caretaker of infected individual.

[13] Note that when LUDET was established Ludewa was not a full fledged district. It was part of Njombe district.

"…My sister has been sick and she has sores all over her body even in the mouth. Sometimes she cannot swallow anything. I was sent by our parents to take care of her and I have been washing her, nursing her sores and feeding her. However I don't know what she is suffering from. Would you please let me know what my sister is suffering from…" (Female, 22 years old, Madope village).

It was pathetic to note that this youngster was helping her sister without having a clue on what her sister was suffering from. This means that she has no been using any protective device when taking care of her sister. Although the main mode of transmission of HIV in Tanzania is through sexual intercourse, the need to educate the community about other sources of transmission of the virus is crucial. This is also related to how the communities in the study handle a dead body. Infections could result from washing the dead body.

4.4.3 Coordination of HIV/AIDS Related Activities

CARE International has done a commendable job as far as assisting in coordination of health related and in particular HIV/AIDS related activities in the study area. CARE formed the Voluntary Sector Health Program (VSHP), which concentrate on three important activities: Safe delivery/motherhood; Maternal and child health services; and HIV/AIDS. Financial support to NGOs dealing with these activities is channelled through this program. The coordination of activities is through the partnership committee that encompasses members from the government, and representation from the umbrella organization under VSHP. Partnership committee members include: District Administrative Secretary (DAS), District Medical Officer (DMO); District Education Officer (DEO); District Community Development Officer (DCDO); and focal persons/representative from the NGOs operating under VSHP.

The VSHP program has strengthened the partnership between government and NGOs and facilitated the coordination of different activities. Under VSHP, the following have been achieved:

(i) Promotion of synergy between government and NGOs. For instance, the District Council provides transport and expertise to facilitate the NGO activities, whereas the responsible NGOs provide other support. In conducing a seminar for instance on HIV/AIDS prevention, the NGOs may get a councillor or educator from the district hospital. If NGOs are conducting seminars on for instance good crop husbandry, they get support from the District's agriculture desk.

(ii) Duplication of activities and concentration of NGOs in one area has been minimized. Each NGO is mandated with specific activities and specific designated area. In this way, the spread of activities to remote, marginalized, and hard to reach areas like Manda have been enhanced.

(iii) VSHP also enhances cooperation among NGOs. For instance, all the seven NGOs under VSHP participated in the big campaign against malaria. Further, MLADEA, Lupanga Youth Society (LUYOSO), and LUDEA are working together in facilitating VSHP activities.

(iv) Acceptably of NGOs by the community and transparency has also been augmented through the VSHP partnership committee.

Coordination by the Joint Umbrella Committee has reduced significantly conflicts and contradiction among different players, which used to prevail in the past. In addition, to a larger extent duplication of efforts and subsequently wastage of resources have been minimized. There is a higher degree of harmony between government authorities at district level and private institutions operating at the grassroots. This achievement was partly made possible by the fact all private institutions go through the laid down procedures before they start their operations. They go through registration process, licensing etc, and therefore they operate with clean records.

As mentioned, most of the NGOs and CBOs make use of the professional staff from the District Council to execute some of the activities in the villages, atop their own para-professionals. This is an example of the best practices in terms of public-private partnership.

4.4.4 Copping Mechanisms at Household Level

(i) Reducing Working Hours

Information from the surveyed households revealed that some time was spent in attending funerals and visiting/taking care of HIV sick individuals as presented earlier. As a result the welfare of the HIV/AIDS affected households is affected as much time is used for attending the HIV/AIDS related problems and not on productive activities. For self-employed individuals, reduction of working hours meant loss of income and hence, inability to meet medical and other expenses needed for a functional livelihood. The time of non-affected households is also put into jeopardy as they will have to take care of neighbour, relative, friend who is sick and also attend frequent funerals. However, reducing hours on leisure activities is an effective copping strategy.

(ii) Selling of Assets

Some other individuals/households resorted into selling of assets as a means of meeting individual/household expenses including paying for medical expenses. This was necessary as the costs are high while at the same time cash available at the household disposal are small. Some of the assets sold include radio cassette, and video player. However, only 7 percent of the households sold land as a copping strategy.

(iii) Selling of Agricultural Produce and Livestock

This copping strategy was resorted by majority of the affected households. In three months prior the survey, the households sold mainly maize. In addition, animals like chicken were also sold. This adds to the problems of household food insecurity as food is used for unintended purposes. Some surveyed households used the readily available cash in the household while 13 percent and 11 percent sold agricultural produce and livestock respectively.

(iv) Borrowing and Requesting for Support

Some households resorted into borrowing and requesting for support from other households so as to meet medical and other expenses at their respective households.

(v) Taking Children Out of School

This was mentioned in by NGOs to be rare. It also seemed uncommon in the study area, except for one case where children were to be transferred to public schools because their father had died.

4.4.5 Assessment of the Different Coping Mechanisms Employed

Households and different institutions surveyed have adopted different mechanisms in preventing the spread of the virus and mitigating the impacts of the pandemic. For households in particular, while pursuing a combination of copping strategies, there is a greater likelihood of strategies that damage household resilience to other future shocks and which increases the likelihood of these households spiralling into increased poverty.

One way to classify the copping strategies is according to whether they are "erosive" or "non-erosive." Non-erosive strategies are those that are reversible, that is, they do not result in permanent damage to the household's ability to cope in the future. Erosive strategies on the other hand are those that deplete assets in such a way that the household's resilience to future shock is permanently weakened.

Different copping mechanisms are opted by different households but some are effective in mitigating the impact than the other, and some are erosive while others are none erosive. Assessment of the effectiveness and erosiveness of some of the discussed coping strategies is presented in Table 4.14. The analysis shows that social economic arrangements to support widows, elders and orphans, and social economic arrangement for funerals are observed to be very effective and non- erosive

Table 4.14: Assessment of Different Forms of Copping Mechanisms

Type of Coping Mechanism	Factors Assessed	
	Effectiveness	Erosiveness
Selling assets	E	RR
Taking children out of school	E	RR
Borrow or request for help	E	R
Reducing hours allocated to productive activities	E	R
Reducing hours allocated to leisure activities	EE	NR
Social economic arrangements to support widows, elders and orphans	EE	NR
Social and economic arrangements for funerals	EE	NR

Note: The E, R, NR indicate whether the coping mechanism is effective, erosive or non-erosive respectively. Note also that EE means very effective where as RR means very erosive.

Copping mechanisms such as selling of assets and taking children out of school could be effective in the short run but very erosive in the long run whereas reducing hours spent on leisure activities is very effective. However, reducing hours allocated to productive activities could be effective in the short run but also erosive in the long run. Coping strategies that are erosive are also considered to be negative as they expose the infected household into higher risk of HIV/AIDS infection. For instance, taking children out of school increases the possibility of such children engaging into risk activities such as prostitution. This is particularly possible after the death of their parents.

It is important to note that the coping strategies adopted by different institutions NGOs and government are effective and non erosive to the people living with HIV/AIDS/households but they are erosive at the institution's level. For instance, distribution of condoms draws resources that could be used for other alternative activities. However, at institutional level, spending on preventive programs to combat the spread of the virus and thus reduce expenditures on medical, and deaths is imperative.

It is difficult to recommend best coping strategies to be adopted by different individuals and households/communities in order to avoid the long term effects, as this would mostly depend on the social and economic status of the affected individual/household or the community. For instance, it is difficult to prevent a household from selling a piece of land or any other asset or not taking a child out of school as these are influenced by the degree to which the respective household has been hit by the pandemic as well as the initial social and economic conditions before the household was hit. In addition, majority of people prefer to solve the problem at hand at the expense of future sufferance. However, coping strategies related to social capital formation are highly encouraged because the impact of the shock is spread in a bigger segment of the society.

5.0 CONCLUSION AND RECOMMENDATIONS

The impact of the HIV/AIDS pandemic on the communities' livelihoods is likely to reduce the potential gains in poverty reduction efforts. The study has found that the poverty situation in Ludewa is disquieting. About 95 percent of the surveyed households for example fell within the food poor category within the community. Findings have revealed that HIV/AIDS apart from leading to significant loss of lives of productive members of society also reduces the amount of time spent on economic activities due to own illness, care of the chronically ill and attending funerals.

HIV/AIDS pandemic in Ludewa district has affected the performance of agricultural activities in different ways. The potential labour force in the sector has generally lost the ability to perform productive activities following loss of man-days. These findings call for urgent corrective measures particularly because Ludewa district is primarily agriculture dependent. Furthermore apart from contributing to local households livelihoods (employment and incomes) agriculture in the rural areas is the most important source of food to urban areas, and accounts for more than 50 percent of GDP, and a relatively large share of foreign exchange earnings. It is a labour-based sector, yet it is the same labour force, which is currently under serious threat.

In the district, the dependence (Worker – Consumer) ratio using aggregate labour and consumer units are 0.69, implying that every adult in Ludewa district supports 1.5 consumption units. With the depletion of the most productive labour force the dependence ration in the district is expected to increase. This has and is likely to continue lowering ability of families to earn adequate incomes to sustain them.

High medical expenditure associated with HIV/AIDS also diverts the few poor households resources to non-productive household expenditures. All these in turn leads to further increase in vulnerability of households to food insecurity and poverty. A two way causation between HIV/AIDS and poverty makes the situation rather complex, which means that for mitigation efforts to work, the need to go deep and wide enough to address the roots of the problem. Below are recommendations on the needed efforts to mitigate the impact of HIV/AIDS as well as improve the livelihoods of the people so that their ability to avoid the spread of new HIV/AIDS is enhanced.

(i) Due to the disquieting poverty situation in Ludewa, efforts to mitigate the impact of HIV/AIDS can only succeed in the long run if they also focus in improving the livelihood means of the people in the district. Currently they are mostly concerned with prevention and they do not adequately deal with economic empowerment of old people and affected households to help them cope in the event of loss of main household breadwinner. Poverty and HIV/AIDS are complex and intertwined problems and need to be tackled with

comprehensive initiatives. It is therefore important to increase interventions that lead to economic empowerment, for example:

a. Starting and encouraging the private sector to undertake economic activities such as extracting of coal, which is plenty in the district.
b. Ludewa is also known as one of the largest maize producing districts and therefore improving marketing systems for the agricultural products could increase the level of incomes
c. Encourage households to undertake sustainable economic activities, as these would reduce the risk of heavy reliance on sale of household assets to cope with the negative impacts of the disease.

(ii) There is a need to extent coverage and improve quality of voluntary counselling and testing services in the locality. These services are rather scattered and in only a few areas. Lack of facilities was noted even in wards that are identified as the high prevalence areas, for example Madope ward.

a. The civic education, training and awareness campaigns should be made a continuous activity and where possible individuals living with HIV/AIDS should lead the process of sensitisation.
b. Organization of training sessions should be organised by age and sex groups to make it easier to communicate with all community members without enticing problems caused by cultural barriers.
c. It is important that efforts are taken to improve confidentiality and counselling ethics between the voluntary testing and counselling service providers. Some community members said that fear of breach of ethics governing anonymous testing and country discourage people from testing
d. Medical personnel/doctors are blamed for infections that result from their silence/failure to inform their patients' and/their close relative of their ill household members HIV/AIDS status. This situation increases the risk of infections to household members who are involved in taking care of the sick. The medical personnel are therefore urged to be frank with the patients about their sero status

(iii) Malnutrition is rampant in the rural areas of the country and Ludewa, confirms this observation. Excessive malnutrition lowers lower the immunity system as the HIV does for an AIDS victim, and is likely to lead to symptoms that are very similar to those brought about by HIV/AIDS. The situation is called Nutritionally Acquired Immune Deficiency Syndrome (NAIDS). Thus, medical personnel have to exhaust all HIV/AIDS tests before condemning one to be HIV positive.

(iv) Respected elders in the community should also be mobilized to participate in the awareness campaigns. Their advice is likely to be accepted more easily by groups of peer elderly people in the rural settings compared to the youth that are currently championing awareness campaigns.

(v) Not all villages/wards are within easy reach of the available VSHP facilities. There is therefore a need to increase the coverage of the VSHP and testing facilities so that they are within easy reach of more community members.

(iii) Deliberate tendency of some people to try to spread HIV/AIDS infections to others was strongly voiced by elders in the villages we visited. This tendency jeopardises effectiveness of existing efforts to curtail the spread of the pandemic. Accordingly, the village elders suggested that the government should consider giving them mandate/powers to intervene and stop obvious deliberate moves to infect other village members.

(iv) Establish formal social insurance schemes for widows, orphans and aged people in the communities. Old people who remain to rake care of the orphans are usually unable to work and therefore their ability to sustain the orphans' development is limited. Improvement of the current safety nets for the poor and affected households and development of new ones at district, ward and community levels is vital. Thus;

(a) Village governments, where possible should be allowed to use part of the money they get from the District Council to help the widows and orphans
(b) Undertake gender sensitive approaches to mobilizing community participation in mitigating the risks associated with the spread of HIV/AIDS. Good example is related to establishment of home-based care system.

(v) Improvement of the availability of protective gear and raise awareness on their use among community members on their safe use:

a. Gloves are not readily available. Businessmen were requested to sell gloves but this has not been taken aboard, and therefore deliberate efforts are needed to improve their availability
b. Make the protective gear available at affordable costs and educate communities on necessity of using protective gears to protect themselves from infections when taking care of HIV/AIDS patients and when handling a HIV/AIDS related corpse.

(vi) Although the NGOs activities are coordinated in abetter way now compared to the past, there is still a need to improve the approaches so as to extend their outreach.

(vi) On the government side however, it was observed that too much emphasis is placed on prevention and very little on mitigation, and/empowering communities economically to be able to cope with the risks associated with HIV/AIDS. There is therefore a need of the government to invest in HIV/AIDS campaigns that also incorporate empowerment activities for agricultural households in the rural areas.

REFERENCES

ACC/SCN. (2001). "Nutrition and HIV/AIDS." Nutrition Policy Paper Number 20 and Report of the 28th Session Symposium held 3-4 April, 2001, Nairobi Kenya.

Barnett, T and A. Whiteside. (2002). "Poverty and HIV/AIDS: Impact, Coping and Mitigation Policy," in Cornia G. A. (ed) *AIDS, Public Policy and Child Well-being,* UNICEF-IRC.

Baylies, C. (2002). "The Impact of AIDS on Rural Households in Africa: A Shock Like Any other. Institute of Social Studies, US and UK.

Bollinger, L., J. Stover, P. Riwa. (1999). "The Economic Impacts of AIDS in Tanzania." The Future Group International in Collaboration with Research Triangle Institute (RTI). The Center for Development and Population Activities (CEDPA).

Boyd, H.K., P. Westfall and S.F. Stasch. (1981). *Marketing Research: Texts and Cases.* Richard D. Irwin Inc. Illinois.

Brown, P. (1990). "Africa's Growing AIDS Crisis," *New Scientist*, 17th November, pp 41.

ESRF. (2003). "The Economic and Social Impacts of HIV/AIDS in Tanzania." A Research Report submitted to Swedish International Development Agency (SIDA), Dar es Salaam.

ESRF. (2004). "The Impact of HIV/AIDS on Agriculture: The Case of Kilombero and Ulanga Districts." A Research Report submitted to EZCORE Project, Ilonga Kilosa.

FAO. (2001). *The Impact of HIV/AIDS on Food Security*. Rome: FAO.

Fox, M., S. Rosen, W. Mcleod, M. Wasunna, M. Bii, G. Foglia, and J. Simon. (2003). "The Impact of HIV/AIDS on Labour Productivity." Center for International Health and Development, Boston University School of Public Health. Discussion Draft.

Gillespie, S and L. Haddad. (2002). "Food Security as a Response to AIDS." In: *AIDS and Food Security*. International Food Policy Research Institute (IFPRI). Washington D.C.: IFPRI.

Gillespie, S., L. Haddad, and R. Jackson. (2001). "HIV/AIDS, Food and Nutrition Security: Impacts and Actions." In: *Nutrition and HIV/AIDS, Nutrition Policy Paper* No. 20. ACC/SCN: Geneva.

IFPRI. (2002). "AIDS and Food Security." Essays by Peter Piot, Pinstrup Andresen, Stuart Gillespie and Lawrence Haddad. Washington D.C: International Food Research Institute.

Isaksen, J., N. G. Songstad and A. Spissoy. 2002. "Socio-economic effects of HIV/AIDS in African Countries." Report Submitted to Chr. Michelsen Institute, Bergen, Norway. Also available at www.cmi.no/public/pub2002.

Itika, J. S. (2002). "Small holder Traditional Cash Crop Production for Poverty Alleviation at the Household: Institutional Constraints." Findings from Pilot Study in Kilosa District, Research report REPOA, Dar-es-salaam.

Kwaramba, P. (1998). "The Socioeconomic Impact of HIV/AIDS on Communal Agricultural Systems in Zimbabwe. Working Paper Number 19, Economic Advisory Project.

Likwelile S. (2000):"Measurement of Poverty and Inequality, the Basic of Poverty and Evidence and Trends on Poverty and Inequality Locally and Globally", A Paper Presented at a Training Workshop on Policy Analysis, Poverty, Inequality and Research Methodology, ESRF, Dar-es-Salaam

Lwihula, G. K. (1998). "Coping with AIDS Pandemic: The Experience of Peasant Communities of Kagera Region, Tanzania." ." Paper Presented at the East and Southern African Regional Conference on Responding to HIV/AIDS: Development Needs of African Small holder Agriculture, Harare, June 8-10, 1998.

Makundi, F. L. (1996) " Household food security in rural Tanzania: A Case study of Moshi Rural District, MSc Thesis (Management of Natural Resources and Sustainable Agriculture). Agricultural University of Norway, Ås Norway.

Mamiro, P. (1991) Household food security in rural Tanzania: Adequacy stability and accessibility A case study of Moshi and Kilosa District. MSc Thesis (Management of Natural Resources and Sustainable Agriculture). Agricultural University of Norway, Ås Norway.

Mohamed, J. (2003). "Impact of HIV/AIDS on Food Security and Rural Development in the SADC Region." School of Agriculture, National University of Lesotho, December 2003.

Morris, C., D. Burdge, and E. Cheevers. (2000). "Economic Impact of HIV Infection in a Cohort of Male Sugar Mill Workers in South Africa from the Perspective Industry." International AIDS Economics Network Symposium, Durban, South Africa, July 2000.

Msambichaka L., N. Mwamba and O. Mashindano. (2003): "Poverty in Tanzania: Situation, Perception and Escape Routes", A Paper Submitted for Publication

Odenya, W. O. (2003). "HIV/AIDS and Food Security Within the Southern African Development Community (SADC)." School of Agriculture, National University of Lesotho, December 2003.

Okello-Uma, I. (2003). "The impact of HIV/AIDS on Rural Development." School of Agriculture , National University of Lesotho, December 2003.

Over, M., M. Ainsworth, P. Mujinja, I. Semali, G. Lwihula, G. Koda, and K. Beegle. (1996). "Coping with AIDS: Summary of the Research Results of the Economic Impact of Adult Mortality from AIDS and Other Causes on Households in Kagera, Tanzania. Manuscript prepared for a Discussion at a Workshop in Bukoba, Tanzania. Washington D.C: World Bank.

Qamar, M.K. (2001). "The HIV/AIDS Epidemic. An Unusual Challenge to Agricultural Extension Services in Sub-Saharan Africa." *Journal of Agricultural Education and Extension* 8(1): 1-11.

Rugalema, G. (1998). "It is not Only the Loss of Labour: HIV/AIDS, Loss of Household Assets and Household Livelihood in Bukoba District, Tanzania." Paper Presented at the East and Southern African Regional Conference on Responding to HIV/AIDS: Development Needs of African Small holder Agriculture, Harare, June 8-10, 1998.

Rugalema, G. (1999). *Adult Mortality as an Entitlement Failure*, *Tanzania.* Published PhD Thesis. The Hague: Institute of Social Studies (ISS).

SADC. (2003). "Towards Identifying Impacts of HIV/AIDS on Food Insecurity in Southern Africa and Implications for Response: Findings from Malawi, Zambia and Zimbabwe," Harare, Zimbabwe.

Sankhayan, P. L. (1994). Effects of Economic Policy Reforms on Peasant Agriculture and the Management of Natural Resources in Tanzania, in Ecology and Development Paper No. 15, Agricultural University of Norway

Rweyemamu D. and M. Kimaro. (2004). "Assessing Market Distortions Affecting Poverty Reduction Efforts Through Smallholder Tobacco Production". REPOA Funded Research Work in Progress.

Tibaijuka, A. K. (1984). An Economic Analysis of Smallholder Banana-coffee Farms in the Kagera Region, Tanzania: Causes of Decline in Productivity and Strategies for Revitalization; A PhD Thesis, Uppsala: Swedish University of Agricultural Sciences.

Tibaijuka, A. K. (1994). "The Cost of Differential Gender Roles in African Agriculture: A Case Study of Smallholder Banana-Coffee Farms in the Kagera Region, Tanzania", Journal of Agricultural Economics, Vol 45 No. 1 of January, pp 69-81

Tibaijuka, A. K. (1997). AIDS and Economic Welfare in Peasant Agriculture: Case Studies from Kagabiro Village, Kagera Region, Tanzania." *World Development* 25:963-975.

UNAIDS. (2003). "AIDS Epidemic Update—December 2003."

UNDP/FAO. (2002). "Meeting the HIV/AIDS Challenge to Food Security: The Role of Labour Saving Technologies in Farm Households." Building regional HIV Resilience UNDP South East Asia HIV and Development Programme.
UNICEF (1998) Household food security situation in selected district in Tanzania: Knowledge Attitude and Practices of community Leadership. A UNICEF Study Report December 1997 – February 1998.

URT. (1997). "Iringa Region Socio-Economic Profile." Dar es Salaam and Iringa: Planning Commission and Regional Commissioner's Office.

URT. (2000a). "Poverty Reduction Strategy Paper. Dar es Salaam: Government Printers.

URT. (2001). National HIV/AIDS Policy, Government Printers, Dar es Salaam

URT. (2002a). "Household Budget Survey 2000/01." National Bureau of Statistics, Dar es Salaam.

URT. (2003a). National AIDS Control Programme: HIV/AIDS/STI Surveillance Report – Report No 17; Ministry of Heath, Dar-es-Salaam

URT. (2003b). "National HIV/AIDS Multi-sectoral Framework: Dar es Salaam: Prime Minster Office, TACAIDS.

URT. (2003c). "2002 Population and Housing Census." Dar es Salaam; National Bureau of Statistics.

Van Liere, M. J. (2002) HIV/AIDS and food security in Sub Saharan Africa. Presentation at the 7th Annual ECOWAS Nutrition Forum, Banjul, the Gambia 2- 6 September 2002.

White, J and E. Robinson. (2000). "HIV/AIDS and Rural Livelihoods in Sub Saharan Africa." Policy Series No 6 NRI, Chathan, UK.

World Bank (2000). "Agriculture in Tanzania Since 1986: Follower or Leader of Growth?." World Bank Country Study. Washington D.C: The World Bank.

APPENDICES

Appendix 1: Questionnaire for Households

THE IMPACT OF HIV/AIDS ON FOOD POVERTY IN RURAL TANZANIA: THE CASE OF LUDEWA DISTRICT

QUESTIONNAIRE FOR HOUSEHOLDS

PART 1: INTRODUCTION

[*Interviewer: Read the following introductory statement, which you ought to make to the respondent*]

My name is----------. I am working with Economic and Social Research Foundation (ESRF) in Dar es Salaam. We are studying "The Impact of HIV/AIDS on Food Poverty in Ludewa District." We are interested in learning how the disease has impacted on household food security and how different mechanisms have been employed to mitigate that impact. We are interviewing households, districts, ward and village leaders, NGOs and CBOs dealing with HIV/AIDS. The information we are gathering will help the government and organizations to plan, design and implement different interventions to mitigate the impact of HIV/AIDS. The information would also be used to plan and implement different programs for social and economic development. We are assuring you that information you will give will be completely confidential. Neither your name nor the information that you will give, as a person will be disclosed to anybody apart from the research team. Note that, you are not forced to answer any question that you think you do not have to.

1. **Questionnaire number ----------**

2. **Household Number----------**

3. **Date of Interview ----------**

4. **Location:**
   - **(i) Ward ----------**
   - **(ii) Village/Street ----------**
   - **(iii) HIV Status 1. HPA 2. LPA ----------**

5. **Would you be willing to be interviewed?**
   - **(a) Yes**
   - **(b) No**

(IF YES, PROCEED WITH THE INTERVIEW - IF NO, STOP THE INTERVIEW)

PART 2: THE HOUSEHOLD ROSTER

ID		01	02	03	04	05
	NAME OF THE MEMBERS OF THE HOUSEHOLD.	Is .. [NAME] …male or female?	What is the relationship of ([NAME] …. To the head of the household?	How many months has … [NAME].. been living in this household out of the past year?	Is this person to be considered a member of the household for survey purposes?	How old is [NAME] .. in years?
	THE HEAD/PRINCIPAL RESPONDENT MUST BE THE FIRST ON EVERY QUESTIONNAIRE.	MALE … …1 FEMALE: .. 2	HEAD ……. 1 WIFE OR HUSBAND .. 2 SON/DAUGHTER….. 3 STEP SON/DAUGHTER 4 GRANDCHILD ……. 5 FATHER OR MOTHER 6 SISTER OR BROTHER … 7 NIECE OR NEPHEW …… 8 SON/DAUGHTER IN LAW …… 9 BROTHER/SISTER-IN-LAW …… 10 FATHER/MOTHER-IN-LAW … ……. 11 OTHER RELATIVE OF HEAD OR OF HIS/HER SPOUSE …….. 12 SERVANT/MAKUBALIANO … …….. 13 SERVANT/MKATABA …… 14 TENANT/BOARDER.. 15 OTHER UNRELATED PERSON …… 16	WRITE NUMBER OF MONTHS, FROM 0 TO 12	DETERMINE WHETHER A PERSON IS TO BE TREATED AS HOUSEHOLD MEMBER: **CRITERIA FOR "YES" AND "NO"** A PERSON SHOULD BE CONSIDERED A HOUSEHOLD MEMBER IF HE/SHE HAS LIVED IN THE HOUSEHOLD FOR AT LEAST 3 MONTHS. YES ……..1 NO…….2	
		SEX	RELATIONSHIP TO HEAD	IN RESIDENCE	HH MEMBER TEST	AGE
		CODE	CODE	MONTHS	CODE	YEARS
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

PART 3: HOUSEHOLD CHARACTERISTICS

ID	06	07	08	09	10	11
	What is the present marital status of .. [NAME]..	Can .. [NAME] .. read and write Swahili?	Has … (NAME).. ever attended or is he/she attending school?	What is the highest grade in school that …[NAME].. completed?	What is your religion?	Among children whom are less than 16 years old living in this household. Is there anyone who is an orphan (lost one or both parents)?
	READ TO RESPONDENT: Married/ Monogamous…..1 Married/ polygamous……2 Partner/Co-habiting ……..3 Divorced …… . 4 Separated ……. 5 Widow/widower.. 6 Never married …. 7	YES ……. 1 NO …… 2	YES ……..1 NO …….2	SEE CODE LIST BELOW	MUSLIM…….1 CATHOLIC….2 PROTESTANT.3 NONE……..4 OTHER…….5	YES……1 NO……..2 IF THE ANSWER IS NO, STOP IF THE ANSWER IS YES INDICATE BY INSERTING "YES" TO THOSE HOUSEHOLD MEMBERS WHO ARE ORPHANS.
	MARITAL STATUS	READING	EVER SCHOOL	SCHOOLING	RELIGION	ORPHANS
	CODE	CODE	CODE	CODE	CODE	CODE
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

HIGHEST GRADE COMPLETED IN SCHOOL – GRADE CODES
KORANIC……...…..……...1 **NOT YET IN SCHOOL (0-5 YEARS)----------…..--…---------2** **NOT COMPLETED PRIMARY SCHOOL (up to how many years)…….……..…....3** **COMPLETED PRIMARY SCHOOL……..….4** **NO FORMAL EDUCATION……..5** **COMPLETED PRIMARY SCHOOL + EXTRA COURSES(Years of attended courses..…..6** **COMPLETED O-LEVEL SECONDARY SCHOOL……7** **COMPLETED A-LEVEL SECONDARY SCHOOL……..…..…….8** **COMPLETED HIGHER INSTITUTIONS OF LEARNING (UNIVERSITY, DIPLOMA)……...9** **COMPLETED ADULT EDUCATION……..……...…….10** **OTHER (Specify)……..11**

ID	12		13		14		15	
	Does … [NAME] .. own a watch?		Does .. [NAME].. own a bicycle?		Does … [NAME].. own a camera?		Does .. [NAME] .. own a radio or cassette player?	
	YES ……1 NO ……. 2		YES ……1 NO ……. 2		YES ……1 NO ……. 2		YES ……1 NO ……. 2	
	WATCH	Market Value	BICYCLE	Market Value	CAMERA	Market Value	RADIO/ CASSETTE	Market Value
	CODE	Tsh	CODE	Tsh	CODE	Tsh	CODE	Tsh
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

PART 4: HOUSEHOLD ECONOMIC ACTIVITIES AND INCOME

7	16	17	18	19	20
	What is the main source of water for drinking and everyday use for your household?	What kind of toilet facility does your household has?	What are the main materials used in the roof?	What are the main materials used in the wall?	What are the main construction materials used on the floor?
	TAP……..1 PIPED WATER OUTSIDE……..2 PUBLIC TAP…….3 WELL WATER WITHIN RESIDENCE…….4 OUTSIDE/PUBLIC WELL.5 SPRING WATER……6 RIVER/STREAM/POND/ LAKE/DAM……..7 RAIN WATER……..…8 WATER VENDORS…….9. OTHER (SPECIFY)…….10	FLUSH TOLET…….1 IMPROVED PIT LATRINE……..2 TRADITIONAL PIT LATRINE……..3 RIVER/CANAL…….4 NO TOILET……5 BUSH/FIELD……6 OTHER (SPECIFY)…7	ROOF FROM NATURAL MATERIALS……1 RUDIMENTARY ROOF (e.g. BOXES) ……2 CORRUGATED IRON….3 TILED OR CONCRETE ROOF……4 OTHER (Specify)…….5	WOOD/GRASS….1 WOOD/CLAY……2 CORRUGATED IRON SHEET……3 UNPROCESSED CLAY BRICKS……4 PROCESSED CLAY BRICKS…….5 CONCRETE OR CEMENT BLOCKS..6 OTHER (Specify)….7	MUD/CLAY……1 CEMENT..2 TILES/CERAMIC……3 PARQUET..4 OTHER (Specify)……5
	WATER SOURCE	TOILET	ROOF MATERIAL	WALL MATERIAL	FLOOR MATERIAL
	CODE	CODE	CODE	CODE	CODE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Item		21	22	
	DESCRIPTION OF ECONOMIC ACTIVITY	During the past 12 months have you or any other member of this household received income from. …(ITEM)…?	Do you manage to save some income from the income you earn from economic activities you perform?	
	READ THE NAME OF THE ITEM IN FULL WHEN…(ITEM)… IS SPECIFIED IN THE QUESTIONS TO THE RIGHT (The head of the household to respond)	FIRST ASK THIS YES/NO QUESTION FOR ALL ITEMS IN THE LIST. PLACE AN "X" IN THE CORRECT COLUMN, YES OR NO. Monetary Value (TZS)	ALWAYS…….1 SOMETIMES…2 NO…….3 SAVINGS	AMOUNT IN TZS
		INCOME		
	LIST	TZS		
1	Crop production			
2	Livestock			
3	Fishing			
4	Hunting/beekeeping			
5	Poultry			
6	Farm wage			
7	Other agricultural activity (specify)			
8	Wage in a parastatal/government			
9	Wage earner in a private sector			
10	Monetary savings			
11	Pensions from private sector			
12	Pensions from government			
13	Property (rentals)			
14	Self-employed in own business			
15	Mining			
16	Remittance			
17	Payment in kind (gratuity, bonuses etc.)			
17	Other non-agricultural income (specify)			

PART 5: LABOUR SUPPLY AND UTILISATION

ID	23	24	25	26	27	28	29	30
	What is your main occupation	On average, how many hours does...[NAME]…spend on main occupation everyday?	During the last one month, has …(NAME)… spent time caring for a HIV/AIDS sick person in or outside this household?	If yes, how many hours did …(NAME)… spend caring for a sick person in the last one month?	During the last one month has…(NAME)…spent time attending funeral of any person died of HIV/AIDS related sickness in or outside this household?	If yes, how many hours did...(NAME)… spend attending such funerals in the last one month?	During the last one month has …(NAME)… spent time attending a social activity (e.g. wedding, celebration of any kind, etc) in or outside this household?	During the last one month has, has …(NAME)… failed to attend own activities due to illness? (general question)
			YES……..…1 NO……..……2 I CAN NOT REMEMBER…….3 I DON'T KNOW....4	TIME BE GIVEN IN HOURS	YES ……1 NO ……. 2 I CANNOT REMEMBER...3	TIME BE GIVEN IN HOURS	YES ……..1 NO ……... 2 I CANNOT REMEMBER …3	YES……..…..….1 NO…….…..…2 I CAN NOT REMEMBER…...3 NOT SICK……4
		TIME	CARING A SICK	TIME UNITS	FUNERAL ATTENDANCE	TIME UNITS	SOCIAL ACTIVITIES ATTENDANCE	ATTENDING ACTIVITIES
		HOURS	CODE	HOURS	CODE	HOURS	CODE	CODE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

ID	31	32	33	34
	During the last one month, has …(NAME)… failed to attend own activities due to own illness related to HIV/AIDS?	If yes, how many hours was...(NAME)…not able to attend to his/her activities in the one month?	In the last one month, has …(NAME)… spent any time visiting anyone outside this household who was suffering from HIV/AIDS related problems?	If yes, how much time did …(NAME)… spend in the last 30 days on visiting ill people suffering from HIV/AIDS related problems?
	YES……..……1 NO…….……2 I CAN NOT REMEMBER……3 NOT SICK……4	TIME BE GIVEN IN HOURS	YES……..1 NO……2 I DON'T REMEMBER……3	TIME BE GIVEN IN HOURS
	ATTENDING ACTIVITIES	ACTIVITIES	VISITING THE SICK	HOURS
	CODE	CODE	CODE	HOURS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

PART 6: AGRICULTURE AND FOOD SECURITY

Now, I would like to ask you about all agricultural and livestock keeping activities and markets for agricultural produce.

	35	36
	A. Please describe to me all of the shambas/gardens owned by the members of your household in the past 12 months.	What is the total area of this shamba/garden?
	MAKE A LIST OF ALL SHAMBAS/GARDENS OWNED BY THE HOUSEHOLD. INCLUDE SHAMBAS/GARDENS IN FALLOW. ***Include not owned/not rented***	RECORD THE AREA
	SHAMBAS/GARDENS	AREA
	NUMBER	ACRES
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

	37	38	39	40
	Which farming systems do you use (*check for all applicable options*)	Which farming practice do you use (*check for all applicable options*	For Households with HIV cases have you changed the type of farming systems due to decrease labour supply	If Yes explain what are the farming systems you are using now and why?
	MIXED CROPPING (Intercropping)……..… 1 MIXED FARMING (Livestock and crops)……. 2 AGRO FORESTRY (Trees and crops)……..… 3 OTHER FARMING SYSTEMS…. ……..4	CONTOUR RIDGING . ……1 MULCHING……..……2 COMPOSTING……..…… 3 OTHER FARMING PRACTICES……..4	YES……..1 NO……2	
	FARMING SYSTEM	FRAMING PRACTICES		
	CODE	CODE		
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

ITEM		41	42	43	44	45
	READ THE NAME OF THE ITEM IN FULL WHEN …. (ITEM)…. IS SPECIFIED IN THE QUESTIONS TO THE RIGHT	During the past 12 months has any member of your household raised or owned (……)?	How many ..(____).. of all ages are owned by your household at present?	During the past 12 months have members of your household sold any ..(____)..?	How many ..(___).. have they sold.	If any member of the household sold any livestock, how much was obtained
		YES……..1 NO……2	ASK FOR EACH ITEM WITH AN "X" IN THE "YES" COLUMN.	ASK FOR EACH ITEM WITH AN "X" IN THE "YES" COLUMN. YES ……1 NO …….2	ASK FOR EACH ITEM WITH AN "X" IN THE "YES" COLUMN	
		OWNED ANY	OWN CURRENTLY	SOLD ANY	SOLD	VALUE
		CODE	NUMBER	CODE	NUMBER	TZS
A	Local cows					
B	Improved cows					
C	Local bulls					
D	Improved bulls					
E	Oxen					
F	Sheep					
G	Goats					
H	Pigs					
I	Poultry					
J	Bee hives					
K	Other1					
L	Others 2					

ITEM		46	47	48	49	50	51
	IF CROP PRODUCTION WAS MENTIONED IN THE PREVIOUS SECTION THEN ASK DESCRIPTION OF ITEM	In the past 12 months, did anyone in the household grow…(ITEM…. either for consumption by the household or to sell in the market? If yes how much was harvested?	During past 12 months, did anyone in the household sell…(ITEM)? If yes how much was sold?	You said that your household sold … (ITEMS) …How much was realized from such sales in the last 12 months?	What proportion were kept for household consumption	What was the requirement of the following cereals for household consumption in the last 12 months period?	How much cereals were bought in order to meet household requirement in the past 12 months
	READ THE NAME OF THE ITEM IN FULL WHEN ….. (ITEM)… IS SPECIFIED IN THE QUESTIONS TO THE RIGHT.	FIRST ASK THIS YES/NO QUESTION FOR ALL ITEMS IN THE LIST. PLACE AN "X" IN THE CORRECT COLUMN, YES OR NO. STRESS THAT GROWING ONLY FOR HOME CONSUMPTION IS AN IMPORTANT ECONOMIC ACTIVITY FOR THIS SURVEY	FIRST ASK THIS YES/NO QUESTION FOR ALL ITEMS IN THE LIST. PLACE AN "X" IN THE CORRECT COLUMN, YES OR NO. YES……1 NO…….2	ASK FOR EACH ITEM WITH AN "X" IN THE YES COLUMN	ASK FOR EACH ITEM WITH AN "X" IN THE YES COLUMN	ASK FOR EACH ITEM WITH AN "X" IN THE YES COLUMN	ASK FOR EACH ITEM WITH AN "X" IN THE YES COLUMN
		GROW THIS CROP	SOLD THIS CROP	VALUE	KEPT THIS CROP	REQUIREMENT	BOUGHT
		YIELD (kg)	kg	TZS	(kg)	(kg)	(kg)
1	Local maize						
2	Hybrid maize						

ITEM		46	47	48	49	50	51
3	Beans						
4	Millet						
5	Sorghum						
6	Cassava						
7	Groundnuts						
8	Wheat						
9	Paddy (Mpunga)						
10	Peas						
11	Coffee						
12	Bananas						
13	Tea						
14	Tobacco						
15	Cotton						
16	Pyrethrum						
17	Cardamon (Iliki)						
18	Cashew Nuts						
19	Coconut						
20	Sesame (Ufuta)						
21	Sunflower (Alizeti)						
22	Castor Seed (Nyonyo)						
23	Sugarcane						
24	Legumes/Vegetables						
25	Yams/Sweet Potatoes						
26	Other crops (SPECIFY)						

PART 7: HEALTH SEEKING BEHAVIOUR AND THE COPING MECHANISM

ID	52	53	54	55	56
	ASK THE PRINCIPAL RESPONDENT How would you rate your health and the health of members of your household?	During the last three months, have you or any member of your household had any illness?	What was he/she suffering from? *(If one suffered from more than one illness, ask about the last illness)*	For how many days did you/he/she suffer from this illness (in the last one month)?	For how many days were you/he/she unable to carry on your usual activities because of this illness in the last one month?
	VERY GOOD …..1 GOOD ……2 FAIR…….3 BAD…….4 VERY BAD…….5	YES……..1 NO……2	MALARIA ……...……1 DIARRHEA……..……2 RESPIRATORY RELATED DISEASE……..3 TUBERCULOSIS……4 HIV/AIDS……5 INJURY……6 OTHER (SPECIFY)……7	WRITE NUMBER OF DAYS. IF NONE, WRITE 0.	IF NONE, WRITE 0.
	HEALTH	Illness	TYPE OF DISEASE	DAYS OF ILLNESS/ INJURY	DAYS WITH NO USUAL ACTIVITIES
	CODE	CODE	CODE	DAYS	DAYS
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

ID	57	58	59
	Has anyone been consulted for treating this illness? For example a doctor, nurse, TBA, traditional healer, village health worker, pharmacist, or other practitioner?	If not, why?	I will read several places where you might have been treated or purchased items needed to treat this illness. Tell me if you received treatment, or purchased something (like drugs) at each one. Did you get treatment at or use a:
	YES ……1 NO …….2		HOSPITAL……..1 HEALTH CENTER…… ……2 DISPENSARY…… ……3 CLINIC …….. ……4 PHARMACY……..5 HOME OF PERSON CONSULTED…….6 YOUR OWN HOME ……7 TRADITIONAL HEALER OR SPIRITUALIST……. 8 OTHER (SPECIFY) ……...9
	ANYONE CONSULTED		GET TREATMENT AT…
	CODE		ALL CODES THAT APPLY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

ID	60	61	62	63
	Is this (REPEAT NAME IN 60) a government or mission facility, a private practitioner, or an employer-owned establishment?	How far is this establishment from here?	How much did you spend on treatment in the last 3-months/12 weeks for illness or injury?	Did you or any member of your household receive any assistance from outside your household to help pay for treatment of this illness?
	PROBE! GOVERNMENT…….1 MISSION……2 PRIVATE ……...3 EMPLOYER-OWNED.. 4 OTHER (SPECIFY)……5 NONE (OWN HOME)…6		ASK IN CASH OR IN KIND AND CONVERT TO SHILLINGS IF NECESSARY IF FREE, WRITE ZERO	YES ……1 NO……..2
	FACILITY TYPE	DISTANCE	AMOUNT	OUTSIDE HELP
	CODE	KILOMETERS	TZS	CODE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

ID	64	65	66	69
	How much did you or members of your household receive from outside the household?	Will any part of this have to be repaid?	If yes, how much will have to be repaid?	For expenses for this illness not paid by someone outside the household, how did you get the money to make the payments?
	IF ZERO WRITE 0	YES…….1 NO……..2	IF ZERO WRITE 0	AVAILABLE CASH…….1 SOLD LIVESTOCK OR POULTRY…….2 SOLD AN ASSET (Specify)……..3 DID NOT PAY……...4 LAND…… 5 OTHER (Specify)……6
	OUTSIDE AMOUNT	REPAY	REPAY AMOUNT	SOURCE OF OWN FUNDS
	SHILLINGS	CODE	SHILLINGS	CODE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

PART 8: DEATH IN THE HOUSEHOLD

I would like to ask you about the death(s) which occurred in your household for the past twelve months (These questions are directed to head/principal respondent)

	68	69	70	71	72	73
	Is there a household member who died during the last 12 months?	If a household member died during the last 12 months, can you tell us something about them?	If a household member died during the last 12 months, what was their sex?	If a household member died during the last 12 months, what was their age?	If a household member died during the last 12 months, what was the cause of death?	If a household member died during the last 12 months, what were the funeral costs?
	YES……1 NO……..2	HOW MANY DIED (THE LIST SHOWS ONLY FIVE MEMBERS, IF MORE THAN FIVE MEMBERS DIED ADD ANOTHER ROW) DIED…….1 NONE……2	MALE……1 FEMALE……2		MALARIA ……..……1 DIARRHEA……..……2 RESPIRATORY RELATED DISEASE……..3 TUBERCULOSIS…….4 HIV/AIDS……5 INJURY……6 OTHER (SPECIFY)…….7	
	DEATH	DIED		AGE	CAUSE OF DEATH	FUNERAL COSTS
	CODE	CODE		YEARS	CODE	TZS
1						
2						
3						
4						
5						

PART 9 CHRONIC ILLNESS OF A MEMBER OF HOUSEHOLD

ID	74	75	76	77	78	79
	Is there any household member who has been chronically ill for the last 6 months?	If yes, what was he/she suffering from?	Is there any household member who is too sick to work/or go to school now?	If yes, what is he/she suffering from?	Is there any household member who is sick but still s/he is performing his duties?	If yes, what was he/she suffering from?
	YES……1 NO……..2 I DON'T KNOW…3	MALARIA ……..1 DIARRHEA……2 RESPIRATORY RELATED DISEASE……3 TUBERCULOSIS…….4 HIV/AIDS……5 INJURY……6 OTHER (SPECIFY)…….7	YES……1 NO……..2 I DON'T KNOW…….……3	MALARIA ……1 DIARRHEA……2 RESPIRATORY RELATED ISEASE……3 TUBERCULOSIS……4 HIV/AIDS……5 INJURY……6 OTHER (SPECIFY)…….7	YES…….1 NO……..2 I DON'T KNOW…3	MALARIA ……1 DIARRHEA……2 RESPIRATORY RELATED DISEASE..3 TUBERCULOSIS……4 HIV/AIDS……5 INJURY……6 OTHER (SPECIFY)……7
	CHRONICALLY ILL	ILLNESS	TOO SICK TO WORK	ILLNESS	SICK BUT STILL WORKING	ILLNESS
		CODE	CODE	CODE	CODE	CODE
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Failure to go to school

	80	81	82	83
	Is there a child who cannot go to school because the household cannot afford to pay for uniforms/or school fees?	If yes, who are these children?	Is there a child who cannot go to school so as to assist in household activities?	If yes, who are these children?
	YES……1 NO……..2	AN ORPHAN (BOTH PARENTS)….1 AN ORPHAN (ONE PARENT)……..2 SINGLE PARENT CHILD (ONE PARENT NOT IN THE HOUSEHOLD BUT NOT AN ORPHAN)……3 HAS BOTH PARENTS ALIVE……..4	YES……1 NO……..2	AN ORPHAN (BOTH PARENTS)….1 AN ORPHAN (ONE PARENT)……..2 SINGLE PARENT CHILD (ONE PARENT NOT IN THE HOUSEHOLD BUT NOT AN ORPHAN)……3 HAS BOTH PARENTS ALIVE……..4
	NOT GOING TO SCHOOL		NOT GOING TO SCHOOL	
	CODE		CODE	
1				
2				
3				
4				
5				

PART 10 COPING WITH MEDICAL EXPENSES

Ask the following questions to respondents from households with HIV/AIDS sick person and those which have lost a person due to HI/AIDS related problems

ID	84	85	86	87	88	89	90	91
	Did you or any member of your household sell a piece of land in order to take care of a member of household who is sick due to HIV/AIDS related problems?	If you or any member of your household sold a piece of land, how much was sold?	Did you or any member of your household sell agricultural produce in order to take care of a member of household who is sick due to HIV/AIDS related problems?	If you or any member of your household sold agricultural produce, how much was sold?	Did you or any member of your household sell livestock in order to take care of a member of household who is sick due to HIV/AIDS related problems?	If you or any member of your household sold livestock, how many were sold?	Have you or any member of your household reduced hours spent on economic activities so as to take care of a person suffering from HIV/AIDS related problems?	If you or any member of your household reduced hours spent on economic activities, how many hours were reduced per day?
	YES……1 NO……..2		YES……1 NO……..2		YES……1 NO……..2		YES……1 NO……..2	
	SOLD LAND	TOTAL LAND SOLD	SOLD AGRICULTURAL PRODUCE	TOTAL AGRICULTURAL PRODUCE SOLD	SOLD LIVESTOCK	TOTAL NUMBER SOLD	REDUCED HOURS	HOURS REDUCED
	CODE	ACRES	CODE	KILOGRAMS	CODE	NUMBER	CODE	DAYS
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Community response to Socio-economic and HIV related problems (Head of the household to respond)

	92	93	94	95	96
	Do you have people in other households in this community who are suffering from HIV/AIDS?	How are people suffering from HIV/AIDS regarded by other people in this community CHECK FOR ALL APPLICABLE OPTIONS	How are people suffering from HIV/AIDS feel in this community CHECK FOR ALL APPLICABLE OPTIONS	Are there formal social and economic arrangements for the widows, orphans and or elders in this community? If yes please mention the activities covered in these arrangements	Are there informal social arrangements among households in this village/community where members help each other to meet costs of say illness, funeral or celebrations? If yes tell us some of the activities covered by these arrangements
	YES……..1 NO…….2 PROBABLY……3 I DONT KNOW/I CAN NOT TELL……..….4	NORMAL PEOPLE…….1 PROMISCUOUS…….2 GONE AGAINST NORMS.3 SOME DISCRIMINATED..4 OTHER (SPECIFY)……..5	HIDE THEMSELVES……..1 HIDDEN BY THEIR RELATIVES IN HOUSEHOLDS…2 THEY FEEL THAT THEY ARE LOOKED DOWN UPON……..3 OTHER (SPECIFY)……4	YES……1 NO……..2 IAM NOT SURE….3	YES……1 NO……..2 IAM NOT SURE….3
	HIV/AIDS CASES IN THE COMMUNITY			SOCIAL ECONOMIC ARRANGEMENTS	SOCIAL ECONOMIC ARRANGEMENTS
	CODE			CODE	CODE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

PART 11: GENERAL (Head of household to respond)

97. In case of emergency where do you get immediate assistance?

(i) ……

(ii) ……

(iii) ……

(iv) ……

98. What are other sources of labour in this household (for household with chronically ill member or who have lost a member due to HIV/AIDS) (probe for child labor)

(i) ……

(ii) ……

(iii) ……

(iv) ……

99. What are other coping mechanisms are used by the household after death of breadwinner of the household?

(i) ……

(ii) ……

(iii) ……

(iv) ……

Part 12: Finalizing the Interview

100. How do you find this questionnaire?

1 = Too long
2 = Not interested
3 = Boring
4 = Wastage of time
5 = Interesting topic
6 = Useful topic
7 = Airing of ideas
8 = Other (specify) _____

101. Would you allow us to come back and talk to you in case of anything?

1 = Yes
2 = No

102. Do you have any question/comment/suggestion to make?

……..
……..
……..
……..
……..

Now we have come to the end of our interview, thanks you for your cooperation

Appendix 2: Interview Schedule for District, Ward, And Village Leaders

1. What kind of a household is regarded as being poor in this community? (Probe for community based poverty indicators and seek opinion on whether HIV/AIDS is considered as a poverty catalyst).

2. Based on the indicators mentioned above, how do you rank your community?

3. Are there anti-poverty interventions/programs implemented at the district/ community level? If yes, what institutions are implementing them? How are they aiming at addressing poverty and food security issues in particular (get a copy of the program objectives and activities if any, probe for food programs at schools, hospitals etc).

4. Are there any community-initiated strategies/programs to combat HIV/AIDS you are aware of? If yes, please mention them. What institutions are implementing them? What activities are been implemented under each program? How are they aiming at addressing food security issues (get a copy of the program objectives and activities if any).

5. Are there any non-community-initiated strategies/programs to combat HIV/AIDS you are aware of? If yes, please mention them. What institutions are implementing them? What activities are been implemented under each program? How are they aiming at addressing food security issues (get a copy of the program objectives and activities if any).

6. What is the response of the community towards the strategies/programs in place to combat HIV/AIDS but that are not community initiated?

7. Do you think the community is well informed about how HIV virus is spread and preventive measures? Explain.

8. Please comment on the coordination of the various interventions and actors in anti-poverty and HIV/AIDS in the district/community.

9. In your opinion, what role do you see the government playing to enhance the establishment and sustaining HIV/AIDS interventions at your district/community?

10. In your opinion, what role do you see NGOs playing to enhance the establishment and sustaining HIV/AIDS interventions at your district/community?

11. In your opinion, what measures do you think should be taken to combat the spread of the HIV virus and mitigate the impact of HIV/AIDS?

Thanks you.

Appendix 3: Interview Schedule for NGOs and CBOs Dealing with HIV/AIDS Related Activities

1. Are there any community strategies to combat HIV/AIDS you are aware of? If yes, please mention them. What is your role in supporting these programs?

2. Are there any community strategies to combat poverty (anti-poverty programs) that you are aware of? If yes, please mention them. What is your role in supporting these programs?

3. What is your main area of focus as far as combating HIV/AIDS is concerned (testing, counseling, prevention, mitigation, care and support, ARV support etc). Please elaborate activities undertaken under each program.

4. Could you provide actual expenses per year per program?

5. Do you think the programs/strategies have contributed towards alleviating poverty and food poverty in particular? Explain.

6. What is the response of the community towards the strategies/programs in place to combat HIV/AIDS but that are not community initiated?

7. Do you think the community is well informed about how the virus is spread and the preventive measures? Explain.

8. Please comment on the coordination of the various interventions and actors in anti-poverty and HIV/AIDS in this community.

9. In your opinion, what role do you see the government playing to enhance the establishment and sustaining HIV/AIDS interventions at this community?

10. To what extent does the government collaborate or support your activities?

11. What constraints have you been facing with regard to implementing antipoverty and HIV/AIDS related activities?

Thank you.