



UGANDA MANAGEMENT INSTITUTE

**WATER AND SANITATION PROGRAMMES AND HOUSEHOLD
LIVELIHOODS IN NORTHERN UGANDA: A CASE STUDY OF GULU
DISTRICT**

By

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DECLARATION

I, SAMUEL NOAH OTEDOR, do declare that the work herein is presented in its original form and has not been presented to any other Institution for any academic award whatsoever.

Sign.....

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APPROVAL

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DEDICATION

To my mother, Anne Leah Olupot; God definitely delivers us so many gifts and graciously extends so many doors, but the rich gift of my Mother is more than I could ever ask for. May the almighty God bless her indeed, and enlarge her boundaries.

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ABBREVIATIONS AND ACRONYMS

DFID - Department for International Development

GDP - Gross Domestic Product

IDP - Internally Displaced People

ICRC - International Committee of the Red Cross

ICWE - International Conference on Water and the Environment

MDGs - Millennium Development Goals

LC- Local Councillor

LRA - Lord's Resistance Army

NWDR - National Water Development Report

UBOS - Uganda Bureau of Statistics

UNICEF - United Nations Children's Fund

UNDP - United Nations Development Programme

UNSGAB - United Nations Secretary General's Advisory Board

WHO - World Health Organisation

WSS - Water Supply and Sanitation

O' Level - Ordinary Level of Education (senior one to senior four)

ABSTRACT

The purpose of the study was to determine the contribution of water and sanitation programmes on household livelihoods in Gulu district of Uganda. The study employed a cross sectional survey design and used both qualitative and quantitative techniques in data collection and analysis. The findings revealed that access to water had the greatest contribution towards Household livelihoods in Gulu district, with a correlation of 0.280** and a regression Coefficient of 0.230, which meant that access to water affects the variations in Household livelihoods by 23%. Safe sanitation followed with a correlation of 0.210* and a regression Coefficient of 0.141, implying that its effect on Household livelihood was 14.1%. Livelihood strategies had the least contribution, with an insignificant correlation of 0.133 and a Coefficient of 0.024, implying an effect of 2.4% of the variations in Household livelihoods. In Gulu district households engaged in activities that depend on availability of water which have led to increased incomes and wealth thus improved livelihoods. Households that engaged in safe sanitation had good health and this enabled them to engage in productive activities such as trading and agriculture that notably increased their incomes. The livelihood strategies adopted, given their diversity had an insignificant moderator effect on the relationship between water and sanitation and household livelihoods. Based on those conclusions, the researcher came up with a number of recommendations among which were that; designing of water interventions should be above cooking and drinking needs; communities should be given an active part in the choice of the design, basic treatment and service of water and sanitation related projects and interventions; sanitation programs should enhance the individuals' well being; water systems design should be made suitable to match the different livelihood strategies and also create awareness to demand for water supply services.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Water and sanitation have been known to greatly contribute to people's livelihoods, since most of the human activities involve the use of water. This study examined the contribution of water and sanitation programmes carried out by the International Committee of the Red Cross and other humanitarian actors such as UNICEF, on household livelihoods in Northern Uganda. The independent variable was water and sanitation programmes and Household-livelihoods was the dependent variable in the study. This chapter presents the background to the study, the statement of the problem, the purpose, the objectives of the study, the research questions, the hypotheses, conceptual framework, the scope of the study, the significance, justification and operational definition of terms and concepts.

1.1 Background to the Study

Worldwide, 2.6 billion people live in families with no proper means of sanitation and 1.1 billion do not have access to improved drinking water. Between 1990 and 2006, the population without proper sanitation decreased by only eight percent. Lack of water supply and sanitation services kills about 4500 children a day (WHO & UNICEF, 2008).

The Millennium Development Goals (MDGs) call for halving the proportion of the population without access to safe drinking water and basic sanitation by 2015. The MDG

for safe drinking water on a global scale appears likely to be reached, in most regions, with the exception of Sub-Saharan Africa. Halving the proportion of people who lack satisfactory water supply and sanitation services by 2015 would avert 470, 000 deaths a year and result in an extra 320 million productive working days annually. Depending on the region of the world, economic benefits of achieving the MDG drinking water and sanitation target have been estimated to range from US\$ 3 to US\$ 34 for each dollar invested. Sub-Saharan Africa will need almost to double the annual numbers of additional people served with drinking water and quadruple the additional numbers served with basic sanitation if the MDG target is to be reached (WHO & UNICEF, 2005).

Water is a key strategic resource, vital for sustaining life, promoting development and maintaining the environment. Access to clean and safe water, improved sanitation facilities and practices are pre-requisites to a healthy population and therefore have a direct impact on the quality of life and productivity of the population. Besides domestic water supply, water is also vital for livestock, industrialisation, hydropower generation, agriculture, marine transport, fisheries, waste discharge, tourism, and environmental conservation. Water, therefore, significantly contributes to the national socio-economic development and thus poverty eradication (NWDR, 2005:10).

Despite the fact that Uganda is well endowed with significant fresh water resources, the challenges of rapid population growth, increased urbanization and industrialization, uncontrolled environmental degradation and pollution are leading to accelerated depletion and degradation of the available water resources. As of December 2003, Uganda faced a challenge of low safe water coverage, 59% rural and 65% urban (NWDR, 2005:10). Gulu

in northern Uganda is among the districts of which nearly 2 million people were displaced to live in overcrowded camps due to the two decades of violence in the region. As such, one of the major challenges posed was the need to ensure that people have access to safe drinking water and basic sanitation. In conflict situations, access to water is frequently restricted because the water supply and purification systems have been destroyed, water reserves are located in areas that have been rendered dangerous or because of massive displacement (The ICRC – Water and War, March 2009).

To alleviate human suffering, in 2006 the ICRC drilled 60 boreholes, constructed 1500 latrines and conducted hygiene promotion in seven IDP camps of Acholi. In 2007, the ICRC drilled 31 new boreholes in 22 camps, rehabilitated 78 boreholes in 42 camps, constructed 2003 pit latrines in 20 camps and carried out regular public health and hygiene promotion in 17 camps. In 2008, the ICRC rehabilitated 65 water points and drilled 60 new boreholes, constructed 1500 pit latrines and conducted regular public health and hygiene promotion sessions in 30 sites. This intervention enabled a minimum access of 15 litres of safe water per person per day in most camps for a maximum distance of 500 metres for a household to the nearest water point, which was in line with the Minimum Sphere standards (www.icrc.org - Health & Wash Programs: 4, 23/06/2009). However, in spite of all this intervention, there has been no significant improvement in household livelihoods of people in Gulu district. According to the National Development Plan (2010), a greater proportion of the population living under the poverty line is located in Northern Uganda with Gulu district having 70 – 80% of the population living below the poverty line. Most households lack effective access to income generating activities which has taken a huge toll on their incomes, health and extent of vulnerability.

1.2 Statement of the Problem

Access to water and sanitation facilities are prime to household livelihoods in terms of their incomes, health and use of livelihood assets like social, human, physical and natural capital. The ICRC and other humanitarian actors had since 2005 been implementing projects aimed at improving access to water and sanitation especially to people living in IDP camps in Gulu district. This was done through drilling boreholes, construction of latrines and hygiene promotion (Aeschlimann, 2005).

Despite the afore mentioned progress, access to water remained a top priority need in the communities of Acholi. Access to latrines remained wanting. In March 2008, Hepatitis E, a virus transmitted via the faecal-oral route was reported in these communities with 314 cases and 11 deaths. In several cases poor people became sick, lost their jobs and subsequently lost their income. Other family members had to spend scarce resources on treatment and some had to stop working, or attending school, to take care of their sick relatives. This took a great toll on use of livelihood assets such as labour power, which draws on physical capital to collect water as valuable time, energy and resources were absorbed in household-level care, which would otherwise have been put to productive and educational use. This presupposed that water and sanitation programmes hardly had any significant contribution towards household livelihoods in Gulu district. This study therefore aimed at determining the contribution of water and sanitation programmes on household livelihoods in Gulu district, in northern Uganda, such that appropriate recommendations could be sought.

1.3 Purpose of the Study

The purpose of the study was to determine the contribution of water and sanitation programmes on household livelihoods in Gulu district of Uganda.

1.4 Objectives of the Study

- To assess how access to water contributes to household livelihoods in Gulu district.
- To establish the contribution of sanitation and hygiene promotion to household livelihoods in Gulu district.
- To find out the moderator effect of the livelihood strategies adopted on the relationship between water & sanitation and household livelihoods in Gulu district.

1.5 Research Questions

- How has access to water contributed to household livelihoods in Gulu district?
- What is the contribution of safe sanitation and hygiene promotion to household livelihoods in Gulu district?
- What is the moderator effect of the livelihood strategies adopted on the relationship between water & sanitation and household livelihoods in Gulu district?

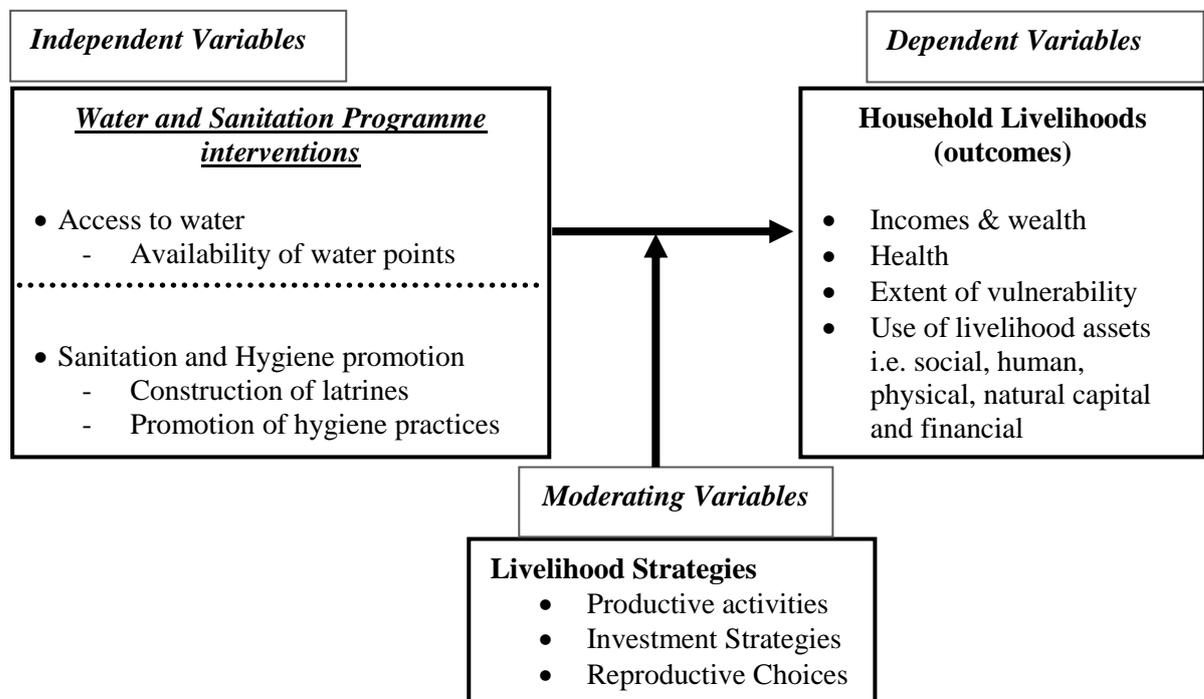
1.6 Hypotheses of the Study

The study tested the following hypotheses:-

- Access to water significantly contributes to household livelihood in Gulu district.
- Sanitation and hygiene promotion contribute to household livelihoods in Gulu district.
- There is a significant moderator effect of livelihood strategies adopted on the relationship between water & sanitation and household livelihoods in Gulu district.

1.7 Conceptual Framework

Figure 1: Conceptual Framework Showing the Relationship between Water & Sanitation Programmes and Household Livelihoods for the Study



Source: Adapted and modified from Department for International Development, (2005)

The study was based on the assumption that water and sanitation programmes affect household livelihoods. The benefit of improved access to safe drinking water, notably working through improved human wealth in terms of better health and increases in time and energy made available for additional productive activities, is a strong argument to support additional resource allocation (Pond & Pedley, 2009). Independent variables in the study are water and sanitation programme interventions of the ICRC and other humanitarian actors such as UNICEF. The moderating variable is livelihood strategies adopted by the households in the community. The dependent variable is household livelihoods. This is illustrated in **Figure 1**.

The relationship between water and poverty is widely discussed by several scholars. Water contributes to poverty alleviation in many ways – through sanitation services, water supply, affordable food and enhanced resilience of poor communities to disease, climate shocks and environmental degradation. Water of appropriate quantity and quality can improve health and, when applied at the right time, can enhance the productivity of land, labour and other inputs thereby improving livelihoods of the people.

Sanitation influences the livelihoods of the poor and also makes it more possible for poor women and men to undertake initiatives and mobilise their assets. Without sanitation and its effect of improvements in health and the environment poor people lack sufficient energy and to initiate and sustain productivity, whether at household or community level.

Hygiene promotion is a campaign for hygienic practices such as hand washing. Infectious diseases claim over 300 million illnesses and more than 5 million deaths each year.

Eighty percent of the incidence of these diseases is related to inadequate water supply, sanitation and hygiene. The promotion of better hygiene, alone, or in combination with better water supply and sanitation, can have a major impact on reducing disease prevalence and public and private health costs (WHO & UNICEF, 2008).

Different livelihood assets at the household level are manifested in the different degrees and types of access to water resources in different environments. Their composition can determine access through the relative availability or absence of:

- Social capital, which creates opportunities to raise other forms of capital through the community (as communal resources) and is an additional factor in scarcity, as it can involve the removal of social barriers;
- Human capital, which provides the knowledge and educational environments by which decisions on gaining access to water can be made;
- Labour power (human and/or animal), which draws on physical capital to collect water;
- Natural capital, which determines water availability, and is a factor in scarcity;
- Financial capital, which give the means to purchase water and enables the operation and maintenance of water points

1.8 Significance of the Study

The study findings would generate information that may be used by government, humanitarian actors and development partners in the design and implementation of water and sanitation programmes in transit camps and villages of origin. The study findings are expected to inform the future programming efforts of the ICRC and other humanitarian

actors in improving household livelihoods of the vulnerable people through more appropriate models. Other researchers interested in water, sanitation and livelihood studies may utilise the findings of this study for reference or further research.

1.9 Justification of the Study

Since the beginning of 2006, ICRC together with other humanitarian actors have been actively involved in water supply, sanitation, hygiene promotion programmes in the IDP camps in the four districts of Amuru, Gulu, Kitgum and Pader in Acholiland, northern Uganda (WASH, 2008). However, various reports and observations did not clearly indicate how water and sanitation programmes changed household livelihoods in the region. The study was carried out in Gulu district because, as a result of the Lord's Resistance Army (LRA) war, many people in the district were forced to stay in camps where they hardly had access to safe water and sanitation and, as several water borne related diseases broke out in the district. This study was conducted so as to come up with appropriate recommendations on how water and sanitation could be used to enhance people's livelihoods.

1.10 Scope of the Study

The study was limited to the following scope:

1.10.1 Geographical Scope

The study was carried out in Gulu district, one of the districts forming the historical homeland of the Acholi ethnic group also known as Acholiland. It lies 332 km north of the capital of Kampala, Uganda's capital and largest city.

1.10.2 Content Scope

The study aimed at establishing the contribution of water and sanitation on household livelihoods. Specific emphasis was: To assess how increasing access to water contributes to household livelihoods in Gulu district, to establish the contribution of safe sanitation and hygiene promotion to household livelihoods in Gulu district, to find out the moderator effect of the livelihood strategies adopted in Gulu district on household livelihoods.

1.10.3 Time Scope

The study focused on the contribution of water and sanitation programmes on household livelihoods from the year 2006 up to 2009 because the ICRC and other humanitarian actors intensified the implementation of water and sanitation programmes during that period because of the growing International concern on the deteriorating general livelihood of the IDPs in northern Uganda.

1.11 Operational Definitions

In the context of this study words or concepts were defined for clarification. These included:

1.11.1 Livelihood Approaches

Livelihood approaches are a way of thinking about the objectives, scope and priorities for development. They place people and their priorities at the centre of development (Ashley & Carney, 1999).

1.11.2 Livelihood Strategies

Livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals. They include productive activities, investment strategies and reproductive choices (Chambers & Conway, 1992).

1.11.3 Livelihood Outcomes

Livelihood outcomes are the goals to which people aspire, the results of pursuing their livelihood strategies (www.eldis.org, 21/06/2009).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the literature that has been reviewed. It has been arranged under the different variables of the study, namely; the linkage between increasing access to water and household livelihoods, safe sanitation and hygiene promotion and household livelihoods and livelihood strategies adopted and household livelihoods. A theoretical review was also done to underpin the study.

2.1 Theoretical Review

Different theories were used in the study to explain the concept of water, sanitation and livelihood improvement.

2.1.1 A Health-Based Approach

A health-based view has driven most sector development in the last 30 years, derived mainly from public health approaches to water supply and sanitation and government-led supply provision. During the 1960s and 1970s, this focus on developing supply and improving sanitation became the mainstream development approach within the sector, and was enshrined in the United Nations (UN) water decade¹ which had a central ‘health-based’ and supply-oriented message. In health terms, the overriding benefits were perceived to be the reduced transmission of water-borne diseases e.g. diarrhoeal diseases, typhoid and guinea worm. The focus widened during the 1980s to integrate water supply,

sanitation provision and hygiene education, as the need to take a more comprehensive approach to reducing the presence and transfer of pathogens at a household level was recognised. Poor health caused by poor water supply quality, insufficient sanitation and unsafe hygiene behaviour was regarded as both a symptom and cause of poverty. Images of open sewers and unclean water sources became a favourite medium for conveying the 'idea' of poverty in the developing world, regardless of the many other influences and causes (Maluleke, 2005).

At the global policy level, safe water supply and sanitation have been closely linked to better health, whilst at the household level, establishing these links has proven far harder. These methodological difficulties have led to reservations about the practicality of the emphasis on health impacts. Chambers & Conway (1992), state that 'With the development of international aid in the post-war decades, donor agencies invested increasing sums in water supply programs in developing countries. Whatever their real motives, their ostensible rationale for this investment, was its health impact. To evaluate their programs, they were willing to pay for epidemiological studies to measure that impact. The results of a number of these and subsequent studies have surprised the authors by failing to show any difference in diarrhoea incidence between households whose drinking water contained large faecal bacteria and others who drank water of microbiological quality'. The difficulty in proving the link and the ability to monitor and evaluate progress in disease reduction provided the rationale for the 'integrated approach', which sought to reduce the transfer of contaminants through other routes than water supply.

2.1.2 The Integrated Approach

This approach aimed at reducing contamination levels within local household and community environments, and to establish better hygiene procedures at a household level. Established as ‘best practice’ in the sector in the 1990s, the level of commitment to this idea is demonstrated in the Department for International Development (DFID) Guidance Manual which states that:

Water shortage, poor water quality, or unreliable supply have profound effects on people’s well-being. Providing safe water alone is not enough since water can quickly become unsafe, and the faecal-oral transmission of diseases can occur in other ways. If people do not have adequate and appropriate sanitation facilities or the chance to develop good hygiene practices, diseases can be spread through the contamination of water or through other pathways in the home environment (DFID: 1998).

In the Gulu scenario, contamination was mainly reported through the water supply chain. In as much as the ICRC and other humanitarian actors disinfected water sources, it got contaminated at household level which greatly affected people’s well being (Aeschlimann, 2005).

2.1.3 Livelihood Approach

A livelihoods approach is a people-centred, dynamic concept, with an interest in the action and ‘activism’ of the poor in the context of their struggle against poverty not just to survive, but also to modify their conditions and maintain life improvements. It is a holistic (not a sector) approach paying attention to the relation between the various perspectives: improvement of health, environment, income generation, and in the overall conditions of life. Poor people have capabilities that ensure access to resources, such as

knowledge, ideas, aspirations, and a feeling of what is good for them and their families, which defines them as agents of development. They are also the agents of the solution, as they are the ones who most suffer from the problem (Borba et al, 2007).

Whereas the health-based approach came to integrate water supply with sanitation and hygiene promotion, the livelihoods approach integrates the management of water as a natural asset with financial, physical and other household asset management. This type of management involves planning ahead for years of poor asset availability and suggests that participation is not important just in terms of getting views across, but also for gaining access to information on resource availability. This holistic management of assets works at the household and community level (Maluleke, 2005).

According to Campbell (2003), the 'livelihoods approach' can be seen as a way of viewing scientific problems through the eyes of the target group. In this approach, one thinks about the five types of assets that individuals and communities need in order to be productive: natural resources (land, water), physical assets (infrastructure, labour power), financial assets (income, loans), human assets (knowledge, skills, gender) and social assets (organisation in the community, byelaws).

Different types of livelihood strategies determine different levels of disposable income and/or available labour time to engage in financing/cost recovery. For example, the availability of income and/or labour power at different times of the year is important in subsistence agriculture. Water is classified as an asset, which is an input into household livelihoods so the relationship between supply and demand may be partly contingent on

different 'returns' to different activities within livelihoods strategies. This has implications both for understanding the wider 'economic' tag applied to water, its significance at different times of the year (frequently reflected in its price in water-scarce environments) and the sequencing of availability. The notion that water became recognised as an economic good in Dublin (1999), in fact needs qualification. Water has been paid for and is intimately understood in economic terms in many parts of the world where huge expenditures in time and money are required to gain access. Water as an economic good is common knowledge for the poor.

Rather than the simple achievement of health benefits, per se, the livelihoods approach seeks to build long-term savings into the structure of the household economy. This impact can be two-fold: firstly by increasing the capacity to diversify household economies, secondly by creating the conditions for greater accumulation of capital assets, including social capital (establishing networks within and between communities and developing links with local private sector and government institutions) and human capital (perhaps more education for girl children). One of the tenets of a livelihoods approach is that there is no fixed response to a given situation; just as livelihoods are dynamic, so are the means by which to address them (Maluleke, 2005).

There is a growing recognition by the World Bank, and others, of the need to link water developments with livelihood systems at the household level (World Bank, 1999). Investment in Water Supply & Sanitation (WSS) services should 'keep in step with local economic development both contributing to improved livelihoods and benefiting from users' ability to sustain their systems' (World Bank, 1999). Nevertheless, the impact on

the livelihoods of the poor being fully responsible for operations and maintenance of their WSS systems is still not made explicit. The link with livelihood systems at the household level is acknowledged, but the capacity to improve livelihood through better understanding of such linkages and their implications for community-level financing are not. This study adopted the livelihoods approach, as the major theory to be used in the study.

2.2 Access to Water and Household Livelihoods

Most discussion of domestic water is concerned with human consumption requirements and its use as a part of daily household requirements for cooking, cleaning, washing and drinking. The weighting given to this view of water – as opposed to its use as a productive asset – is perhaps undue and arises from the health-based approach described earlier.

Access refers to whether people can actually use the water they demand. Access is determined by a number of factors, including the resource and its management, the infrastructure and its management. Water access of any single user is impacted by the demands of other users. Social and political factors, including power and conflict will play a role in determining access. This can happen at various scales, varying from social exclusion of some groups from accessing water from a village tap, to conflicts around water rights between upstream and downstream users (Maluleke et al, 2005).

Water is both a good which has costs attached (in delivery and disposal), and an asset in productive processes at a household level –whether watering animals, supplementing small plot irrigation, producing local drinks for sale or other cottage industrial products or even reselling for a profit to other households. Water as a natural asset forms part of the asset range available to households and its economic value as well as its cost needs to be properly understood in order to understand the linkages with livelihood strategies. This is the case not just because this points towards ways of strengthening asset bundles through improving access to natural capital, but also has methodological implications for demand assessment. The structure of demand for water within a community – particularly demand over and above the survival level – may be informed just as much by its productive uses as by its routine daily consumptive uses. Calculating anticipated demand at the household and community level may, therefore, require greater depth of analysis of household livelihood uses (and potential uses) than is commonly undertaken by demand-assessment. This also has policy implications for notions of scarcity, particularly in terms of the presence or absence of other assets critical to gaining sustainable access to supplies. Scarcity can be determined by the unavailability of physical and human capital as well as by the absence of the water (Nicol, 2000).

Investment in water infrastructure and sanitation can reduce poverty by stimulating productive activity. The health based approach to water management assumes that making water available to the population will provide adequate access to everybody. It does not. From the familiarity that supply-oriented projects and programmes do not automatically reach a major group of intended users, has come the call for more participatory approaches. Experience with livelihood (participatory) approaches to water management have led to a reconsideration of technologies and to taking into account the

experience, knowledge, needs, and expectations of local water users. At the same time, the experience with livelihood approaches shows that identifying who uses water and for what purpose is essential. Communities contain competing interest groups—individuals and groups who command different levels of power, wealth, influence, and ability to express their needs, concerns, and rights. Where water is scarce and vulnerable, those at the lower end of the power spectrum will lose out. Efforts need to be made to ensure that community participation is based on democratic principles that increase social stability and create conditions for all stakeholders to be ensured fair rights, access to information, and an adequate share in decision-making (www.worldwatercouncil.org, 04/07/2009).

According to ICWE 1992, achieving food security is a high priority in many countries. However, the challenge is to develop and apply water-saving technology and management methods, and, thorough capacity building. This can enable communities to introduce institutions and incentives for the rural population to adopt new approaches, for both rain fed and irrigated agriculture. The rural population must also have better access to a potable water supply and to sanitation services. It is an immense task, but not an impossible one, provided appropriate policies and programmes are adopted at all levels; international, national and local.

Climate change, energy, food supplies and prices, and troubled financial markets are crises full in the media today. These global crises are linked to each other and to water resources. Unless resolved, they may lead to increasing political insecurity and conflict at national and local levels. These crises arise against a background of continuing poverty for much of the world. Managing water resources is essential to social and economic

development, poverty reduction and equity and to achieving the Millennium Development Goals. Sustainable development depends on managing the costs of service provision using existing infrastructure along with additional investments in new water infrastructure and rehabilitation, both physical and institutional. The Millennium Development Goal, set by the world community, of halving the proportion of people living in poverty by 2015 is far from being on track, particularly in regions where the need is highest (World Water Assessment Programme 2009).

The importance of water services is especially apparent in societies where normal social life and political structures have broken down. Categorizing them as fragile states, the UK Department for International Development defines these as countries ‘where the government cannot or will not deliver core functions to the majority of its people, including the poor’. Among the most important functions of the state for poverty reduction is ‘the ability to protect and support the ways in which the poorest people sustain themselves’. While each fragile state is fragile in different ways and for different reasons – war, post-conflict recovery, major natural catastrophe, prolonged mismanagement and political repression – a striking commonality in reports from aid agencies is the prominence of water and sanitation in relief and reconstruction programmes. The rapid restoration of viable water services is often a crucial ingredient of nation building in these fragile states (DfID 2005, p. 7; OECD 2008).

In rural areas there is no definitive line between ‘household’ water use and water use for productive purposes – watering plots for food and cash crop production, livestock, trade and other income-generating activities. The amount of water provided to poor households

with access to land needs to be sufficient for these other income-generating purposes (World Water Assessment Programme 2009, p277).

Water for agricultural production is but one component of a very complex system of livelihoods that are dependent upon the availability of water for community development. The challenge is to establish an efficient and innovative means to address water and development. The key to success, however, lies in active participation and community involvement to engender a sense of ownership. Active participation and community involvement also ensures that the challenges of water for food security and livelihoods, particularly among marginalised groups such as small-scale farmers and women, are managed in an equitable way (www.waterwiki.net, 05/07/2009). However, in the Gulu scenario, household depend on rain for agricultural production which is unreliable with the current climate change and as a result they have challenges of food security which consequently affects their livelihoods.

2.3 Sanitation and Hygiene Promotion and Household Livelihoods

Sanitation refers to the hygienic disposal or recycling of waste. It is an important measure to prevent the outbreak of diseases and thus protect public health and control environmental pollution. From this definition, one could conclude that sanitation refers to all types of waste. However, nowadays sanitation refers in most cases only to the hygienic disposal or recycling of human excreta and grey water (wastewater from washing, laundry and kitchens) produced by households. According to guidelines for the selection of sanitation services, sanitation refers to the means of collecting and disposing of excreta and community liquid waste in a hygienic way so as not to endanger the health of individuals or the community as a whole (Cotton & Saywell, 1998).

Millennium Development Goal – Seven, calls on countries to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. Two and a half billion people, 38 per cent of the world’s population, remain without improved sanitation facilities, mostly in sub-Saharan Africa and Southern Asia. While 1.2 billion people still practise open defecation, the riskiest sanitation practice of all, it is decreasing. At current rates, over 700 million people will miss the Millennium Development Goal sanitation target. Seven out of ten people without improved sanitation live in rural areas (WHO & UNICEF, 2008:58).

To highlight the problem, and in order to raise awareness and accelerate progress towards the Millennium Development Goal, the UN General Assembly declared 2008 the International Year of Sanitation in response to the recommendations of the UN Secretary-General’s Advisory Board on Water and Sanitation (UNSGAB, 2006).

The role unsafe sanitation plays in the poverty cycle is well known: poor sanitation leads to sickness and disease, which lead to low productivity, and, consequently, to poverty. By contrast, individual household and community development projects, through the management of human excreta, have brought interesting results for the community and the improvement of household health and well-being, as well as having a positive impact on the environment. At household level, for example, better sanitation can stimulate poor households to increase their economic status through house building or improvements. At the same time, enhanced livelihoods have a positive impact on up-grading sanitation.

Improved life conditions encourage poor men and women to define safe sanitation as a relevant goal to be achieved through their own efforts and or with help (Borba, 2007).

Human faeces are the main source of diarrhoeal pathogens. They are also the source of infectious diarrhoeas (including dysentery, cholera and typhoid). These pathogens get into humans via the mouth and are passed out in faeces of an infected host (UNICEF 1999). Changing household hygiene behaviour is one of the most effective means of preventing diarrhoeal diseases. Indeed, the health impacts of water and sanitation interventions are mostly mediated through improvements in hygiene. The major global consequences of lack of sanitation are the 4 billion cases of diarrhoea reported each year between 1990 and 2000, and the annual death toll of 2.2 million people (WHO-UNICEF, 2000). In 1998 in Brazil, 65% of all hospital beds were occupied by children less than 10 years of age whose diseases were linked to the lack of effective sanitation programmes (Nicol, 2000).

2.4 Livelihood Strategies Adopted and Household Livelihoods

Livelihood strategies are the combination of activities that households choose to undertake in order to achieve their livelihood goals. They include productive activities, investment strategies and reproductive choices. The choice of strategies is a dynamic process in which households combine activities to meet their changing needs. For example, in farming households, activities are not necessarily confined to agriculture but often include non-farm activities in order to diversify income and meet household needs (www.eldis.org, 21/06/2009).

Until recently, the main international focus has been access to a safe water supply; e.g. forming an important indicator of poverty levels used in the United Nations Development Programme (UNDP) Human Poverty Index (HPI). This multidimensional measure includes human deprivation categorised in four dimensions of human life: a long and healthy life, knowledge, economic provisioning and social inclusion. Under economic provisioning the UNDP states that ‘In developing countries, lack of access to health services and safe water, and the level of malnutrition capture deprivation in economic provisioning more practically than other indicators’ (UNDP, 1999). The emphasis on water quality remains, however, and is closely linked as an indicator to the level of economic provisioning within a community. The cost of supply and the relative impact this has on volume is of equal, if not greater, importance in terms of livelihoods strategies. Hence, whilst a lack of a good quality supply may indicate lack of provisioning for human consumption, it does not necessarily indicate lack of provisioning say, for livestock assets, or for the cultivation of crops – which may, in fact, be more significant determinants of poverty in given communities. In short, the presence of a good quality supply may be on the basis of higher unit costs for water collected. The relative trade-offs involved for households are what determine the poverty impact, rather than the presence or absence, per se.

This is a key departure for the livelihoods view of water supply. While a poor quality supply for a household’s own consumption might warrant a higher poverty weighting, the same supply might be plentiful and not harmful for livestock, serving to increase livestock productivity and reduce the vulnerability of the household. It may also increase the household’s income sufficiently to free other assets to improve supplies in the long term. Thus, whilst the water–poverty relationship is significant, the mechanisms to

achieving greater poverty reduction through water supply involve trade-offs, which the livelihoods view helps to identify. The emphasis is not on water quality, so much as the uses to which it is put (Nicol, 2000).

2.5 Household Livelihoods

Livelihood according to Merriam-Webster's Online Dictionary is a means of support or subsistence. Livelihoods comprise people and their capabilities, material assets (including food and income), social assets and activities required for a means of living. A livelihood is sustainable when it can cope and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Ashley & Carney, 1999; Chambers & Conway, 1992).

The concept of livelihood refers to the use of capacities and resources by poor men and women in rural areas and on the periphery of towns and cities to undertake activities in order to survive in adverse circumstances. Livelihoods are therefore people's means of survival, and are fundamentally affected by the situation in which people find themselves, especially their physical, economical, social, environmental and psychological conditions.

The activities are meant especially to; generate an income which contributes to improving life conditions and enhance human dignity, improve family members' health, – especially of those most affected: children, women and the elderly, improve their immediate environment.

On the other hand, household livelihood security has been defined as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing and time for community participation and social integration (Frankenberger 1996). The common principles underlying the sustainable livelihood models include vulnerability context; the resources owned or accessed at the household level; the institutional processes, structures, and policies; household livelihood strategies; and, household livelihoods outcomes.

The starting point for adopting sustainable livelihood framework in the water sector is a sound understanding of the vulnerability contexts within which people gain and secure access to water resources. At the heart of the framework is an analysis of the capital assets of the household, divided into natural, social, human, physical and financial. A sixth – political capital – has been suggested (Ashley & Carney, 1999: 35). The livelihoods cycle is taken to represent assets used in productive activities to create income. Income is then spent to meet household consumption needs and maintain household asset levels. Water is thus both part of the expenditure and part of the consumption of a household economy (Nicol, 2000).

2.6 Summary of the Literature Review

A lot of literature has been published on water and sanitation in relation to household livelihoods as cited in this thesis. The health – based approach does not provide evidence on the linkage between poor hygiene and disease and poverty, it only focuses on the health benefits of water. The integrated approach fails to offer practical solutions on how

to ensure water safety and how this would enhance people's livelihoods. The livelihood approach views water as an asset that could be used to improve household livelihoods. The above literature provides the researcher a valuable input especially bringing out water and sanitation and how they can be utilized to enhance people's livelihoods.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methodology that was used in the study. It is divided into: the research design, study population, sample size and selection, sampling techniques and procedures, data collection methods, procedure of data collection, and data analysis methods.

3.1 Research Design

The study employed a cross-sectional survey research design with descriptive aspects in which both qualitative and quantitative approaches were used. The qualitative approach aimed at evaluating people's attitudes, beliefs, practices and perceptions about water and sanitation programmes and household livelihoods. The quantitative approach was used to generate data on people's perceptions about access to water, sanitation and hygiene, livelihood strategies adopted and household livelihoods. The cross-sectional survey design was used because it is a method of investigation that allows data collection from samples of predetermined interests at a particular time (Amin, 2005).

3.2 Study Population

According to the Uganda National Population Census 2002, the overall population of Gulu is 479,496. Gulu district is one of the four districts in northern Uganda forming the

historical homeland of the Acholi ethnic group. The study population included 200 household heads from three camps where the ICRC and other humanitarian actors were operational, namely; Orapwoyo, Mede and Binya IDP camp. Key informants included 3 staff of ICRC, 3 local council leaders, 1 UNICEF Staff, Gulu District Water Officer and 3 camp leaders. The total population was 211 from which a sample of 138 was selected. In the category of key informants were: 3 ICRC staff; the water and habitat engineer, field officer and hygiene promotion facilitator of ICRC Gulu sub-delegation, one UNICEF staff, and the Water and Sanitation Officer overseeing operations in Gulu. These were selected because they had been directly involved with the water and sanitation programmes in Gulu district and therefore had good working knowledge on the subject.

3.2.1 Sample Size and Selection

The sample was selected using a table provided by Krejcie & Morgan as cited in Amin, (2005).

Table I: Sample Size and Selection

Category	Population	Sample	Technique
Household heads	200	127	Simple random
ICRC Staff	3	3	Purposive
LC	3	3	Purposive
UNICEF Staff	1	1	Purposive
District Water Officer	1	1	Purposive
Camp Leaders	3	3	Purposive
Total	211	138	

Source: Krejcie & Morgan Adopted from Amin (2005)

Two Hundred Household Heads were identified from which a sample of 127 was randomly selected. Three ICRC staff, 3 Local Councillors and 3 camp leaders were purposively selected as key informants for the study.

3.2.2 Sampling Techniques and Procedure

Simple random sampling was used in the selection of household heads so that every element could get an equal chance of being selected. Besides, Amin 2005 says that the simple random method allows for use of statistics, tests hypotheses and helps to eliminate bias. For key informants, non-random purposive sampling method was used because of its appropriateness to select a sample on the basis of knowledge of a population, its elements and the purpose of the study (Babbie, 2007). In this category were; 3 ICRC staff, 3 local councillors, 1 UNICEF staff, 1 district water officer and 3 camp leaders.

3.3 Data Collection Methods and Tools

Both qualitative and quantitative techniques were used for data collection.

3.3.1 Household Survey Questionnaire: A five point likert scale structured questionnaire was administered to household heads in camps. It was structured on a five point likert scale of 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree. It was the main instrument for collecting primary data. It was administered to a sample of 127 household heads. It sought to collect quantitative data on water and sanitation from households in camps, transit sites and villages of origin. The questionnaire items focused on increasing access to water and household livelihoods, the role of safe sanitation and hygiene promotion in household livelihoods and the livelihood strategies adopted for household livelihoods.

3.3.2 Key Informant Interviews: Key informant interviews were held with 3 ICRC staff, 3 local council leaders, 1 UNICEF staff, 3 camp leaders and the Gulu District Water Officer. The key informant interviews were used to gather information on the successes and challenges of the water and sanitation interventions including; provision of safe water, provision of latrines, hygiene promotion and access to livelihood assets. This was done using a structured interview guide, which comprised of questions under the following themes; increasing access to water and improved household livelihoods, the role of safe sanitation and hygiene promotion in household livelihoods and the livelihood strategy adopted by the households for household livelihoods. It was administered to the key informants who included local council leaders, ICRC staff, UNICEF staff, Gulu district Water Officer and Camp leaders.

3.3.3 Documentary Review: A review of relevant documents was carried out to obtain secondary data from various records including; the project design, quarterly reports and evaluations reports. Through the documentary review data that was obtained included: baseline information on water coverage, access levels to safe sanitation and targeted camps, transit sites and villages of origin, the list of identified parishes with a low water and sanitation coverage. Literature review was conducted on livelihoods, poverty, water and sanitation. A checklist with a set of questions was designed to capture information on the study variables.

3.4 Validity and Reliability

3.4.1 Validity: The questionnaire was given to the supervisor as an expert to identify the items that were valid to the study. The questionnaire items were read to check on language

clarity, relevance and comprehensiveness. The researcher then made adjustments in response to the comments raised.

A Coefficient of Validity Index (CVI) was computed using the following formulae;

$$\text{CVI} = \frac{\text{Items rated relevant}}{\text{Total number of items in the questionnaire}}$$

The items that were rated relevant were 43 out of a total of 47. This yielded a CVI of 0.914. According to Amin (2005), a coefficient is regarded acceptable if it is within the statistical range of $>0.5 < 1$.

3.4.2 Reliability: Using the results of the pilot study the reliability of the instruments was computed. The Cronbach's Alpha Coefficient (α) can be computed from the formulae;

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum SD_i^2}{SD_t^2} \right)$$

Where K= Number of items in the questionnaire

SD_i^2 = Standard deviation squared (Variance) for each individual item

SD_t^2 = Variance for the total items in the questionnaire

A reliability coefficient (α) was computed using the Statistical Package for Social Scientists (SPSS) which informed the extent to which the research instrument would yield consistent results. The overall reliability coefficient of the research instrument was 0.703, which is regarded acceptable (Amin, 2005).

3.5 Procedure of Data Collection

Upon approval of the Proposal, the researcher was given an introductory letter from Uganda Management Institute (UMI). With the help of research assistants, the questionnaire was translated to Luo (the local language used in Gulu) after which it was administered to the respondents. In cases where respondents were not able to read on their own, the research assistants read the questionnaire items to them and ticked against the responses.

Dates for interviews were scheduled with key informants who included local council leaders, ICRC staff, camp leaders, UNICEF staff and the Gulu District Water Officer. During the interviews the researcher kept on noting the main points.

3.6 Data Analysis

The section discusses how the collected data was analysed. Both qualitative and quantitative methods were used as discussed below;

3.6.1 Quantitative Data Analysis

The data collected from the questionnaires was edited, coded and cleaned. The SPSS data analyst was used to compute the frequencies, percentages, correlations and regressions. Descriptive statistics were used to describe the nature of the data. The correlations were used to measure the degree of relationships among the variables and to test the hypothesis. The regression analysis was used to establish the effect of the independent variable onto the dependent.

3.6.2 Qualitative Data Analysis

The data collected from interviews conducted and documents reviewed was categorised according to themes. The sub themes were identified and put into meaningful patterns formulating logical study findings. Verbatim quotations were used upon permission to enrich the discussions.

3.7 Measurements of Variables (Quantitative Studies)

The variables were measured for central tendency and variability. Measurement for central tendency includes; the mode, median and the mean. Measurement for variability included; the range, standard deviation and variance. Frequency distribution was represented graphically using bar charts and pie charts.

3.8 Limitations Encountered

One of the study limitations was language barrier. This meant that the researcher had to heavily rely on the local people all through, for translation. However, there were some situations where it was quite hard for the local people to get the proper translations of some of the terms into the Luo dialect. In order to mitigate this, the researcher had to hire some language experts and this was quite costly in terms of time and finances.

The study targeted IDPs and given that the research was carried out during a period when the IDPs were preparing to leave the camps, it was hard to get good audience from

them. At the same time this meant that the researcher had to engage extra people in order to get data in the shortest period of time possible. The researcher therefore had to incur more costs than had been planned.

Another limitation was the fact that the study was too costly in terms of transport and facilitation. Gulu being an area that is just recovering from war, the research assistants encountered several barriers as the respondents kept demanding for a financial attachment to their responses. Many of them said that NGOs that had conducted research in that area had always provided them with soap and salt as well as some food. The argument that this was an academic research fell on deaf ears. This meant that the researcher had to part with hefty sums of money out of his limited and inadequate financial resources so as to be able to gather the data.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

Data presentation proceeds with analysis of demographic characteristics of the respondents. For the empirical findings, descriptive statistics are presented for easier understanding and interpretation. Correlations and regressions were used in order to show relationships among variables and to determine the effect of the independent variable on dependent variable. The analysis was both qualitative and quantitative, focusing on; access to water and household livelihoods, the role of safe sanitation and hygiene promotion to household livelihoods and the livelihood strategy adopted by the households on household livelihoods as presented in the conceptual framework. The study subjects comprised 3 staff of the ICRC, 3 Local Council leaders, 1 UNICEF staff, 3 camp leaders and the Gulu District Water Officer and 127 household heads.

Response Rate: A sample 138 respondents, out of a population of 211 respondents were selected. A total of 100 out of 127 questionnaires were returned. Eleven key informants were interviewed. The total number of respondents was 111 out of a sample of 138, constituting a response rate of 80.4%.

4.1 Background Characteristics of the Respondents

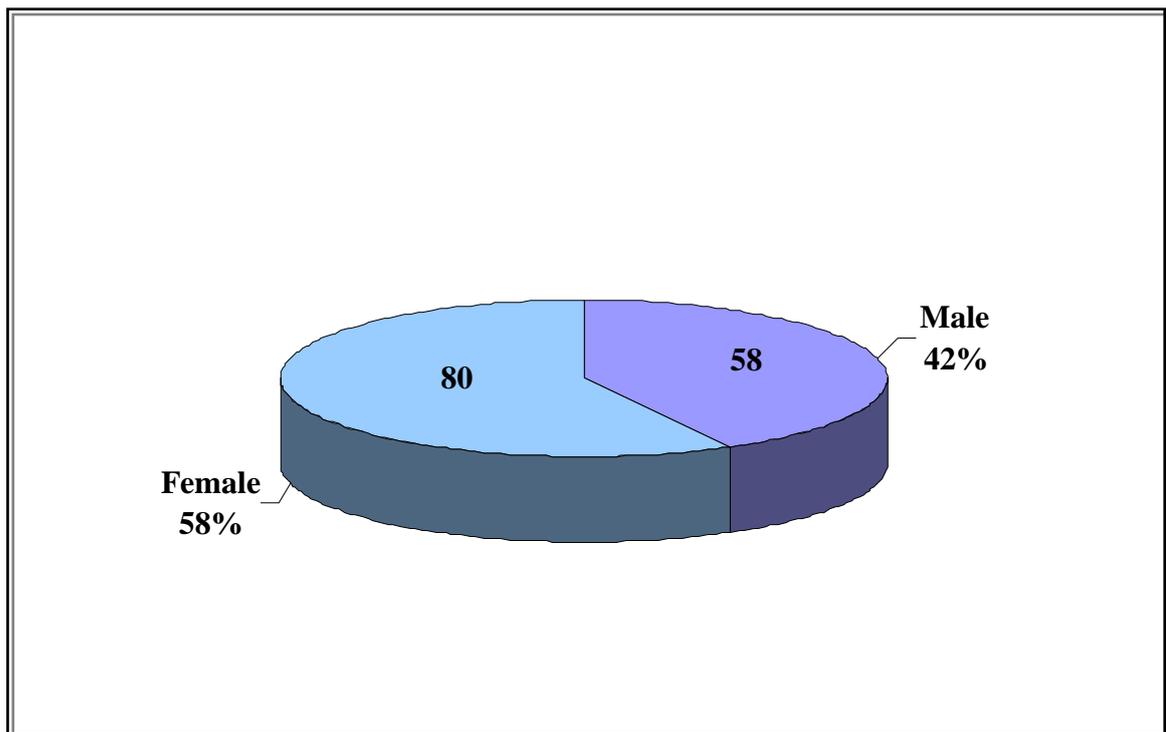
This included the demographic information of respondents as gender, age distribution, educational level, and others. This information was presumed to be vital because such

aspects, in one way or the other, can influence people's attitudes, beliefs, practices and perceptions about water and sanitation programmes and household livelihoods.

4.1.1 Distribution of Respondents by Gender

In the demographic section of the questionnaire, the researcher sought to find out the distribution of respondents by gender, in order to establish whether this had any influence on the contribution of water and sanitation programmes on household livelihoods. The gender distribution is represented in figure 2.

Figure 2: Distribution of Respondents by Gender



Source: Primary Data

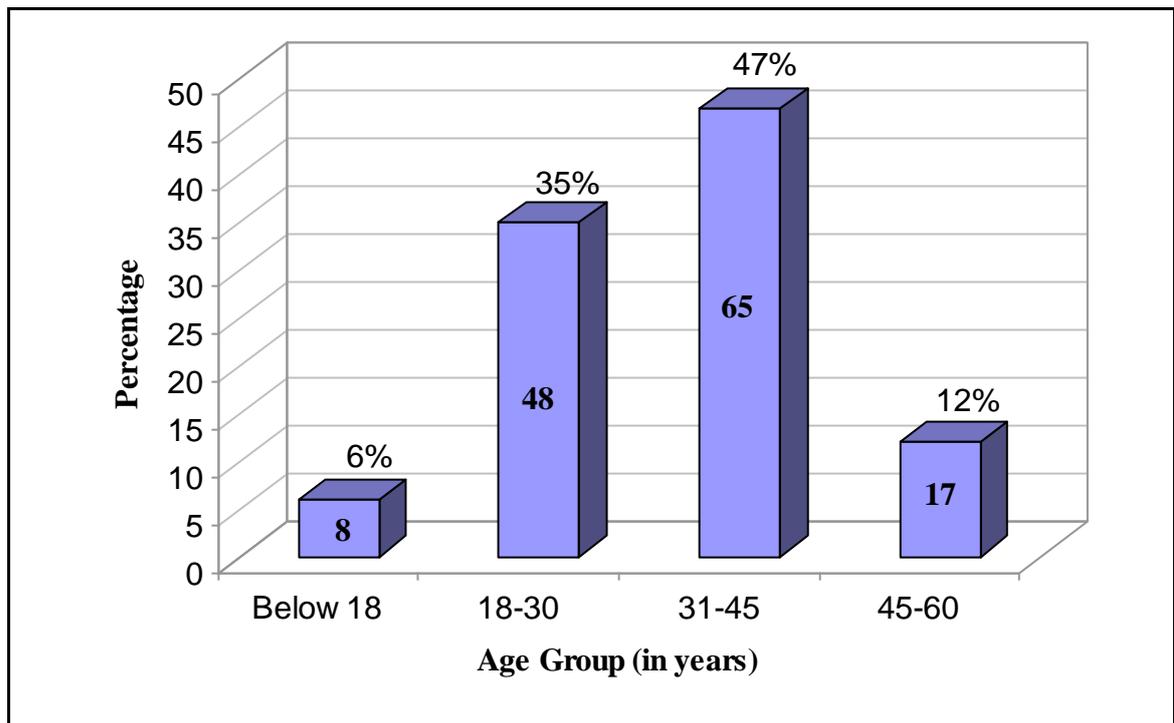
Women were more strongly represented (58%) than men (42%). Being a region that is just recovering from armed conflict, several of the families are headed by females.

Women and men usually have different roles in water activities particularly in rural areas. Women are most often the users, providers, and managers of water in rural households. This implies that if a water system breaks down, women, will more likely be the ones most affected, for they may have to travel long distances for water or use other means to meet the household's water needs.

4.1.2 Distribution of the Respondents by Age

The researcher enquired about the age categories of the respondents. The results are presented in figure 3.

Figure 3: Distribution of Respondents by Age



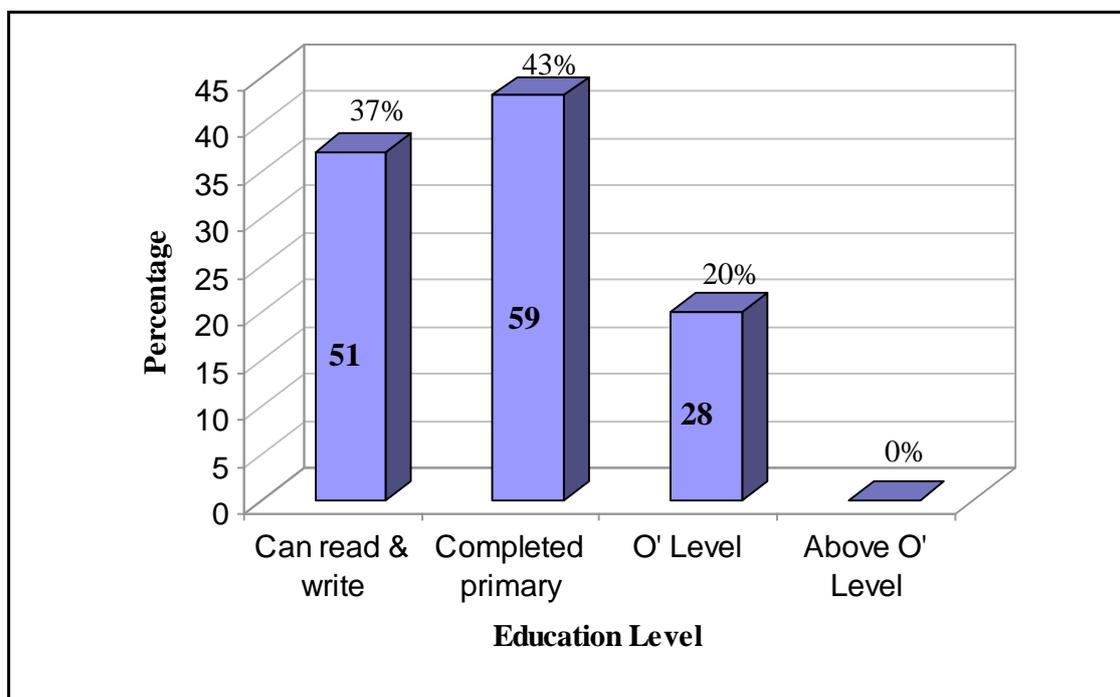
Source: Primary Data

Six percent of respondents were in the age category of below 18 years, which implies that some household heads are children, which is typical of a war-affected region. The burden of collecting water in a developing world is usually born by children and women, depriving them of quality time for education and other social activities. Twelve percent of the respondents were between 45 to 60 years. Eighty two percent (82%) of the respondents were in the age bracket of 18 – 45 years. This therefore implies that most of the household heads can provide labour power or human capital, which draws on physical capital to collect water for household livelihoods.

4.1.3 Distribution of Respondents by Highest Educational Level Attained

The educational levels of the respondents were categorized as can read and write, completed primary school and O' level. The findings are presented in figure 4.

Figure 4: Distribution of Respondents by Highest Educational Level Attained



Source: Primary Data

Results revealed that 37% of the respondents could only read and write. Forty three percent of the respondents had completed primary while only 20% of the respondents had attained post primary level of education. All the respondents could read and write. This therefore implies that there is sufficient human capital that can provide the knowledge and educational environments by which decisions can be made on gaining access and lessons can be learnt and disseminated towards household livelihoods.

4.2 Empirical Findings

In this section, the contribution of water and sanitation programmes on household livelihoods is explored. The findings are arranged as; access to water and household livelihoods, safe sanitation & hygiene promotion and household livelihoods, livelihood strategy adopted by the households and livelihoods. The results are presented in descriptive tables, showing the percentage of responses under each variable. In order to establish the effect of the Independent Variables to the Dependent Variable, regressions have been used. The results are then further explained using correlations in order to show relationships between the variables. The results from the quantitative data are compared with the qualitative ones.

4.2.1 Access to Water and Household Livelihoods

The researcher's first objective was to assess how increasing access to water contributes to household livelihoods in Gulu district. Findings were got from questionnaires, interviews and documentary reviews. Results are presented in descriptive statistics and correlations. In this study, this variable was measured using a total of 11 items, which

solicited the respondents' opinions. This was done on the basis of a five-likert scale.

Emerging results are presented in table II.

Table II: Responses on Access to Water and Household Livelihoods

Item	Percentage distribution				
	Disagree		Not Sure	Agree	
	SD%	DA%	NS%	A%	SA%
Water saving methods have helped to improve our livelihood	2	11	28	43	16
We have adequate access to water supply and sanitation services	3	21	21	42	13
Management of water resources in our community has led to social and economic development	0	5	17	64	14
Investment in water infrastructure & sanitation has reduced poverty in Gulu	6	2	24	68	10
Water is used for productive purposes	1	5	11	65	18
There is sufficient supply of water in the camps	17	26	18	28	11
Water in the camps is used for income generating purposes	16	26	28	22	8
Access to water plays a role in production and income for improved Livelihood	4	10	22	41	23
We use water for feeding our livestock	3	13	16	50	18
We use water to irrigate our crops	18	30	17	20	15
Water is used to make local brew for commercial Purposes	7	15	15	25	38
Mean	8	15	20	41	17
Mean	23		20	58	

Source: Primary Data

Key: SA = Strongly agree, A = Agree, NS = Not sure, D = Disagree,

Strongly disagree, % = Percentage

Table II shows that 59% of the respondents agreed to the statement that water saving methods have helped to improve livelihood, 55% agreed that there is adequate access to water supply and sanitation services, 78% agreed that investment in water infrastructure

and sanitation has reduced poverty in Gulu. Eighty three percent agreed that water is used for productive purposes, 43% disagreed that there is sufficient supply of water in the camps, 42% disagreed that water in the camps is used for income generating purposes, 64% agreed that access to water plays a role in production and income for improved livelihood. 68% agreed that we use water for feeding our livestock, 48% disagreed that we use water to irrigate our crops and 63% agreed that water is used to make local brew for commercial purposes. Overall 57% of the respondents agreed that access to water contributes to household livelihoods. Twenty three percent disagreed. The results imply that access to water contributes to household livelihoods. This implies that the majority of the respondents recognised the link between access to water and livelihood systems at the household level. These findings are in agreement with what the Water and Habitat Engineer for the ICRC based in Gulu district says;

Compared to the past people's livelihoods have improved. This is because of the availability of water. The IDPs have managed to have within their accessibility at least 15 litres per person per day.

4.2.2 Correlation of access to Water and Household Livelihoods

To test the hypothesis and provide information indicating direction, strength, and significance of the relationship – access to water and household livelihoods, Pearson product moment correlation was done. In this study, a Pearson correlation matrix was used. Emerging results are presented in the table III.

Table III: Correlation of access to Water and Household Livelihoods

		Access to water	Household livelihoods
Access to water	Pearson Correlation	1.000	.280**
	Sig. (2-tailed)	.	.005
	N	100	100
Household livelihoods	Pearson Correlation	.280**	1.000
	Sig. (2-tailed)	.005	.
	N	100	100

**** Correlation is significant at the 0.01 level (2-tailed).**

Source: Primary Data

The study revealed that there is a weak but statistically significant positive correlation between access to water and household livelihoods at 0.280** with a significance of 0.005 at the level of 0.01. The implication of this is that increasing access to water positively contributes to household livelihoods. With more access to water, there is likely to be an improvement in Household livelihoods and the reverse is true. Thus the hypothesis that increasing access to water significantly contributes to household livelihoods in Gulu district is accepted. This is further supplemented by the Gulu District Water Officer;

Access to water saves time which is used for other productive activities like cultivation which generates income. We have also noticed that diseases related to water and sanitation have reduced which has helped to save money now used by households for their general welfare. The water fees collected from the community not only helps in the operation and maintenance of water points but also acts as a revolving loan which is accessed by household for their different investment activities. In Mede IDP camp alone, the water user committee collected UGX 900,000 /= which is available to the households as financial capital for various investment activities.

4.2.3 Safe Sanitation and Hygiene Promotion and Household Livelihoods

The researcher's second objective was to establish the contribution of safe sanitation and hygiene promotion to household livelihoods in Gulu District. This objective was measured using 8 items, which solicited the respondents' opinions and was itemised on a five-likert scale. Emerging results are presented in the table IV.

Table IV: Responses on Safe Sanitation & Hygiene Promotion and Household

Livelihoods

Item	Percentage distribution				
	Disagree		Not Sure	Agree	
	SD%	DA%	NS%	A%	SA%
The Camps have adequate water disposal points	16	25	26	22	11
Sanitation in the camps has contributed to improved Livelihood	8	9	22	46	15
Unsafe sanitation in the camps is one of the reasons for poverty	4	2	16	36	42
Diseases that result from poor sanitation decrease productivity of people in the camps	1	4	15	39	41
Better sanitation stimulates poor households to improve their economic status	1	25	25	40	9
Camp dwellers consider sanitation as relevant to livelihood Improvement	2	6	22	56	14
Proper usage of latrines in the camps has improved people's health	35	20	19	20	6
Households recycle wastes as fertilizers	10	25	23	37	5
Mean	10	14	21	37	18
Mean	24		21	55	

Source: Primary Data

Key: SA = Strongly agree, A = Agree, NS = Not sure, D = Disagree,

Strongly disagree

Table IV shows that 41% of the respondents disagreed to the statement that camps have adequate water disposal points, 61% agreed that sanitation in the camps has contributed to improved livelihood. Seventy eight percent agreed that unsafe sanitation in the camps is one of the reasons for poverty, 80% agreed that diseases that result from poor sanitation decrease productivity of people in the camps, 49% agreed that better sanitation stimulates poor households to improve their economic status. Seventy percent agreed that camp dwellers consider sanitation as relevant to livelihood improvement, 55% disagreed that proper usage of latrines in the camps has improved people's health and 42% agreed that households recycle wastes as fertilizers. Overall 24% of the respondents disagreed that safe sanitation and hygiene promotion contributes to household livelihoods. Fifty five percent agreed. This implies that the role unsafe sanitation plays in the poverty cycle is well known by the majority of the respondents; poor sanitation leads to sickness and disease, which lead to low productivity, and, consequently, to poverty. This is further supported by the Water and Habitat Engineer for the ICRC based in Gulu district;

People have learnt the importance of ensuring personal hygiene. Due to this fact the transmission of diseases has decreased hence improved household livelihoods.

4.2.4 Correlation of Safe Sanitation and Hygiene Promotion and Household

Livelihoods

In order to test the hypothesis and provide information indicating direction, strength, and significance of the relationship – safe sanitation and hygiene promotion and household livelihoods was used. In this study, a Pearson correlation matrix was used. Emerging results are presented in the table V.

Table V: Correlation of Safe Sanitation & Hygiene Promotion and Household Livelihoods

		Safe Sanitation and hygiene promotion	Household livelihoods
Safe sanitation And hygiene promotion	Pearson Correlation	1.000	.210*
	Sig. (2-tailed)	.	.036
	N	100	100
Household livelihoods	Pearson Correlation	.210*	1.000
	Sig. (2-tailed)	.036	.
	N	100	100

*** Correlation is significant at the 0.05 level (2-tailed).**

Source: Primary Data

The findings reveal that there is a weak but statistically significant positive relationship between safe sanitation & hygiene promotion and household livelihoods at a Pearson correlation of 0.210* with a significance of 0.036 at 0.005 level. This implies that if there is safe sanitation and hygiene promotion among the households in Gulu district, this would lead to an improvement in people's household livelihood. Therefore, the hypothesis that safe sanitation and hygiene promotion contribute to household livelihoods in Gulu district is accepted. These findings are further supported by what the Gulu District Water Officer says;

One of the key ways sanitation has improved livelihoods has been through recycling of human wastes for fertilisation. This has been mostly seen in camps that have transformed to rural growth Centres. Several NGOs have provided EcoSan toilets and trained craftsmen to make urine diversion pans used in the generation of wastes for fertilisers.

4.2.5 Livelihood Strategies Adopted by the Households and Household Livelihoods

The researcher's third objective was to find out the moderator effect of livelihood strategies adopted on the relationship between water & sanitation and household livelihoods in Gulu district. This variable was measured using 15 items, which solicited the respondents' opinions and was itemised on a five-likert scale. Emerging results are presented in the table VI.

Table VI: Responses on Livelihood Strategies Adopted by the Households and Household Livelihoods

Item	Percentage distribution				
	Disagree		Not Sure	Agree	
	SD%	D%	NS%	A%	SA%
Households engage in a combination of activities	10	25	23	37	5
Households engage in Productive activities	6	6	11	63	14
Households engage in Investment strategies	6	3	17	60	14
Households engage in Reproductive choices	9	19	32	29	11
Households engage in Cultivation	3	6	16	30	45
Households engage in Livestock farming	4	5	18	57	16
Households engage in Gathering and Hunting	12	19	35	27	7
Households engage in Casual labour	2	7	23	62	6
Households engage in Charcoal burning and selling firewood	4	5	22	53	16
Households engage in Crafts	8	37	21	24	10
Households engage in Petty trade	6	16	13	50	15
Households engage in Borrowing and Lending	13	13	29	34	11
Households collect wood to produce furniture	38	21	18	15	8
Households engage in Brick laying	18	31	26	19	6
Households engage in Beer Brewing	8	28	14	21	29
Mean	9	16	21	39	15
Mean	25		21	54	

Source: Primary Data

Key: SA = Strongly agree, A = Agree, NS = Not sure, D=Disagree,

SD=Strongly disagree

The table shows that 42% of the respondents agreed that households undertake a combination of activities in order to achieve their livelihood goals, 77% agreed that households engage in productive activities as a livelihood strategy. Seventy four percent agreed that households engage in investment strategies as a livelihood strategy, 40% agreed that households engage in reproductive choices as a livelihood strategy. Seventy five percent agreed that households engage in cultivation as a productive activity, 73% agreed that households engage in livestock farming as a productive activity, 68% agreed that households engage in casual labour as a productive activity.

Sixty nine percent agreed that households engage in charcoal burning and selling of firewood as productive activity, 45% disagreed that households engage in crafts as a productive activity, 65% agreed that households engage in petty trade as an investment strategy. Forty five percent agreed that households engage in borrowing and lending (of seeds to be given back after a season) as an investment strategy, 59% of the households disagreed that households collect wood to produce furniture as reproductive choice. Forty nine percent of households disagreed that households engage in brick-laying as reproductive choice and 50% of households engage in beer brewing as reproductive choice. Overall 25% of the respondents disagreed that livelihood strategies adopted by the households contribute to household livelihoods. Fifty four percent agreed. This implies that households undertake combination of activities including productive activities, investment strategies and reproductive choices in order to meet their livelihood goals. This is further supported by one local councillor in Gulu district;

Generally people here are cultivators and most of these grow food for home consumption. Some few sell charcoal and wood. A small number have livestock and

poultry. Others sell local brew for a living and these are mostly women. The men mostly engage in casual labour and such related activities.

4.2.6 Correlation of Livelihood Strategies Adopted and Household Livelihoods

In order to establish the moderator effect of livelihood strategies on the relationship between water and sanitation programmes and household livelihoods, a Pearson product moment correlation matrix was used. This was to provide information indicating direction, strength, and significance of the relationship – livelihood strategies and household livelihoods. Emerging results are presented in the table VII.

Table VII: Correlation of Livelihood Strategies Adopted and Household Livelihoods

		Livelihood Strategies	Household livelihoods
Livelihood Strategies	Pearson Correlation	1.000	.133
	Sig. (2-tailed)	.	.188
	N	100	100
Household livelihoods	Pearson Correlation	.133	1.000
	Sig. (2-tailed)	.188	.
	N	100	100

Source: Primary Data

The findings indicate that there is a weak and statistically insignificant positive relationship between livelihood strategies and household livelihoods at a Pearson correlation of 0.133 with a significance of 0.188, which is above the 0.05 level. This implies that the livelihood strategies adopted by the households in Gulu district, do not have a significant moderator effect on the relationship between water & sanitation programmes and household livelihoods. An alteration in the moderating variable

livelihood strategies may not have a significant effect on household livelihoods. Therefore, the hypothesis that there is a significant moderator effect of livelihood strategies adopted on the relationship between water and sanitation programmes and household livelihoods in Gulu district is not substantiated. These findings are in agreement with what the district water officer says;

Households are used to two planting seasons and no body engages in irrigation systems. Communities depend on the seasons for planting and when the rains fail, their farming is greatly affected. Some reach to the extent of selling their relief food and seedlings instead of prioritising on planting.

This confirms that people adopt different livelihood strategies and there is no single common strategy for all the people, which makes its moderator effect in this study, insignificant. Besides, people in camps have limited land for agriculture. The voluntary resettlement of IDPs in their villages of origin which would help people access their land on which they could cultivate and improve their well being has met a number of bottlenecks such as lack adequate and safe water points.

4.2.7 Regression Analysis: Access to Water, Safe Sanitation and Hygiene Promotion, Livelihood Strategies and Household Livelihoods

In order to establish the effect of the independent variable (Water and Sanitation Programmes) on the dependent variable (Household livelihoods), a regression analysis of variables; access to water, safe sanitation and hygiene promotion, livelihood strategies and household livelihoods, was carried out. Emerging results are presented in the table VIII.

Table VIII: Regression Coefficient^a

Model	Unstandardized Coefficients		Sstandardised Coefficients	t	Sig.
	B	St. Error	Beta		
1 (Constant)	1.572	0.508		3.098	0.003
Access to water	0.201	0.096	0.230	2.099	0.038
Safe sanitation and Hygiene Promotion	0.150	0.107	0.141	1.396	0.166
Livelihood strategies	0.029	0.129	0.024	0.222	0.825

a. Dependent Variable: Household livelihoods**Source: Primary Data**

The table shows the effect of the independent variable as measured by a standardised regression (B). This was used to determine whether the independent variable has a controlling effect on the dependent variable. The results show that statistically, access to water has a standardised coefficient (B) of 0.230 meaning that access to water as an independent variable explains the variations of the dependent variable by 23 percent. This therefore implies that access to water is positively related with household livelihoods in Gulu district. Hence, if there is any alteration on access to water, there would be a corresponding effect on household livelihoods. The results further show that statistically, safe sanitation has a standardised coefficient (B) of 0.141 meaning that access to water explains variations of household livelihoods by 14 percent. Hence, any alteration on safe sanitation will lead to a corresponding effect on household livelihoods. The model still shows that livelihood strategies have a standardised coefficient (B) of 0.024 implying that livelihood strategies as a moderating variable explains the variation of the dependent variable by 2.4 percent. This is further explained in model summary in table IX;

Table IX: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.312 ^a	0.097	0.069	0.42925

a. Predictors: (Constant), livelihood strategy, safe sanitation and hygiene promotion, access to water

Source: Primary Data

From the model summary, all the dimensions of the independent variable had R squared (R^2) of 0.097 (R^2 tells how a set of independent variables explains variations of a dependent variable). This means that the independent variables; access to water, safe sanitation and hygiene and livelihood strategies account for 9.7 percent of the variations in household livelihoods. The findings show that the independent variable is positively related to the dependent variable by 9.7 percent. Other variables could account for the rest of the variance in household livelihoods. This is substantiated by the analysis of variance in table X below.

Table X: Analysis of variance (ANOVA^b)

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	1.903	3	0.634	3.443	0.020 ^a
Residual	17.688	96	0.184		
Total	19.591	99			

a. Predictors: (Constant), livelihood strategies, safe sanitation and hygiene promotion, access to water

b. Dependent Variable: Household livelihoods

Source: Primary Data

Since the "R-Square" is quite small, "0.097" as seen in table 8, the analysis of variance was used to confirm the quality of the model. The analysis of variance "F" as shown in table X is 3.443 with a significance of 0.02. This shows that "F" is statistically significant and implies that water and sanitation programmes combined with the moderating variable – livelihood strategies have a statistically significant effect on household livelihoods.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The general objective of the study was to analyse the contribution of water and sanitation programmes on household livelihoods in Gulu district, Northern Uganda. In this chapter, the results described in chapter four are summarised and discussed, conclusions and recommendations are made objective by objective. Study limitations and areas of further research are also shown.

5.1 Discussion

The study covered three camps; Orapwoyo, Mede and Binya in Gulu district. It looked at a sample of 211 respondents consisting of 200 household heads, Gulu district water officer, 3 staff of the ICRC, 3 local council chairpersons, 1 UNICEF staff and 3 camp leaders. The study revealed that there has been an effort towards provision safe water and sanitation which in one way or the other contributed to an improvement in people's livelihood.

The health based approach focuses on developing water supply and improving sanitation. This approach does not recognise water as an asset that could be used to improve livelihoods but rather focuses on developing safe water supply and links it to better health. The integrated approach aims at reducing contamination levels within local households. This approach to water management leads to a reconsideration of

technologies and taking into account the experience, knowledge, needs and expectations of local water users. The livelihood approach recognises different resources within the communities like Natural capital such as land that provides water, human capital which provides the knowledge and educational environments by which decisions can be made on gaining access to water, and social capital which creates opportunities through the community to participate in water initiatives.

5.1.1 Access to Water and Household Livelihoods

In order to ascertain the relationship between water and sanitation programmes and household livelihoods among IDPs in Gulu district, a number of variables on pertinent issues were covered. Majority of respondents agreed that water and sanitation programmes have a contribution towards household livelihoods. The results indicate that there is a significant positive relationship between access to water and household livelihoods. The contribution of water to livelihood improvement goes far beyond just drinking water since water is essential for improving the health and livelihoods of the poor (Manase, etal, 2009). Similarly Nizamedinkodjayeva (2008) further says that limited access to water is one of the principle constraints for improving rural livelihoods. Improved access to water has a considerable potential to decrease livelihood vulnerability and reduce poverty. Poverty tends to increase where people are deprived of water for basic needs of consumption or sanitation as a result of water scarcity, where people acquire insufficient benefit from water use for their livelihood strategies. Water supply must as well be viewed as a social issue. Access to water, gives more time for productive endeavours, education and leisure hence improved livelihoods. Making water available for agricultural production (including livestock,

fish, as well as crops) where rainfall is unreliable or insufficient can make a huge difference to peoples' lives, as the vast majority of rural poor (and even peri -urban poor) depends on agriculture.

The findings further concur with what Maluleke (2005) says, that lack of water security reduces the scope of strategies for people to sustain their livelihood (by meeting their basic needs to sustain themselves) or to enhance it (by meeting the water needs for productive uses). The consequence is that poor people's livelihoods become more vulnerable. With the current global climate change, there is considerable evidence of declining agricultural yields and further impoverishment. This too has many complex causes, but lack of reliable and adequate water that would make investments in irrigation services a major issue.

Traditionally, water supply planning has focussed on meeting basic domestic needs, without considering the multiple water needs of IDPs. However, looking at people's livelihoods strategies, as the research findings revealed, it becomes evident that people require water for both domestic and productive needs. Access to reliable supplies of water affects a great number of activities, and water availability can either constrain or provide a wide range of opportunities for the rural poor.

To achieve greater water security at village level, and for water to meaningfully contribute to livelihoods, a more holistic and integrated approach to water planning that is based on an understanding of people's livelihood strategies and the role of water resources (and constraints) within them, is needed. The study established that

access to water is concerned with human domestic consumption requirements and its use as a part of daily household requirements for cooking, cleaning, washing and drinking. The weighting given to this view of water – as opposed to its use as a productive asset – is perhaps undue and arises from the health-based approach. Little attention has been put in treating water as both a good which has costs attached (in delivery and disposal), and an asset in productive processes at a household level – whether watering animals, supplementing small plot irrigation, producing local drinks for sale or even reselling for a profit to other households.

The study findings concur with Clarke (1998), that it is necessary to recognise water as just one type of asset available to households that can determine the types of livelihood strategies employed. Availability and access are elements in a network of choices and activities which form the livelihood of communities. Those with the range of assets necessary to combine with water to create income or produce for exchange may, in fact, benefit a richer strata of a community disproportionately, either through increasing the value of other assets (such as land) or through increasing the tendency to monetise access to water resources.

From the research findings, it was revealed that the concept of livelihoods has many dimensions, but lack of access to a reliable water supply for households, as well as for productive purposes is one central feature of livelihoods in developing countries and must be reduced drastically if the Millennium Development Goals are to be met. This concurs with Nicol (1997) who argues that increased access to water can create greater demand, so where water is made more easily available and access is improved,

demand for labour power (often gender specific) at a household level is frequently increased. In some cases, children (particularly girl children) may spend more time collecting water (and/or collecting more of it) as a result of improved access.

5.1.2 Safe Sanitation and Hygiene Promotion and Household Livelihoods

The impact of sanitation on human health is the most widely recognised benefit of good sanitation and hygiene practices. The results indicate a significant positive relationship between safe sanitation and hygiene promotion. However, the researcher observed that in some cases, although latrines are sometimes available, they are not used or properly maintained. Yet proper sanitation is a key factor in controlling water-borne pathogens and maintaining safe drinking water and a hygienic/clean environment. This in one way or the other could have a negative effect on the livelihoods of the IDPs.

Studies suggest that the provision of sanitation facilities can directly or indirectly contribute to improving livelihoods, and thereby to improving life conditions. Direct support refers to the implementation of sanitation facilities which will produce an income such as eco-sanitation producing fertilizers. Indirect support can for example consist of training to help IDPs choose the sanitation facilities they need, which will eventually bring higher levels of health and hygiene. If people do not have adequate and appropriate sanitation facilities or the chance to develop good hygiene practices, diseases can be spread through the contamination of water or through other pathways at household level (DFID: 2005).

5.1.3 Livelihood Strategies Adopted by the Households and Household Livelihoods

On whether livelihood strategies adopted have a significant moderator effect on household livelihoods, the findings revealed that there is no single common livelihood strategy adopted by the people and therefore its contribution was not significant. The results indicate that there is an insignificant positive relationship between livelihood strategies and household livelihoods. This can be attributed to the fact that the majority of the IDPs depend upon multiple strategies for their livelihoods and yet most of the livelihood strategies they adopt are water dependent. In areas where a large proportion of the population is directly dependent on agriculture for their livelihoods, such as Northern Uganda, access and adequate usage of water is a fundamental factor influencing the level of poverty.

The livelihood strategies are the outcome of livelihood activities linked to an understanding of the choices and decisions underlying them. They include: how people combine their income generating activities, their vulnerability context, shocks, the ways in which they use their assets (human, social, physical, financial and natural assets), institutional context water management structures, management processes (water use, operation & maintenance), assets they choose to invest in and how they manage to preserve existing assets and income. In order to capture the dynamic part of livelihoods, it is important to understand the influence of the vulnerability context, shocks and stresses surrounding them. The shocks and stresses affecting people's assets and their strategies need to be considered on the one hand, and people's ability to cope with that on the other hand.

According to Maluleke et al (2005), to perform the multiple activities that directly sustain or enhance their livelihood, people use multiple sources of water for multiple activities. For example, people may make use of water points for drinking and other household activities, a well for watering livestock and gardening, and rainwater harvesting for supplementary garden irrigation.

Evidence from the field indicates that households undertake combination of activities including productive activities, investment strategies and reproductive choices in order to meet their livelihood goals. While majority of households engaged in investment strategies and productive activities, few households engaged in reproductive choices as a livelihood strategy.

There is enormous diversity in livelihood strategies within the population, within households and over time.

5.2 Conclusions

Given the range of vulnerability contexts and of shocks which were caused by the two decades of violence and displacement, there are no recognised blueprints for water and sanitation programs towards household livelihoods. There are a range of responses for different situations, which can span emergencies to longer-term development contexts. Livelihood approaches draw on a range of disciplines to form an improved understanding of livelihoods and analysis related to; households, gender, education, health and income generation as noted in this study.

5.2.1 Access to Water and Household Livelihoods

- The study established that majority of the respondents agreed that investment in water infrastructure and sanitation had reduced poverty in Gulu. Eighty three percent consented that water was used for productive purposes. This implies that majority of the respondents recognised the use of water as a productive asset.
- A good number of respondents agreed that access to water played a role in production and income for improved livelihoods. This was largely attributed to the fact that many of them used water for feeding animals and several of the used it for making local brew for commercial purposes. This implies that the majority of the respondents recognised the link between access to water and livelihood systems at the household level.
- Respondents indicated that there was need for construction of more water points for people living in camps, return sites and those living in villages of origin. It is apparent that there was more weighting given to water for human consumption requirements and its use as a part of daily household requirements for cooking, cleaning, washing and drinking as opposed to its use as a productive asset.
- Increased and better access to water leads to increased and better household livelihoods and vice versa. A Pearson correlation matrix was used to provide information indicating direction, strength, and significance of the relationship. There is a statistically significant positive relationship between having access to water and household livelihoods at 5% level of significance ($p < 0.05$).
- Evidence from the field indicates that the link between access to water and livelihood systems at household level and the use of water as a productive asset was recognised. However, there was more weighting given to water for human

consumption requirements and its use as a part of daily household requirements for cooking, cleaning, washing and drinking as opposed to its use as a productive asset.

- While the analysis of field data indicates that increased and better access to water leads to increased and better household livelihoods and vice versa, the field verification suggested that households had not maximised the use of water for income generating purposes.
- Whereas households demanded for more supply of water, the training given to the water user committees does not address issues of demand over and above the survival level for its productive uses just as for its routine daily consumptive uses.

In Gulu district households engage in productive activities such as cultivation, livestock rearing, casual labour, charcoal burning, and investment activities like petty trading such as road side restaurants and reproductive activities such as furniture production, brick laying and brewing which depend on water supply. These activities have led to increased incomes and wealth thus improved livelihoods. This is in agreement with the hypothesis that access to water significantly contributes to household livelihoods. However communities do engage in irrigation but entirely depend on the unpredictable rainy seasons for cultivation. This in turn has affected the households in the area of food security.

5.2.2 Safe Sanitation and Hygiene Promotion and Household Livelihoods

- The role unsafe sanitation plays in the poverty cycle is well known by the majority of the respondents; poor sanitation leads to sickness and disease, which lead to low productivity, and, consequently, to poverty. Many of the respondents agreed that sanitation in the camps has contributed to improved livelihood. Several of them agreed that diseases that result from poor sanitation decrease productivity of people in the camps. At the same time, others said that unsafe sanitation in the camps was one of the reasons for the rampant poverty they were experiencing in the camps.
- A good number of the respondents said that camp dwellers consider sanitation as relevant to livelihood improvement, though a small percentage of them agreed that households recycle wastes as fertilizers. This implies that majority of the households, who are engaged mainly as farmers, do not understand the benefits and safety of using urine and composted faeces as an asset (agricultural fertilizer).
- The better the sanitation level, the better the household livelihoods and vice versa. In as much as majority of respondents understood the role unsafe sanitation played in the poverty cycle, the potential linkage between sanitation and natural resources had not been exploited optimally. A Pearson correlation matrix indicated that there is a statistically significant positive relationship between safe sanitation and hygiene promotion and household livelihoods at 5% level of significance ($p < 0.05$).
- While majority of the households considered sanitation as relevant to livelihood improvement, a handful of households recycled wastes. Most households did not understand the benefits and safety of using urine and composted faeces as an asset

(agricultural fertilizer). Evidence from the field suggests that the role unsafe sanitation plays in the poverty cycle is well known by majority of the households; poor sanitation leads to sickness and disease, which lead to low productivity, and, consequently, to poverty.

- The analysis of field data suggested that enhanced sanitation at household level led to improved household livelihoods and vice versa. Whereas majority of households had understood the role unsafe sanitation played in the poverty cycle, the potential linkage between sanitation and natural resources had not been realised.

In Gulu district households were aware of the negative effects of unsafe sanitation. Households that engaged in safe sanitation had good health and this enabled them to engage in productive activities such trading and agriculture that notably increased their incomes. This was in line with the study hypothesis which stated that Sanitation and hygiene promotion contributes to household livelihoods. Whereas majority of households had understood the role unsafe sanitation played in the poverty cycle, the potential linkage between sanitation and natural resources had not been realised.

5.2.3 Livelihood Strategies Adopted by the Households and Household Livelihoods

- From the study, it was established that majority of the respondents agreed to the fact that households engage in productive activities as a livelihood strategy.

However households also engaged in investment strategies and reproductive choices as a livelihood strategy.

- Majority of the respondents recognised the link between access to water and livelihood systems at the household level and undertake combination of activities including productive activities, investment strategies and reproductive choices in order to meet their livelihood goals. A good number of the respondents agreed that access to water played a role in production and income for improved livelihoods. Still many of them were of the view that water was used for feeding animals, others engage in petty trade, borrowing and lending (of seeds to be given back after a season) as an investment strategy, beer brewing as reproductive choice, while others consented that water was used to make local brew for commercial purposes.
- There is enormous diversity in livelihood strategies – within the population, within households and over time. In the study, a Pearson correlation matrix was used to provide information indicating direction, strength, and significance of the relationship – livelihood strategies and household livelihoods.

In Gulu district the lesson learnt was that whereas majority of the households engaged in cultivation and livestock farming, there was enormous diversity in livelihood strategies. However, the livelihood strategies adopted, given their diversity had an insignificant moderator effect on the relationship between water and sanitation and household livelihoods.

5.3 Recommendations

Based on the findings of the study, the researcher came up with the following recommendations.

5.3.1 Access to water and household livelihoods

- It is recommended that the in designing water interventions within the communities, the structure of calculating the anticipated demand should be over and above the survival level and be informed as much by its productive uses as by its routine daily consumptive uses.
- Communities should be given an active part over the entire project cycle and they should be given a choice regarding the design, basic treatment and service. Each implemented project should be handed over to a water committee the community has formed during the planning, design and implementation process.
- There is need to develop and promote new water collection technologies and strategies to bring water closer to home.
- It is recommended that community participation needs to be promoted to provide support to vulnerable groups.
- Awareness should be created, people should sensitized on multiple use of water for multiple activities in order to ensure multiple benefits to people's livelihoods for example, people may make use of a well for watering livestock and gardening and rain water harvesting for supplementary garden irrigation.

- Consultative mechanisms need to be created at different levels to engage the community in decision-making regarding the provision and protection of the water supply and sanitation services. Communities need to be encouraged and empowered to take part effectively and independently in every stage of the decision making process. Such a system demonstrates how local knowledge can be used to make optimal use of locally available resources. Establishment of a community-managed water supply system is a step towards sustainable livelihoods since households can manage their own resources and ensure their proper utilisation for the greatest benefit of the community. People's participation irrespective of gender and age in decision-making at grassroots' level for the construction and maintenance of water supply systems makes social cohesion and social capital strong.
- Water and Sanitation programs should promote the coordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare. The programs should refocus more firmly on livelihoods.
- There is a need to develop village level water supply services, in which resources, users and uses are integrated.

5.3.2 Safe Sanitation and Hygiene Promotion and Household Livelihoods

- People should exercise recycling of waste for manure use which could be used to fertilise their crops.
- There is need to promote the use of urine diversions which can be used for purposes of irrigation and fertilization.

- For effectiveness of safe sanitation and hygiene promotion there has to be availability of water that allows people to wash hands and tide their households.
- Communities should engage in the construction of latrine slabs so as to improve local technology for improved livelihoods i.e. in terms generating wealth for the communities.
- Sanitation interventions should enhance the individual families' well being, maximising the economic and social benefits of development.
- Recommend/provide alternative technologies such as installing poles or strengthening venting poles to serve as support; installing ropes, bars, or handrails; providing seats/stools and other devices; constructing a ramp for easy access. Design latrines that use natural light and have adequate ventilation.

5.3.3 Livelihood Strategies Adopted by the Households and Household Livelihoods

- Matching locally available water resources (in space and in time) with the multiple needs people have, and making best use of appropriate technology are necessities that are often overlooked in conventional systems design. It is recommended that water systems design should not only be made suitable to match the different livelihoods strategies adopted by the communities but also create awareness for demand and maximum usage.
- Neither water and sanitation facilities nor local authorities can ensure sustainable access to water for livelihoods. People are the ones who should determine that both water and sanitation facilities and local institutions work, and therefore adopt

strategies as the situation demands. What is needed is a people centred approach, and strategies by the people, for the people and with the people.

5.4 Areas for Further Research

The findings of this study focussed on Water and Sanitation Programmes and their contribution to household livelihoods among IDPs in Gulu district. Further research could consider some of the following areas;

- Programming guidance for integrating water, sanitation, and hygiene improvement into HIV/AIDS programs among IDPs since literature has that there is a higher prevalence of HIV/AIDS in northern (about 12%) compared to the national average (about 6.7%).
- Integrating livelihoods into integrated water resources management.
- Enhancing local livelihoods through community-based planning of multiple uses of water in partnership with private service providers.

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Appendix 1: Introductory Letter from Uganda Management Institute (UMI)



UGANDA MANAGEMENT INSTITUTE

Telephones: 256-41-4259722 /4223748 /4346620
256-31-2265138 /39 /40
256-75-2259722
Telefax: 256-41-4259581 /314
E-mail: admin@umi.ac.ug

Plot 44-52, Jinja Road
P.O. Box 20131
Kampala, Uganda
Website: <http://www.umi.ac.ug>

Your Ref:

Our Ref: G/35

02 September 2009

TO WHOM IT MAY CONCERN

MASTERS IN MANAGEMENT STUDIES DEGREE RESEARCH

Mr. Samuel Noah Otedor is a student of the Masters Degree in Management Studies of Uganda Management Institute 18th Intake 2009/2010 specializing in Project Planning and Management, Registration number: **08/MMSPPM/17/026**.

The purpose of this letter is to formally request you to allow this participant to access any information in your custody/organisation, which is relevant to his research.

His Research Topic is: "*Water and Sanitation Programmes and Household Livelihoods in Northern Uganda: A Case Study of Gulu District*".

A handwritten signature in blue ink that reads 'Benon C. Basheka'. The signature is written in a cursive style.

Benon C. Basheka
**HEAD, HIGHER DEGREES DEPARTMENT/PROGRAMME MANAGER,
MASTERS DEGREES IN MANAGEMENT STUDIES**

Appendix 2: Questionnaire

WATER & SANITATION PROGRAMMES AND IMPROVED HOUSEHOLD LIVELIHOODS IN NORTHERN UGANDA: A CASE STUDY OF THE ICRC IN GULU

Dear respondent,

I am a graduate student at Uganda Management Institute, pursuing a Masters degree in Management Studies (Project Planning and Management). The purpose of my study is to determine the contribution of water and sanitation programmes on household livelihoods in Gulu district of Uganda. You have been selected to participate in the study. All information will be used for purely academic purposes and will be treated with ultimate confidentiality. In order to ensure anonymity, please do not write your name or any identifying marks on the questionnaire.

Thank you

Otedor Noah Samuel

PART 1:

SECTION A: DEMOGRAPHIC INFORMATION					<i>Please tick</i>	
<i>appropriate boxes</i>						
Male				Female		
Age (approximately)						
Below 18	18 -30	31 – 45	46 - 60	Above 60		
Can read & write		Completed primary school		O' Level (S. 1 – S.4)		Above O' Level

PART 1I:

Instructions: From questions 1-11, tick (✓) on a scale of 1-5, how strongly you agree or disagree with the statements given.

1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or disagree 4 = Agree 5 = Strongly Agree

SECTION B: INCREASING ACCESS TO WATER AND HOUSEHOLD LIVELIHOODS	1	2	3	4	5
1. Water saving methods have helped to improve our livelihood					
2. There is adequate access to water supply and sanitation services					
3. Management of water resources in our community has led to social and economic development					
4. Investment in water infrastructure and sanitation has reduced poverty in Gulu					
5. Water is used for productive purposes					
6. There is sufficient supply of water in the camps					
7. Water in the camps is used for income generating purposes					
8. Access to water plays a role in production and income for improved Livelihood					
9. We use water for feeding our livestock					
10. We use water to irrigate our crops					
11. Water is used to make local brew for commercial purposes					

Instructions: From questions 12-19, tick (✓) on a scale of 1-5, how strongly you agree or disagree with the statements given.

1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or disagree 4 = Agree 5 = Strongly Agree

SECTION C: SAFE SANITATION & HYGIENE PROMOTION AND HOUSHOLD LIVELIHOODS	1	2	3	4	5
12. The Camps have adequate water disposal points					
13. Sanitation in the camps has contributed to improved livelihood					
14. Unsafe sanitation in the camps is one of the reasons for poverty					

SECTION C: SAFE SANITATION & HYGIENE PROMOTION AND HOUSHOLD LIVELIHOODS	1	2	3	4	5
15. Diseases that result from poor sanitation decrease productivity of people in the camps					
16. Better sanitation stimulates poor households to improve their economic status					
17. Camp dwellers consider sanitation as relevant to livelihood Improvement					
18. Proper usage of latrines in the camps has improved people's health					
19. Households recycle wastes as fertilizers					

Instructions: From questions 20-34, tick (✓) on a scale of 1-5, how strongly you agree or disagree with the statements given.

1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or disagree 4 = Agree 5 = Strongly Agree

SECTION D: LIVELIHOOD STRATEGIES ADOPTED BY THE HOUSEHOLDS AND LIVELIHOODS	1	2	3	4	5
20. There are a combination of activities that households choose to undertake in order to achieve their livelihood goals.					
21. Households engage in Productive activities as a livelihood strategy					
22. Households engage in Investment strategies as a livelihood strategy					
23. Households engage in Reproductive choices as a livelihood strategy					
24. Households engage in Cultivation as a productive activity					
25. Households engage in Livestock farming as a productive activity					
26. Households engage in Gathering and Hunting as a productive activity					
27. Households engage in Casual labour as a productive activity					
28. Households engage in Charcoal burning and selling of firewood as a productive activity					
29. Households engage in Crafts as a productive activity					
30. Households engage in Petty trade as an Investment strategy					
31. Households engage in Borrowing and Lending of (Seeds to be given back after a season) as an Investment strategy					

SECTION D: LIVELIHOOD STRATEGIES ADOPTED BY THE HOUSEHOLDS AND LIVELIHOODS	1	2	3	4	5
32 Households collect wood to produce furniture as Reproductive choice					
33. Households engage in Brick laying as Reproductive choice					
34. Households engage in Beer Brewing as Reproductive choice					

Instructions: From questions 35-47, tick (✓) on a scale of 1-5, how strongly you agree or disagree with the statements given.

1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or disagree 4 = Agree 5 = Strongly Agree

SECTION E: HOUSEHOLD LIVELIHOODS	1	2	3	4	5
35. Households in the Camps have adequate water points					
36. Sanitation in the camps has contributed to improved household Livelihood					
37. Households in the camps employ a combination of activities to achieve livelihood goals					
38. There is increased wealth among households in the camps as a result of water and sanitation programmes					
39. There is reduced vulnerability because of access to water resources					
40. There are adequate social assets such as; mobilization of communities required to achieve means of living					
41. There is available local knowledge to achieve livelihood improvements					
42. Households have adequate access to water facilities					
43. Households have adequate access to health facilities					
44. Households have adequate access to educational facilities					
45. There is sustainable access to income and resources to meet basic needs					
46. Households engage in productive activities to create income					
47. There is active participation of communities in water management activities					

THANK YOU

Appendix 3: Interview Guide

SECTION A: INCREASING ACCESS TO WATER AND HOUSEHOLD LIVELIHOODS

1. What do you have to say about water availability for households?
2. How has increasing access to water improved your livelihoods?
3. Can you tell us some of the benefits you have got as a result of having access to water?
4. What are some of the activities for which you use water in the camps? Are there any activities among these for which you earn money?

SECTION B: SAFE SANITATION AND HYGIENE PROMOTION AND HOUSEHOLD LIVELIHOODS

5. What is the state of sanitation and hygiene in the camps and at household level?
6. How have safe sanitation and hygiene promotion improved the livelihood of people at household level?
7. Do you think poor sanitation contributes to poor household livelihoods in any way?

SECTION C: LIVELIHOOD STRATEGIES ADOPTED BY THE HOUSEHOLDS AND LIVELIHOODS

8. What kind of activities do people engage in at household level?
9. In what ways have these activities helped to improve household livelihoods?
10. What investment strategies do people engage in at household level?

SECTION D: IMPROVED HOUSEHOLD LIVELIHOODS

11. In your view, do you think the camps have adequate water points?
12. What activities do households in Gulu engage in to achieve their livelihood goals?
13. What do you have to say about the livelihood state of the people in the camps?
14. How do communities here participate in water management activities in order to improve their household livelihoods?

Appendix 4: Table for Determining Sample Size from a given Population

Note: “N” is population size

“S” is sample size

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Table I: Determining the sample size in a given population

Krejcie, Robert V., Morgan, Daryle W., “Determining Sample Size for Research Activities”, Educational and Psychological Measurement, 1970.

Appendix 5: Map of Uganda showing the Geographical Scope of the Study

