

Master Thesis

“Water as a Development Constraint: The Case of Lwebitakuli Sub-county, Sembabule District, Uganda”

By

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This Master's Thesis is carried out as a part of the education at the University of Agder and is therefore approved as a part of this education. However, this does not imply that the University answers for the methods that are used or the conclusions that are drawn.

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Abstract

This is a qualitative study that explores people's perspectives of water as a constraint to socio-economic development in Lwebitakuli sub-county, Sembabule District, South western Uganda.

Three main research questions were explored: What are the features of socio-economic development in Lwebitakuli? What is the role of water in development? How do people perceive or describe water as a development concern? And what strategies has government, NGOs and community members adopted to cope with the challenges and improve water supply in Lwebitakuli? Data was collected by a triangulation of methods such as; semi-structured interviews, observation and focus group discussions. Interviewees included, community members (both men and women) district water officers, water committee members and community leaders.

The main findings suggest that water is of much importance to the socio-economic development of Lwebitakuli although the importance attached differed between the different gender groups. For example men looked at water as necessary for their productive economic activities, while women saw it as a necessity to performing their daily domestic activities. Despite the fact that, the right to water is a human right and accessibility is of paramount importance, the study found that, the majority of people in Lwebitakuli did not have access to safe water with coverage of 21% only. It was further revealed that, the most common water sources were boreholes and dams but these were broken and non-functional. This meant that, different users especially men walked long distances up to 20kms in extreme cases in search of water, which wastes the productive time for work. Schools too were significantly affected with children spending substantial school time searching for water for their personal and teacher use at school. Some strategies such as water harvesting, boreholes and ponds have been applied but still, they have had limited impact on the problem.

The study concluded that, water is a major constraint to socio-economic development in Lwebitakuli since it affects most of the key sectors of development such as health, education and people's major economic activities. The study recommended that, stakeholders like the government need to take appropriate measures to ensure, sustainable access to water in Lwebitakuli through specific action areas such as increasing funding to water projects, encouraging rain water harvesting, investment in new water facilities, rehabilitating viable point sources such as dams and boreholes as well as increasing participation of local people in water resource planning and management.

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While most of the people recorded above have helped me to build up and strengthen the argument in this thesis, it is important to state that errors and omissions are entirely mine.

Declaration by Candidate

I hereby declare that the thesis

Water as a Development Constraint: The Case of Lwebitakuli Sub-County, Sembabule District in Uganda

has not been submitted to any other universities than the University of Agder for any type of academic degree

31st May 2012

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Kaliisa Rogers

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Date

List of Abbreviations and Acronyms

CSO	Civil Society Organization
CBOs	Community Based Organizations
DWSCCs	District Water and Sanitation Coordination Committees
DP	Democratic Party
DWRM	Directorate of Water Resources Management
DWD	Directorate of Water Development
DEA	Directorate of Environmental Affairs
ENR	Environment and Natural Resources
ENRWG	Environment and Natural Resources Working Group
FAO	Food and Agricultural Organization
GoU	Government of Uganda
ICC	International Criminal Court
IWRM	Integrated Water Resources Management
KY	Kabaka Yekka
LRA	Lord's Resistance Army
LC	Local Council
LG	Local Government
MDGs	Millennium Development Goals
MAAIF	Ministry of Agriculture and Animal Husbandry
MoH	Ministry of Health
MoE	Ministry of Education
MGLSD	Ministry of Gender, Labor and Social Development
MoFPED	Ministry of Finance, Planning and Economic Development
MWLE	Ministry of Water, Lands and Environment
MLG	Ministry of Local government
NDP	National Development Plan
NOMA	NORAD's Programme for Master Studies
NEMA	National Environment Management Authority
NRM	National Resistance Movement
NWSC	National Water and Sewerage Corporation
NGOs	Non Government Organizations
NRA	National Resistance Army

PEAP	Poverty Eradication Action Plan
RWH	Rain Water Harvesting
SWAP	Sector Wide Approach to Planning
TCs	Town Councils
UNEP	United Nations Environmental Management Plan
UN	United Nations
UNESCO	United Nations Education Scientific Cultural Organization
UWASNET	Uganda Water and Sanitation NGO Network (UWASNET)
UBOS	Uganda Bureau of Standards
UPC	Uganda People's Congress
UPM	Uganda People's Movement
UNLA	Uganda National Liberation Army (UNLA)
UNBS	Uganda National Bureau of Statistics
UNICEF	United Nations Immunization and Children's Education Fund
UPE	Universal Primary Education
WWDR	World Water Development Report
WHO	World Health Organization
WSS	Water and Sanitation Sub-Sector
WSSWG	Water and Sanitation Sector Working Group
WPC	Water Policy Committee
WUC	Water User Committee
WSC	Water and Sanitation Committee

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CHAPTER ONE:

INTRODUCTION AND BACKGROUND OF THE STUDY

“There is no single intervention with greater overall impact upon economic development than the provision of safe water and proper sanitation” (Williams, 2002: Para 5).

1.0 Introduction

This study attempted to assess the extent to which water constrains socio-economic development in the context of Lwebitakuli sub-county, Sembabule district. The study looked at the features of socio-economic development in Lwebitakuli and how this kind of development is affected by water shortage. It also examined the role of water in promoting socio-economic development, the way water shortage constrains socio-economic development, the strategies that have been taken by both the government and non-governmental organizations to improve water supply and whether these have been successful in promoting socio-economic development in Lwebitakuli sub-county.

1.1 Background of the study

An estimated 1.5 billion people remain without safe drinking water and about 2.5 billion have no access to adequate sanitation (Mutume, 2004:19). Although the Johannesburg summit set a target of reducing by half the proportion of people without access to safe drinking water and sanitation by 2015, more than 300 million Africans still lack access to safe drinking water (Mutume, 2004:20). Further, by 2025, 1.8 billion people will be living in countries with absolute water scarcity while two thirds of the world population could be under conditions of water stress (UN cited in UNEP, 2007:129). Similarly, the time line observes that, 4 billion people will suffer from water shortages in 2025 (GVU, 2003-2010) while Bjørk and Ahmed (2010) asserted that, about one third of the world’s population live in countries suffering from moderate to high water stress.

While the global picture is far from encouraging, that of Africa is much worse. This is because, most indicators on the provision of water, sanitation and settlements, progress remains slowest in the world’s poorest region (Mutume, 2004:19). *“Water problems in Africa*

are acute and complex” Nigerian water minister Mukhhtar told the CSD session. Water bodies in Africa are shrinking. The size of L.Chad for example, has fallen from 25,000 sqkms during the 1960’s to less than 3000 sqkms today affecting more than 20 million people (Mutume, 2004:19).

According to the World Water Development Report (WWDR), problems of poverty are inextricably linked with those of water and improving the access of water to poor people has the potential to make a major contribution towards poverty eradication (UNESCO, 2009). In line with this, Uganda is no exception as William observed that, “poverty and shortages of water are inextricably linked for people in Uganda” [...] “and if the water resources are not managed, sustainable development remains a far away goal to achieve” (William, 2002: Para 4). This is the same with some Millennium Development Goals¹ (MDGs) like reducing poverty and maternal mortality, because member states Uganda inclusive were called upon during the UN Millennium Summit in 2000 to halve the proportion of people without access to safe drinking water by 2015 (Water Aid, 2005). However, the current progress within the water sector in countries like Uganda shows that, these goals may not easily be achieved.

1.1.1 Water and the Millennium Development Goals

In September 2000, at the United Nations Millennium Summit, the 191 member countries in the United Nations agreed to a set of Eight Millennium Development Goals for the World’s poor nations, with a set of 21 targets and a series of measurable indicators for each target. These goals targeted for fulfillment by 2015, have since become the fulcrum for public policy discussions and actions concerning economic and social development. These Eight goals include: Goal 1: Reduce Extreme Hunger and Poverty by half, Goal 2: Achieve Universal Primary Education, Goal 3: Promote Gender Equality and Empower Women, Goal 4: Reduce Child Mortality, Goal 5: Improve Maternal Health, Goal 6: Combat HIV/AIDS, Malaria and other diseases and Goal 7: Ensure Environmental Sustainability and finally Goal 8: Develop a global partnership for development with developing countries (Amin, 2006:1-3).

A critical examination for some of the above goals can only lead to a conclusion that, for them to be achieved to a certain level, water access to all is one of the conditions that need to

¹ The Millennium Development Goals (MDGs) are the World’s time-bound and quantified targets for addressing extreme poverty in its many dimensions by 2015.

be met without which, the possibility of turning them to reality may be a great challenge to those implementing them. The study findings (Chapter 4) explain in detail, how water shortage has already affected the achievement of the MDGs in the context of a rural sub-county called Lwebitakuli in the past twelve years since they were adopted.

1.1.2 Water and Uganda's National Development Plan (NDP) / Poverty Eradication Action Plan (PEAP)

It is important to note that, Uganda is one of the few low-developed countries that have made tremendous efforts in reducing poverty. Poverty reduction has been a leading objective for Uganda's development strategy since 1990's. Government aspires to bring down poverty levels to 15% and 30% of the population living in absolute and relative poverty respectively by the year 2017. To guide its effort in combating poverty, government prepared a Poverty Eradication Action Plan in 1997 (now the National Development Plan). One of PEAP's targets is to provide safe water within easy reach to 100% of the population by 2015 (Rudaheranwa et al, 2003:3). The plan employs a multi-sectoral approach that takes into consideration the multi-dimensional nature of poverty and the inter-linkages between influencing factors. However, in order to achieve its objectives, the issue of water needs to be put among the top priorities. For example; Pillar 1 is *economic development* and in this case, good water quality is required to sustain many economic activities, Pillar 2 which is *production, competitiveness and incomes* cannot be achieved without water because, it is required for irrigation, aquaculture and livestock in order to ensure high yields and minimize death of livestock, Pillar 3 is *security, conflict resolution and disaster management*, in this case, water availability will help to avoid potential conflicts arising from contamination or encroachment on public water sources, Pillar 4 is *Good governance*, and here water for all citizens is a basic right, so if water is scarce, this cannot be achieved. Pillar 5 *Human development*, comprises sectors like *education and Health* which cannot succeed in the absence of water, for example, with Health, if water is available, it will reduce incidences of water borne diseases and improve productivity of people and social development. Also, on the other side, water availability will promote education standards by reducing school drop-out rate brought about by water scarcity (MWLE, 2006) hence improving the quality of life of the poor through delivery of social services (Rudaheranwa et al, 2003:7). Therefore from this background, it is evident that water is much needed if Uganda is to achieve its development

objectives as laid down in the National Development Plan which is Uganda's guiding tool on development issues.

1.2 The water situation in Uganda

Fresh water is a key strategic resource in Uganda's quest for economic development. Although Uganda is considered to be well endowed with water resources, the spatial and seasonal variability raises concern in the context of rapid population growth, increased need for water for agricultural production, industrialization and the challenges posed by being part of an international basin (MWLE, 2006). Aware that water is a socio-economic good and recognizing the trans-boundary nature of Uganda's water resources, Government of Uganda (GoU) in 1993 embarked on the process of indentifying both long and short term management strategies for water resources management through the water action plan (MWLE, 2006).

The country's surface area of about 241,500km consists of 15% open water, 3% permanent wetlands and 9.4% seasonal wetlands. The water resources of Uganda consist of open water bodies such as, L.Victoria, L. Kyoga and L.Albert and rivers like the Nile, Sezibwa, Katonga, Kagera and many others. Ground water exists in both the fractured and non-fractured aquifers. The annual rainfall is in the range of 600-2500mm (MWLE, 2006). More than 98% of Uganda's water resources are transboundary in nature and are part of the Nile. Major trans-boundary water bodies include Lakes Victoria, Albert, Edward and Kyoga and Rivers Kagera, Semliki, Malaba, Sio, Aswa Victoria Nile, Albert Nile and Kyoga Nile. The country occupies a unique and pivotal position in the Nile Basin geographical setting as it is both an upstream and downstream state. This poses challenges to the country, related to making maximum use of the water resources within its territory for her socio-economic development while not compromising the legitimate right by her neighbors to the same shared resources. As a result, Uganda has been very keen on fostering close collaboration with her neighbors in the joint planning, management and development of the shared water resources (MWLE, 2011:75).

However, despite Uganda's being well endowed with significant freshwater 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 leading to a challenge of low safe water coverage (59% rural and 65% urban, as of December 2003) [and] in order to meet the above challenges,

government initiated reforms in the water sector in 1997, to ensure that water services are provided and managed with increased efficiency and cost effectiveness (MWLE, 2005).

One of the key strategic outcomes from the reform studies is the adoption of a ‘Sector Wide Approach to Planning (SWAP)’ for the sector. The SWAP framework, which has been embraced by both government and the water sector development partners, has already proved to be the most appropriate mechanism for resources mobilization and implementation of the action plans. The SWAP framework also guarantees the participation of all stakeholders in the planning and implementation of water sector activities (MWLE, 2005).

However, despite the significant progress highlighted above, the sector is still faced with a number of challenges. The major challenge is establishment of strong mechanisms for effective, efficient and sustainable delivery of water and sanitation services to the end users, on the basis of the strategies and funding mechanisms established under the SWAP framework.

1.3 The Institutional Framework for Uganda’s Water Sector

Uganda’s water and sanitation sector is based on an institutional and legal framework that has been continuously revised and updated since the early 1990s. Reforms have been implemented in the various sub-sectors, aimed at improving the performance of the sector. There are different policies, strategies and guidelines developed for the different sub-sectors, which potentially have implications on equitable distribution of water and sanitation services. Overall, the National Water Policy (1999) provides an elaborate set of strategies and approaches to be used in the sector (MWLE, 2011:8).

The water and environment sector consists of two sub-sectors, that is; the water and sanitation sub-sector (WSS) and the environment and natural resources (ENR) sub-sector. The water and sanitation sub-sector comprises water resource management, rural water supply and sanitation, urban water supply and sanitation and water for production (MWLE, 2011:9). In the rural water supply and sanitation sub-sector, the goal and targets are: Sustainable safe water supply and Sanitation facilities, based on management responsibility and ownership by the users, within easy reach of 77% or 95% of the rural population by the year 2015, with an 80%-90% effective use and functionality of facilities. The objective is to reduce the walking

distance to improved water sources in rural areas to 1.5 km so as to enable people devote the rest of the saved time to increasing their incomes as well as improving the quality of their lives (Rwamwanja, 2006).

With effect from July 2008, the water and sanitation sector working group (WSSWG) was merged with the environment and natural resources working group (WESWG). The ENRWG provided policy and technical guidance for the sector. It comprises representatives from all key sector institutions (Government, Development Partners and NGOs) (MWLE, 2011:9).

The institutional framework for the water and environment sector comprises the MWLE and its three directorates and various parastatal organizations as well as related government and NGOs and stakeholders at community, district, regional and national levels (MWLE, 2011:9).

1.3.1 National Level

The water policy committee (WPC) was established under the water act CAP 152 and water resources regulation (1998) of Uganda, to assist and advise the Minister of Water and Environment and to promote inter-ministerial and inter-sectoral coordination over a wide range of water resources management and development issues. The WPC provides an avenue for promoting IWRM at a national level and guiding the strategic management and development of water resources of the country. The WPC also coordinates the preparation of national water quality standards and mediations and undertakes conflict resolution between national authorities on water resource matters (MWLE, 2011:10).

The Ministry of Water and Environment has the responsibility for setting national policies and standards, managing and regulating water resources and determining priorities for water development and management. It also monitors and evaluates sector development programmes to keep track of the performance, efficiency and effectiveness in service delivery. MWLE has 3 directorates, that is; Directorate of water resources management (DWRM), Directorate of water development (DWD) and the Directorate of environmental affairs (DEA). With respect to water for production, MWLE is the lead agency for water production and development off-farm. Ministry of Agriculture and Animal Husbandry (MAAIF) is the lead agency for water use and management for agriculture development on-farm (MWLE, 2011:10).

The Directorate of Water Resources Management (DWRM) is responsible for developing and maintaining national water laws, policies and regulations, managing, monitoring and regulation of water resources through issuing water use, abstraction and waste water discharge permits, integrated water resources management (IWRM) activities, coordinating Uganda's participation in joint management of transboundary water resources and peaceful cooperation with Nile basin riparian countries (MWLE, 2011:9).

The Directorate of Water Development (DWD) is responsible for providing overall technical oversight for the planning, implementation and supervision of the delivery of urban and rural water and sanitation services across the country including water for production (MWLE, 2011:9).

The National Water and Sewerage Cooperation (NWSC) is a parastatal that operates and provides water and sewerage services for 23 large urban centers across the country including Kampala the capital city.

Important to note further is that, a number of line ministries have important roles in the ministry for example; the Ministry of Health(MOH), Ministry of Education(MoE) Ministry of Gender, Labor and social development(MGLSD), Ministry of Agriculture, Animal Husbandry and Fisheries(MAAIF), Uganda Wildlife and Ministry of Finance, Planning and Economic Development (MoFPED).

Also over 200 NGOs are working in water supply and sanitation. The Uganda water and sanitation NGO Network (UWASNET) is a national network organization established in 2000 with the aim of strengthening contribution of NGOs/ CBOs in achieving water and sanitation sector goals (MWLE, 2011:10).

1.3.2 District Level

Local governments (districts \ town councils and sub-counties) are empowered by the LG Act (2000) to provide water services and manage the environment and natural resource base. Local governments in consultation with MWLE appoint and manage private operators for urban piped water schemes that are outside the jurisdiction of NWSC. The district water offices manage water and sanitation development and oversee the operation and maintenance

of existing water supplies in the district. Local governments receive funding from central government in the form of conditional grants i.e. district water and sanitation development conditional grants (DWSDCG).

District water and sanitation coordination committees (DWSCCs) were established in almost all districts. The DWSCC membership consists of administrative and political leaders, technocrats, and NGO/CBO representatives at district level. The role of the DWSCC is to oversee the implementation of WSS programmes, strengthen collaboration and coordination with other sectors (health, education, social development and agriculture and other players (NGO, CSO). In 2008/9 DWSCCs were active in all districts except in Bugiri and Kalangala (MWLE, 2011:11). Also involved in service delivery at the district level are NGOs who have played an important role in the promotion of sanitation and hygiene education as well as private sector organizations and individuals involved in the design, construction, operation and maintenance of water facilities (Rwamwanja, 2006).

1.3.3 Private sector

Private sector firms undertake design and construction in water supply and sanitation under contract to local and central government. Private hand pump mechanics and scheme attendants provide maintenance services to water users in rural and peri-urban areas. Private operators manage piped water services in small towns and rural growth centers (MWLE, 2011:12).

1.3.4 Community Level

Last but not least, communities are responsible for demanding, planning and contributing a cash contribution to capital cost and operating and maintaining rural water supply and sanitation facilities. A water user committee (WUC) which is sometimes referred to as water and sanitation committee (WSC) should ideally be established at each water point (MWLE, 2011:12).

However, despite the existence of the above conducive policy framework during the past years, some areas in Uganda have remained in a bad state, in as far as water access is concerned. This is related to what Saghir observed that, while many African governments have updated their water policies, they have been less effective at putting them into practice,

with national and local governments unsure about what their respective duties should be (Saghir, 2012).

In other words, for the Ugandan case, the aggregation of water service delivery marks variation across districts. For example in the central region, the most benefiting districts in terms of water service coverage between 1999 and 2001 were Mpigi, where the water service level rose from 27% to about 82%, while the least beneficiary districts in the central region in terms of access to safe water were Sembabule with only 26% (Rudaheranwa, 2003:16). This explains why the water problem still persists in Sembabule and possibly affecting socio-economic development in the district. Therefore, in order to look at the complex relationship between water and socio-economic development, the topic of this study was set as **“Water as a Development Constraint- A Case of Lwebitakuli Sub-county- Sembabule District, Uganda.**

The reasons for focusing on Lwebitakuli in this study are many; First, Lwebitakuli is a rural sub-county which receives relatively low rainfall and has long dry spells hence perennial water shortages. Agriculture is the mainstay of the sub-county economy, involving both crop and animal husbandry (Ssekandi, 2009) and these activities being dependant on water; the sub-county is more vulnerable to the effects of water shortages. Further, Lwebitakuli sub-county is poorly endowed with natural water, to the extent that even deep boreholes cannot succeed and the water table is very low to apply the common and less costly water technologies (Water Aid, 2005). Also, the fact that Lwebitakuli is still doing bad with water access compared to other sub-counties in Uganda, further justifies the reason for studying it.

On the other hand, the focus on water and development as a topic has multiple justifications. First of all, findings will enable stakeholders such as the government, NGOs, community members and others to be more aware of the impact water can have towards development and people’s livelihoods. The study further provides information regarding the relationship between water and socio-economic development from the perspective of local people, along with suitable strategies to reduce water shortage. This will possibly help government and other key stakeholders, to re-examine their policies and consider water as a priority when planning and allocating resources since the study findings noted a decrease in government funding for the water sector. The results also exposed the causes of the water problem which

may influence a positive change in attitudes towards protecting natural resources such as forests and wetlands. The findings of this research are also bound to add on the existing body of knowledge about water and development, since most studies have mainly focused on water quality, distribution and others while paying less attention to water and socio-economic development. This study will therefore serve as a source of information for future researchers in the same field and perhaps with a larger sample.

The study employed a Qualitative research approach, using semi-structured interviews, focus groups, observation and documents for data collection to enable better exploration of the problem.

Problem statement and Research questions

1.4 Problem statement

The linkage between water and socio-economic development² is significant since all productive sectors of the economy like; agriculture, livestock, industry, human settlements and others rely on water for most of their activities (Bagoora et al, 1999:2). The water sector is one of the priority sectors in Uganda, as emphasized in the different institutional frameworks and the National Poverty Eradication Action Plan (PEAP) (now the National Development Plan), which is the key government framework for ensuring poverty eradication (MWLE, 2005). However, despite all these, in Uganda, the water problem is persisting since half of the districts are said to be still below the national average of 63% yet water coverage in 130 sub-counties out of 1,024 is also below 39%. Equally, there is disparity in the functionality of water facilities across districts (MoFPSED, 2010:268). This in turn affects people's livelihoods and in the long run affect Uganda's efforts to achieve sustainable development and the Millennium Development Goals. This study therefore sought to investigate how water may constrain socio-economic development from the perspective of local people. Also, a focus was put on the strategies that have been put in place by the government and community members to cope with the problem both at the community and

² socio economic development in this study is defined as ability of the community to have good health services, education services measured by the levels of literacy in the community, the ability to have daily incomes of at least 2 dollars a day and employment opportunities that enable them fulfill their livelihoods or get access to all their basic needs as well as presence of personal dignity and freedom of association by all sections of people in the society

household levels and the extent to which they have been successful. This in the end provided valuable information that will work as a starting point in designing appropriate strategies to reduce water shortage in Lwebitakuli, Sembabule and Uganda at large, thus helping in achieving socio-economic development, Millennium Development Goals and the objectives under the newly introduced National Development Plan.

1.5 Main Objective

The main objective of the study was *to investigate how water constrains socio-economic development from the perspective of local people alongside finding measures that have been put forward by the government and the community of Lwebitakuli sub-county to improve water supply.*

1.6 Research questions

The following research questions which the data was specifically collected to answer shaped the study:

1. What are the key features of socio-economic development in Lwebitakuli sub-county?
2. What is the role of water for promoting such development?
3. How is the lack of water constraining socio-economic development and what measures/coping strategies are put forward by the government and the community to improve water supply?

1.7 Study Hypotheses

This study is conceived and built on a number of hypotheses. Firstly, the study argues that, if water is available in the community, it can facilitate socio-economic development by promoting better health, sanitation, farming and agriculture and education standards. Secondly, if rural water programs involve the local people in water resources management, it can ensure sustainability since community members develop a sense of ownership for the water sources thus improving water supply. Lastly, water alone may not necessarily promote socio-economic development but instead other factors such as access to markets, improving transport network, access to enough capital, and others are significantly necessary to achieve socio-economic development.

Uganda

Uganda is a land locked East African country sharing borders with Kenya to the East, Sudan to the North, the Democratic Republic of Congo to the West and Rwanda and Tanzania to the South. Uganda has an area of 241,550skm out of which 41743skm is made up of open water bodies and swamps (MWLE, 2011:13). Uganda located astride the equator is characterized by a number of major transboundary natural resources that include lakes, rivers and mountains (CIA, 2006, NEMA, 2005). Uganda possesses important resources that include fertile soils as well as regular rainfall and enjoys a favorable climate because of its relatively high altitude. Uganda has 2 rainfall seasons with an average of annual rainfall of 1500mm, ranging from 500mm in North Eastern Uganda to 2100mm in the L.Victoria basin. This offers a good potential for rainwater harvesting (MWLE, 2011:13).

Economically, agriculture is the most important economic sector with over 80% of the population engaged in agricultural production or agro-based industry. Agriculture contributes up to 31.1% of the GDP with coffee accounting for the biggest portion of the country's revenue (CIA, 2006). The country is relatively self sufficient in food although the distribution is uneven over the different areas.

Administratively, Uganda is organized in form of districts as the basic units of administration. From the 39 districts which were in existence in 1994, currently the country boasts of 111 districts and others pending waiting for parliament approval (MLG, 2010).

Politically, Uganda is governed through a decentralized system of governance and some functions and responsibilities have been relinquished by the central administration to the local governments using the districts as the administrative units for the system. However, the central government retains the responsibility of making policy, setting standards and supervising and ensuring national security among others (UBOS, 2007).

As of June 2011, Uganda's population was estimated at 32.9 million people, an increase of 1,150,000 as compared to 2010. The national annual population growth rate is 3.4% which is among the highest in the world. Out of this population, 4.9 million (14.8) live in urban areas and 28.9 million (85.2%) reside in rural areas. The national population is relatively young with 50% of the population below 15 years while those below 18 years of age make up 56%

of the total population. The mean household size is 4.8 persons to 4.2 in urban areas and 4.9 in rural settings (MWLE, 2011). The main religion is Christianity, where 41.9% are Roman Catholics and 35.9% Anglican while 12.1% are Muslims (UBOS, 2002).

2.1.1 Historical and Political Background of Uganda

Uganda's history is characterized by aspects of change, population migration and progressive development of cultural diversity. It is said that, the earliest occupants of Uganda were joined by new migrants from the North and west around the 4th century A.D. These intruders who are the ancestors of today i.e. bantu-speaking societies, are said to have come under pressure from the expansion of non-bantu speaking warriors and herders from the north-east in around the 1st century A.D (Byrnes, 1992).

By the 19th century, Uganda had a number of kingdoms especially in the central and South-western regions while in the North, East and North East, there were smaller tribal groupings in form of chiefdoms that had developed overtime (Karugire, 1980). The strongest tribal grouping/kingdom at that time-Bunyoro began to lose power to its breakaway neighbor, Buganda. Incidentally, by the end of the 19th century, the new Buganda kingdom dominated the region, but the rivalry between Buganda and Bunyoro endured for a period long enough to be exploited by the British colonialists who established the Uganda protectorate in 1894 (Byrnes, 1992).

Uganda came into the world economy through ivory trade and agricultural products in the early 20th century, the business section of the colonialists led by K. Borup, with the help of chiefs from Buganda region introduced cash crops, especially cotton in 1903 and later coffee. Buganda prospered and continued to draw laborers from other areas of the protectorate especially from the northern districts (Byrnes, 1992). Agricultural production increased in the 1920's and 1930's and many progressive farmers enjoyed economic benefits from their produce consequently affording to take their children to school. By 1962, when independence was granted to Uganda, the economy was doing well and was equated to be at the same level with that of Malaysia.

Just before independence in 1961, Uganda's political parties contested in a national election which saw the Democratic Party (DP) win the elections and thus Ben Kiwanuka, the president

General of the party becoming the first prime minister of Uganda. However, another election was held the following year that saw the coalition between UPC and Kabaka Yekka (KY) win the elections. Apollo Milton Obote the UPC party president became the second prime minister of Uganda. Uganda was therefore granted independence under the leadership of Obote. After an amendment of the constitution to remove the position of Governor replacing it with the position of non-executive president, Sir-Edward Mutesa 11 became the first president of Uganda. This was after his election by the legislature (Nsibambi (2000).

A military coup in 1971 plunged Uganda into 8 years of terror and turmoil under the government of Idi Amin Dada who was formerly the army commander in the Obote government. Amin ruled the country by decree and is remembered for his famous “war on the economy”. He expelled the Asian community who were supporting the country’s economy with their businesses and investments in the industrial sector. He accused them of milking the cow without feeding it” referring to the economy that he felt the Asians were not contributing enough taxes to it (Nsibambi, 2000).

Amin was overthrown by Ugandan exiles assisted by the Tanzanian army in 1979 in the fierce Kagera war. Multi-party elections were later held in the country in 1980 which were won by DP under the leadership of Paul Ssemwogerere. However, because chairman of the military commission who had the authority to declare the results belonged to UPC, he chose to declare the results in favor of his party. This saw Obote come back as Head of state for the second time.

No sooner had Obote been sworn in as president than Yoweri Kaguta Museveni went to the bush waging a protracted guerilla war against the government of Uganda under Obote. He went to fight because he was discontented with the election results that were in favor of UPC. On 25th Jan 1986, a guerilla army, the National Resistance Army(NRA) led by Yoweri Museveni who was the leader of the Uganda people’s movement (UPM) which had lost miserably in the 1980 elections stormed the capital Kampala and overthrew the Uganda National Liberation Army(UNLA) government led by General Tito Okello-Lutwa. This was the first time ever in African history for guerilla army to over throw a government. 6 months before in 1985, the pressure by the guerillas had led to sharp disagreements within UNLA especially among Acholi and Langi soldiers resulting into an Acholi-led military coup. Tito

Okello-Lutwa, the army commander took a pre-emptive step to overthrow his boss. President Obote hoping that this act would create avenues for dialogue between the government and guerillas.

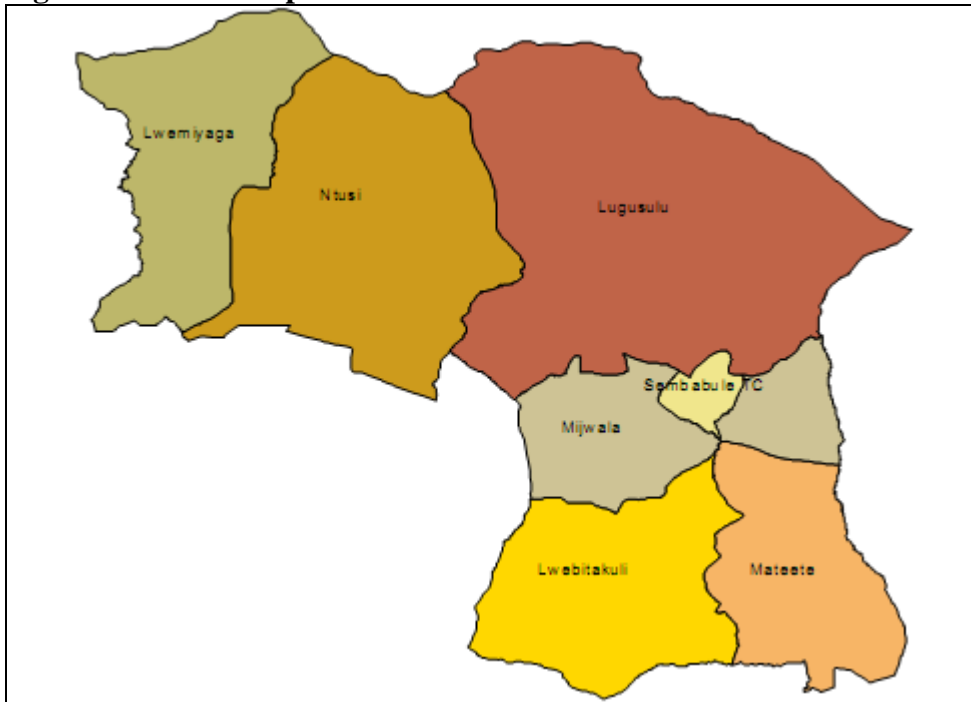
However, the government led by Museveni had not inspired overwhelming public confidence in its ability to rule. The NRA however, had shown greater military discipline than any other armed forces in recent years and when Museveni declared that establishing a peaceful and secure environment was the highest priority as president; his government cultivated strong popular backing from the populace.

Museveni's government came with the ten-point programme which advocated for a broad-based democracy and a hierarchy of popular assemblies or resistance councils (RCs) from the village through to district levels. A twenty one member constitutional commission appointed in 1988 completed its nation-wide consultations in late 1991 and in 1995 a new constitution was promulgated putting Uganda in a "movement" system of governance authored by Museveni's NRM. In 1996; presidential elections were held and won by Museveni thereby becoming the first directly elected president of Uganda. In 2001, Museveni again contested and won. The last recently held elections in 2006 and 2011 were conducted under the multi-party system of governance, after a referendum that led to the amendment of the constitution in 2005 (Sekandi, 2011).

Uganda has experienced profound, social, political and economic stability as well as relative peace since 1986 when the NRA/M took over. However, since 1986, Museveni's government has been engaged in war against a rebel group called the Lords' Resistance Army led by Joseph Kony in Northern Uganda. In April 2008, it was expected that a final seal would be put on the peace deal between the rebel group and government of Uganda. However, Kony refused to sign demanding for more assurance of protection against the international criminal court (ICC) indictment (Sekandi, 2011).

2.1.2 Sembabule district

Figure 2: Sketch Map of Sembabule district



Source: (UCC, 2010)

Sembabule district is one of the 112 districts in Uganda, located in the dry cattle corridor in Southern Uganda, about 48kms northwest of Masaka district and 168 Kilometers of Uganda's capital city Kampala. It has an estimated population of 231,500 (According to Uganda National Bureau of Statistics 2010 census results) (LWF, 2011:5). However the youth constitutes a big percentage of the total population of the District which implies a very big labor force coupled with available land resources that can be harnessed to increase agricultural production in the District (National census, 2002). The Population density stands 79 persons per square km with an annual growth rate of 1.9 (1999 – 2002 Census). The growth rate is 1.9 per year (Sembabule DDP, 2008).

The district is divided into 2 counties that is; Lwemiyaga and Mawogola, seven sub-counties of Mateete, Mijwala, Lugusuulu, Ntuusi, Lwebitakuli and Town council with 35 parishes and 402 villages.

The LC.V chairperson is the political head while the Chief Administrative Officer (CAO) is the head of the civil servants. The District has 7 departments namely: Health Services, Administration and Management services, Education services, Gender and Community services, Production Engineering, Planning and Finance departments. These departments are linked to the district Council through various standing committees which are responsible for policy formulation and overseeing their implementation (Sembabule District LG, 2007-2012). The weather situation in Sembabule is characterized by a bi-modal rain distribution ranging between 500- 750mm and high temperatures ranging between 17° - 32° cc. The District's two major seasons of rain fall are March – May and September to December. The rest of the year is dry which exhibits semi-arid conditions (Sembabule DDP, 2008). It has few water bodies (e.g. Kyoja swamp, Katonga, Kakyinga dam and a few small local springs and valley dams) which dry up during prolonged dry periods. With economic activities, agriculture is the mainstay of the district economy, involving both crop and animal husbandry (Ssekandi, 2009) and since both of these activities require water, the effects of its shortage on social and economic development in Sembabule district are many, hence justifying why it was selected for this study.

2.1.3 Lwebitakuli Sub-county

Lwebitakuli is one of the sub-counties found in Sembabule district. It has got a total number of 5 parishes including, Lwebitakuli, Kabaale, Nakasenyi, Kinywamazzi, Kasambya, and Lugusuulu. The total number of villages in Lwebitakuli are 104 (EU and HIVOS, 2009). Most of the characteristics common with Sembabule district are similar to Lwebitakuli sub-county. For example it receives rain ranging between 500-750 mm and temperatures between 17° - 32 cc. The estimated population in the sub-county according to the district development plan is 43,234(Sembabule DDP, 2008).

2.2 Thesis outline

The thesis is divided into five chapters. Chapter one is the introduction, it looks at the overall context of the water situation in the World and Uganda in particular and how it relates with socio-economic development. It also presents the institutional framework for water in Uganda, problem statement, objectives, research questions, and the study area. Chapter 2 which follows here after presents a review of related literature following through the different

themes reflected from the research questions. Chapter three is the methodology and shows the study design, sampling procedure, instruments for data collection used in the study, data analysis procedure and ethical considerations of the study. Later, chapter 4 covers the presentation and discussion of findings in relation to the study research questions and theoretical framework. The last chapter of the thesis gives the conclusion drawn from the discussion of the findings and also points out some recommendations.

CHAPTER TWO:

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

3.0 Introduction:

In undertaking this study, a variety of literature was reviewed in this chapter with the aim of analysing the relationship between water and socio-economic development. The sources of literature analysed include research reports, books, newspapers, journals, electronic material, and workshop presentations.

In light of the topic and objectives of the study, literature review is presented to include firstly, the drivers of water shortage, secondly, the way water facilitates and constrains socio-economic development is analysed in the context of Uganda and other developing countries. Lastly, the strategies used to cope with water shortages are assessed with a view to testing the assumption that, if appropriate strategies are employed, water shortages can be dealt with to a certain extent.

The literature review aims at ascertaining what other authors and scholars have discovered in respect of similar research problems, in addition to identifying possible theoretical gaps that need to be addressed. The literature review also provides a theoretical backdrop against which the results of the research study can be interpreted.

3.1 Drivers of water shortage

The world's population has continued to grow, causing global warming; altering and intensifying fresh water use (UNESCO, 2010). Human pressures at global to basin scales are substantially modifying the global water cycle and therefore impact on the well-being of people who depend on the services that they provide (UNEP, 2007:119). The issue of human influence was also observed by Bjørke and Ahmed who said, growing populations and

changes in land use will continue to make the water scarcity problem worse (Bjørke and Ahmed, 2010). The speaker of Parliament of Uganda also commented that, countries within the Nile basin are likely to face water shortage due to stress of the river caused by rapid population growth (Jennifer, 2006:26). However, does this mean that water shortage is largely manmade because of our influence in causing global warming? Personally I say no because, there are some factors responsible for global warming which are independent from human activities. The climate changes that we are experiencing today are nothing new and are natural as they are part of the cycle of warming and cooling that happens regularly every 1500 years something that has been going on for millions of years (Wigmore, 2007).

Narendra et al, on the other side said that, “as in many other parts of the world, water in sub-Saharan Africa is generally regarded as a public good and in abundant supply hence over using it, not knowing that it is a finite resource with supply constraints” (Narendra et al, 1996: xii). They also talked of lacking understanding of the consequences of deforestation and land degradation on the quantity and quality of water (Narendra et al, 1996: xii) as causes of water shortages existing in most countries.

However, different from the above, Williams (2002) argues that, the crisis of water is not because the world lacks water but, the world water crisis is a crisis of governance because at the global scale there is enough water to provide water security for all. The same issue was raised by the 2000 ministerial declaration of the Hague on water security in the 21st century which identified inadequate water governance as a main obstacle to water security for all (UNEP, 2007:152-154).

This argument is related to Saleth and Dinar’s view that, as the World ushers in the new millennium, water scarcity in both its quantitative and qualitative manifestations is emerging as a major development challenge for many countries. Although the nature and severity of water problems are different from country to country, one aspect is common to most countries, water scarcity whether quantitative or qualitative originates more from inefficient use and poor management than any real physical limits on supply augmentation. This is the crux of water crisis and such diagnosis raises our hope that, the crisis can be averted by improving water use and management, although the task is not easy as it involves radical changes in the way water resources are developed, allocated and managed. How to design,

initiate and sustain these changes and tackle the water challenge on a durable basis within the ecological, economic and political constraints are at the heart of the ongoing water debate, both nationally and internationally (Saleth and Dinar, 2004:1).

Also, physical factors such as low and variable rainfall contribute to the problem of water scarcity. For example, Lwebitakuli receives relatively low rainfall which ranges from 500mm to 700mm and has long dry spells hence perennial water shortages. However, when compared to other areas near Lake Victoria basin, they receive rainfall ranging between 1000mm-2500mm annually (MWLE, 2011:13) hence a justification for water shortage in Lwebitakuli as compared to many other parts of Uganda (Ssekandi, 2009).

3.2 Relationship between water and socio-economic development

According to Williams (2002), there is no single intervention with greater overall impact upon economic development than the provision of safe drinking water and proper sanitation. (Williams, 2002: Para 5). Similarly, in 2002, then UN-Secretary General Kofi Annan, pointed out that, "no single measure would do more to reduce disease and save lives in the developing world than bringing safe water and sanitation to all" (UN cited in UNEP, 2007:151).

The lack of access to safe drinking water and sanitation is directly related to poverty including wide spread health problems which cause severe limitations for economic development (Gleick cited in UNEP, 2002). At least 1.8 million children less than five years die every year or one child dies every 20 seconds due to water related diseases, yet for an estimated 88% of diarrhea cases, the underlying cause is unsafe water (WHO, 2007 cited in Nillemann & Corcoran, 2010:44).

Narendra et al adds that, the lack of overall access to water among the people for even subsistence farming is at the heart of the poverty trap (Narendra et al, 1996: xiii). This is closely consistent with what Bagoora stated that: "People who live on less than 10 liters of water per day can never escape poverty and achieve sustainable development without first addressing the water scarcity they face" (Bagoora, et al, 1999:2). This is greatly related to the study area (Sembabule/Lwebitakuli), where agriculture is the mainstay of the district economy, involving both crop and animal husbandry (Ssekandi, 2009). Since both of these

activities require adequate water, the effects of its scarcity on social and economic development in Sembabule district and Lwebitakuli sub-county in particular are possibly adverse. This is because, it is widely accepted that, the provision of safe water contributes to poverty reduction in a number of ways. For example, it reduces the incidence of water-borne diseases whether in rural or urban areas as well as reducing time wasted mainly by women and children walking long distances to (and waiting at crowded) water points. Thus, easy access to safe water allows people to engage in other productive activities (Rudaheranwa et al, 2003:3).

FAO noted that, water resources support 40% of global food production through irrigation and 20% of global fish is yield through aquaculture (FAO, 1996:2). This is related to Molden's idea that, water scarcity, defined in terms of access to water is a critical constraint to agriculture in many areas of the world, keeping hundreds of millions of people from escaping poverty because most of them rely directly on agriculture for their food and income (Molden, 2007:10). Saleth and Dinar added that, the overall process of economic development itself depends critically on water sector performance (Saleth & Dinar, 2004:8) and access to safe water and sanitation shapes human lives in many ways and is a key driver of development (UNDP, 2010).

UNESCO on the hand observed that, for humanity, the poverty of a large percentage of the World's population is both a symptom and a cause of the water crisis and giving the poor better access to better managed water can make a big contribution to poverty eradication (UNESCO, 2003). The presence of water brings valuable benefits for both social and economic development and poverty alleviation (WHO/UNICEF cited in UNEP, 2002). It is further argued that, water availability for household consumption and productive use is closely associated with poverty reduction and food security and that making households water secure and providing water efficiently to rain fed and irrigated areas for food production will be key strategic elements in reducing poverty in sub-Saharan Africa (Narendra et al, 1996: xv).

Besides the socio-economic consequences of its quantitative dimension, water scarcity is also having serious effects on its qualitative dimension, pollution induced quality deterioration not only reduces the benefits of available supply but also leads to serious environmental and

health hazards (It is important to note that, water borne diseases kill 5-10 m people each year out of the 250m new cases reported every year (Gleick cited in Dinar and Saleth, 2004).

With respect to domestic water supply, people in the rural areas usually women and children; have to walk long distances, especially during the dry seasons, in search for water sources (Bagoora et al, 1999:2). In eastern Uganda research found that women spend an average of 660 hours per year collecting water for their households, which represents two full months of labor. Cumulatively, one estimate suggests that some 40 billion hours a year, are spent collecting water in sub-Saharan Africa – equal to a year's labor for the entire workforce of France (UNDP, 2006 cited in WSP, 2010). This trend therefore suggests the reality that water remains a major constraint to socio- economic development especially within countries in the lower income range (Saleth and Dinar, 2004:6).

However, despite the big contribution played by water in ensuring socio-economic development, available literature suggests that, there are other factors constraining socio-economic development in most low developing countries other than water. A good example was cited from Sembabule district plan, which reported that other challenges like; low levels of education, political instabilities, poor infrastructure, high illiteracy rates, lack of access to credit facilities, poor land tenure system, low agricultural production, poor accessibility to markets, and poor mobilization towards sustainable developments (Sembabule DDP, 2008) are also big obstacles to the development process of most societies in the developing world. This possibly implies not looking at water as absolute in as far as promoting socio-economic development is concerned.

3.3 Strategies to cope with water shortage/ improve water supply

3.3.1 Improving the financial and economic stability of the water sector

Saleth and Dinar presented that, the key issue of the water challenge is improving the financial and economic sustainability of the water sector and thereby enhance and sustain its indispensable contributions to socio-economic development (Saleth & Dinar, 2004:8). In the same way, the world commission on water has estimated that investments in water infrastructure [such as boreholes, taps, springs etc] in developing countries need to increase

from the current level of about \$75 billion to \$180 billion a year over the next 25 years (World Bank, 2004:11). This situation was further noted by Saghir, the Director for sustainable development in the World Bank's Africa region, who commented that, in a recent World Bank study of water and sanitation services in 15 countries of Sub-Saharan Africa, it was found that, public spending still falls considerably short of government commitments and of international and national policy goals. On average, governments spent \$1.71 per person on water supply and sanitation. This corresponds to less than half a percent of gross domestic product (GDP) and is five times lower than what is estimated to be needed each year to meet Sub-Saharan MDG targets (Saghir, 2012). This is all to justify the fact that, the financial situation in the water sector is bad and requires an urgent response if water shortage and its associated effects are to reduce in most developing countries especially in Sub-Saharan Africa.

3.3.2 Involving water stakeholders

The Global water partnership observed that, if water shortage is to be addressed to some extent, an integrated approach to water resources management including recognition of the need to involve all water stakeholders in decision making is needed (Global Water Partnership, 2008). Narendra et al also observed that, in Africa, the tradition of participation in water management and development programs that target community involvement have been crucial and successful in the maintenance of water sources (Narendra et al, 1996: xv).

3.3.3 Rain water harvesting

As land pressure rises, more and more marginal areas in the world are being used for agriculture. Much of this land is located in the arid or semi-arid belts where rain falls irregular and much of the precious water is soon lost as surface runoff. Recent droughts have highlighted the risks to human beings and livestock, which occur when rains falter or fail (FAO, 2006). While irrigation may be the most obvious response to drought, it has proved costly and can only benefit a fortunate few. As a result, there is now increasing interest in a low cost alternative - generally referred to as "water harvesting".

Water harvesting is the collection of runoff for productive purposes. Instead of runoff being left to cause erosion, it is harvested and utilized. In the semi-arid drought-prone areas where it is already practiced, water harvesting is a directly productive form of soil and water

conservation. Both yields and reliability of production can be significantly improved with this method (FAO, 2006).

In Uganda, the Ministry of Water, Lands and Environment mentioned that, domestic water harvesting is being promoted to take advantage of the abundant rainfall in Uganda (MWLE, 2009:12). This is aimed at providing water for multi-purpose use within easy reach and therefore potential to increase ownership, self reliance and productivity amongst all especially the rural poor.

In this line therefore, continuous efforts on advocacy for rain water harvesting (RWH), training of local masons, community groups and LGs are ongoing to build capacity to construct and maintain these facilities. This is through collaboration between the ministry of water, lands and environment, the local governments, the Uganda rain water harvesting association and NGOs/ CBOs country wide (MWLE, 2009:12).

3.3.4 Influence of CSOs in water supply

NGOs and CBOs have continued to contribute to the water and sanitation sub-sectors, by mobilizing funds for the sector, supporting water and sanitation infrastructure development and capacity building of communities to demand, develop and maintain water sanitation and hygiene facilities. The national umbrella organization of NGOs and CBOs in the water and sanitation sector, the Uganda water and sanitation NGO Network (UWASNET), continues to register more NGO and CBO members joining the sectors with membership currently standing at 180 active organizations. There has been a small decrease in total investment from UGX 18.5bn in FY 2009/10 to UGX bn 17.9 in FY 2010/11. Most CSO investment funds are donor funds and the decrease in CSO investment is reflective of a decrease in donor funding to CSO attributed mainly to the global financial crisis for FY 2010/11 (MWLE, 2011).

It is therefore evident from the review of water and development arguments that; there are varying issues surrounding this topic. For example, different writers on the topic present different factors responsible for water shortage while the view that water constrains or facilitates development has also got divergent arguments. The reviews also reveal that in most developing countries, the financial situation within the water sectors is poor since the local governments cannot generate sufficient local revenue on their own to fund water

programs. The study results will therefore, aim at harmonizing these differences so as to close the knowledge gaps existing on the topic while basing on local people's experiences.

3.4 Conclusion

The foregoing chapter has tried to explore the relationship between water and socio-economic development from the perspective of different authors who have written extensively on the topic. Special emphasis has been made to analyze how water impacts on sectors such as health, education, farming and agriculture which are taken to be the major indicators of development. These have been used to provide a clear theoretical framework to enable better interpretation of the study hypotheses.

CHAPTER THREE:

RESEARCH METHODOLOGY

4.0 Introduction:

This chapter discusses the methodological approach of the study and specifically looks at the study design, choice and description of the study population, sampling procedure, data collection methods and tools as well as the data analysis process.

4.1 Research Design

Research design can be understood as the framework in which data is collected and analyzed (Bryman, 2008:31). For purposes of this research, a qualitative methodological approach was found to be the most suitable to explore the water and development issue in general and in depth. “Qualitative data allow us to investigate people’s beliefs, values and actions [...] and to examine the meanings of the social activities and enable us to situate these in a proper context” (Goodwin cited in Bond, 2006:29). This enabled the researcher to get detailed information on the water problem and how it constrains socio-economic development from the perspective of the local people. The concept of interpretivism is central in qualitative research, referring to ‘the ways in which individuals interpret their social world’ (Bryman, 2008:15) as (Kincheloe, 2003) contends, qualitative research is foregrounded in people’s experiences as it is lived, felt and undergone. This implies that the social world can only be understood from the standpoint of the individuals perceiving it. This corresponds well with the type of information the study was looking for which justifies why the researcher adopted this approach.

4.2 Sampling method and size

Qualitative researchers typically engage in purposive sampling, a method essentially to do with the selection of units with direct reference to the research questions being asked (Bryman, 2008:375). Similarly, 4 local leaders, 3 members on water user committees, 2 district water officers, and 29 community members were selected purposively from the six parishes in Lwebitakuli sub-county and interviewed. On the other hand, the researcher applied

a multi stage random sampling method in order to get the ordinary community members who took part in focus groups. In this case, half of the villages in the sub-county were selected randomly to get 30 homes to provide the required sample. However, due to the lack of proper records by the village leaders, the researcher decided to use purposive sampling in selecting the 27 respondents that participated in focus groups. This brought the number of respondents for the study to 65 which gave an adequate and representative sample to generate reliable and valid data as well as deal with sampling error and non-response cases that arose. In qualitative studies, one cannot engage in intensive examination of all the factors as it would entail huge costs and energy expenditure (Wilkison, 2002:98: Sekaran, 2003:269). This is why the researcher used a relatively small sample.

Purposive sampling was used in selecting respondents because leaders, water committee members and community members were difficult to meet hence unable to be located with non-probability samples. This is consistent with what Bryman identified that sometimes the use of non-probability samples will be due to the impossibility or extreme difficulty of obtaining probability samples (Bryman, 2008:162). Multi-stage sampling was used in selecting villages because it reduced sampling bias which would have resulted when some areas of Lwebitakuli stand little or no chance of being selected for inclusion in the sample (Bryman, 2008:168).

Table 1: Summary of study respondents

Respondents	Number	Percentage %
Women(semi-structured interviews)	11	17
Men(semi-structured Interviews)	18	28
Water committee members	3	5
District Water officers	2	3
Local Leaders	4	6
FGDs 1. Kisaana Village Men 2.Namirembe	15	23

Village(Kabaale Parish) women	12	18
Total	65	100%

Source: Primary data

Important to note is that, the size of the respondents who participated in the focus groups were more than expected. This was because of the excitement that came later among other villagers who saw their fellow community members gathering for a meeting. More so, the fact that those who participated were given a soft drink in form of a soda, it was a big motivating factor to even those who had not been selected before. However, the researcher left the discussion to be inclusive by allowing everyone who wanted to take part since this added on the number and quality of responses and arguments on the water situation issue in the area.

4.3 Methods of data collection

In this study, method triangulation which is ‘a combination of different methods of data collection (Halvorsen, 2009:298) was adopted. Therefore, observation and semi-structured interviews were used since they are vital in the generation of an intensive detailed examination of a case (Bryman, 2008:53). Documents review and focus groups were also employed since the researcher was interested in the dynamics between participants (Goodwin cited in Bond, 2006:35).

4.3.1 Semi –structured interviews

Semi structured interviews are focused interviews with questions contained in an interview guide which ensures that, the researcher collects similar types of data from all informants (Chilisa & Preece, 2005:147). The categories of respondents the researcher interviewed include: ordinary community members, local leaders, district water officers, sub-county chief and village water user committee members. The researcher regarded this group representative enough and able to give the necessary information needed to answer the study research questions. The rationale for choosing to conduct one-to-one semi-structured interviews was that, they allowed the researcher to address the study research questions properly by obtaining in-depth information from the interviewees on the issues addressed. The process of

interviewing is also likely to elicit detailed and natural flow of information especially when good rapport has been established. In qualitative interviewing, the researcher wants rich, detailed answers (Bryman, 2008:437) and semi-structured interviews provided the best choice to get an in-depth understanding of the respondents' perception of water as a constraint to socio-economic development.

4.3.2 Focus group discussions

The focus group technique is a discussion-based interview in which multiple research participants simultaneously produce data on a specified issue (Chilisa and Preece, 2005:151). Two focus groups comprised of 12 participants (women) and 15(men) respectively were organized. The reason for separating the two groups was to reduce fear due to sex differences since it is common for women to fear participating and arguing in the presence of men. Ordinary community members from two villages were selected for focus groups because; they were easy to mobilize together unlike leaders. The discussions were moderated by the researcher with the help of a note-taker, centered on key aspects of water and development, in the context of Lwebitakuli sub-county.

The Focus group discussion approach was preferred in addition to semi-structured interviews because; there was a need to generate variety of responses some of which the individual respondents may over look. Through arguing and challenging each other's views, the method offers the opportunity to end up with 'more realistic accounts of what people think, because they are forced to think about and possibly revise their views (Bryman, 2008:475). However, the researcher was aware of the challenges associated with focus groups as Bryman presented that, "it is challenging to transcribe the data collected from focus groups due to dominating individuals..." (Bryman, 2008:476). Therefore, the researcher made sure that, dominating individuals are controlled and data collection done early to get enough time for transcriptions. A bigger sample was also drawn to compensate for those who did not turn up since it is a common challenge for focus group discussions.

4.3.3 Observation

Observation is a method for systematically watching the behavior of individuals in terms of a schedule of categories (Bryman, 2008:254). In order to understand and interpret the findings from the focus group discussions and interviews, the researcher carried out participant

observation on many of the day-to-day processes in line with how people cope with the water problem. The researcher tried to observe how water affects people's activities, the way they try to deal with the problem as well as challenges involved. Throughout this process, field notes were taken to ensure that valuable information is remembered upon return from the field. However, as Bryman articulated, wandering around with a notebook and pencil in hand and scribbling notes down on a continuous basis runs the risk of making people self-conscious (Bryman, 2008:417) and because of this, the researcher used strategies like breaking off from the field to write something that would be observed to avoid being recognized as a researcher and raising suspicion among the people. Craig also added that, Participant Observation is often time-consuming for an analyst (Craig, 2007) and the researcher therefore used the limited time in the field properly to realize the study objectives.

4.3.4 Secondary data (Document Review)

Sekaran (2003:58) defines secondary data as data that already exists and does not have to be collected by the researcher. This method was highly supplementary aimed at supporting arguments from the interviews; focus group discussions and observation methods. The researcher used this method to harness what other researchers have already written about the problem and research questions in particular, which helped in developing a theoretical framework and in broadening the researcher's perspective on the water and development issue. Documents are good because they can open up relatively inaccessible worlds and the researcher does not have to pay huge sums of money setting up research teams in a quest for material (Goodwin cited in Bond, 2006:41). However, "the search for documents relevant to your research can often be a frustrating and highly protracted process" (Bryman, 2008:515) but the fact that in Uganda the National Environmental Management Authority has a well stocked library with documents on environmental issues, water inclusive; the researcher found it easy to access the necessary information in line with the study problem. In using secondary data, the researcher considered Kothari's caution that, the researcher before using secondary data should see that, they are characterized by reliability, suitability and adequacy (Kothari, 2005:111). Subsequently, the researcher had to ensure reliability by analyzing such questions as to who collected the data, sources, the methods used among others. This was all done to ensure use of quality documents in the study.

4.4 Data analysis

Data analysis was conducted within the framework of *grounded theory*, which indicates data being “systematically gathered and analyzed through the research process” (Bryman, 2008:541). Due to the large amount of data that was collected, the process of analysis started as soon as the collection process begun. In qualitative research, the analysis is tied to data collection and occurs throughout up to the end of the study. Open coding was done and this involved breakdown of data into themes or patterns, to create a meaningful story from the volumes of data. Open coding is the part of the analysis concerned with identifying, naming, categorizing and describing phenomena found in the text. Essentially, each line, sentence, paragraph and others, are read in search of the answer to the repeated question "what is this about? What is being referenced here?" The recorded semi-structured interviews and focus group discussions were transcribed so as to give a verbatim record of what was said by all parties (Goodwin cited in Bond, 2006:43). However, this is a time-consuming task (Bryman, 2008:455) so the researcher begun quite early after fieldwork to avoid delay.

The data collected from each sample was labeled carefully with special symbols and individual data pieces of each were numbered, and then inspected, edited, coded and put into a matrix. Frequency tables were later drawn and percentages established and discussed. Secondary analysis was also carried out through comparing primary data with data from documents and related literature.

4.5 Ethical considerations

Ethics in research refers to a set of standards that can guide researchers on how they should interact with the researched and how research problems could be conceived and formulated (Chilisa and Preece, 2005:229). According to research ethics developed by British Sociological Association (BSA), researchers have the responsibility to “ensure that the physical, social and psychological well-being of research participants is not adversely affected by the research” (BSA, 2002:2). Therefore, in consideration of this, the researcher sought consent of all participants before data collection was done, since participants need not to be forced to participate. Also, respondents were assured of confidentiality for the information they gave since confidentiality is clearly a very important issue in its own right (Bryman, 2008:121). Dissemination of findings to participants will be done and issues that may cause

harm to participants were ignored during data collection and report writing. These were all done to enable quality because ensuring quality in qualitative research includes the criterion 'evidence of consideration of ethical issues (Spencer et al, cited in Bryman, 2008:125).

CHAPTER FOUR:

FINDINGS AND ANALYSIS

5.0 Introduction

This Chapter presents and discusses the study findings. It is divided into four parts and the first part discusses the socio-economic characteristics of study respondents, followed by the main features characterising socio-economic development in Lwebitakuli sub-county and how this is related to water shortage. The second part looks at the role of water in promoting socio-economic development, followed by a section discussing the way water shortage constrains socio-economic development based on experiences and perceptions of people in Lwebitakuli sub-county. The last part presents the different strategies put forward by the government and the community to cope and improve water supply in the community and the extent to which these have been successful.

5.1 Socio-Economic Characteristics of Study Respondents

In this study, 63 respondents selected from six parishes were interviewed from Lwebitakuli sub-county. In addition, two district officials participated in the study making a total number of 65 respondents for the whole study. The table below summarises respondents by their respective parishes.

Table 2: Respondents from Lwebitakuli sub-county by Parish

N=63

Parish	Frequency	Percentage (%)
Kinywamazzi	10	16
Kasambya	10	16
Kabaale	12	19
Lwebitakuli	11	17
Nakasenyi	09	14
Lugusuulu	11	17

Total	63	100
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Source: Primary data

Table 3: Respondents by Gender

N=65

Category	Frequency	Percentage (%)
Male	39	60
Female	26	40
Total	65	100

Source: primary data

The above table displays the study respondents by sex. The male respondents were more than their female counterparts during the study. This suggests many things such as, men being concerned about the water problem because water significantly impacts on their activities such as farming, bricklaying and others. Also, the big number of male respondents was due to the fact that, whenever the researcher went to people's homes men would rarely give chance to women to talk to the researcher. This is because of the cultural norms in the study area, where women normally do not talk when the man is present. Also, during the focus groups, the number of men increased more than that of women, because it is not common for women to attend meetings they were not told about, which is not the case with men. The number of male respondents being slightly bigger than their female counterparts was found useful to the study, since they were always more open and able to express views concerning the water situation.

Table 4: Respondents by Occupation

Category	Frequency	Percentage %
Farmer(Subsistence 28 and 15 commercial)	43	66
Business	06	09
Teacher	05	08
Politician	03	05
Doctor/Nurse	02	03
Brick making	05	08
Bee Keeping	01	01
Total	65	100

Source: Primary data

The above table displays that respondents were from a variety of occupational backgrounds. The majority of study respondents were practicing farming and agriculture and this was of interest because, this is the very section of people largely affected by the water problem. It should also be noted that gender distribution of roles arised in the study with women mainly concentrating in subsistence farming while men engaged in commercial farming and small scale businesses. This also had an implication on how both categories look at water and socio-economic development as discussed in the corresponding chapters.

It is also important to note that study respondents mentioned multiple alternative livelihoods such as small scale business, teaching, politician, doctor/nurse, brick manufacturing and bee keeping. The diversity of economic activities that respondents engage in were important in understanding how water constrains socio-economic development from a multi- dimensional perspective as explored in the sections that follow.

In summary, this section has described the demographic characteristics of the study respondents such as sex, occupational backgrounds and areas of residence. This will be of great importance while presenting and analysing the study findings.

5.2 Features of Socio-Economic Development in Lwebitakuli Sub-county

One of the main objectives of this research was to describe characteristics of socio-economic development in Lwebitakuli sub-county, so as to assess the relationship between the level of development in this area and water availability from the perspective of the residents and where possible comparing this with district or national statistics. For the purpose of this research, economic development, education, health and infrastructure development are considered as key aspects for discussing socio-economic development in Lwebitakuli.

5.2.1 Economic development

As already highlighted, for a number of participants, the major economic activity in Lwebitakuli is subsistence farming and agriculture. People grow crops like coffee, banana, maize, peas, soya beans, millet, and rear animals like cows and goats for earning a living. These activities form the basis of people's livelihoods since they are the main source of income and food. District data shows that 97.4% of the agriculturalists are engaged in crop husbandry while 43.2% are engaged in animal husbandry and fish farming. However, according to the sub-county chief, in Lwebitakuli livestock is still not well organized for efficient dairy and other related animal produces, despite the fact that, the district has an estimated population of 135,000 cattle, 50,000 goats, 10,000 sheep, and 5,000 Pigs (Interview). He added that, even though agriculture is the main economic activity of Lwebitakuli, the sub-county is not food secure because of the dependency on rain fed agriculture dominated by subsistence farming, with limited agro processing and storage technologies.

Also, other people in Lwebitakuli frequently engage in other economic activities such as, small scale trade, charcoal burning, poultry keeping, brick making and bee keeping for cash. During the focus group discussions however, respondents expressed concern that the lack of water hampered these activities. For example, one man dealing in brick manufacturing expressed the difficulty as:

"I only make bricks when it rains, yet sometimes, one month can go without rain which affects my work".

The same difficulty is faced by the poultry keepers who said, their poultry were dying and producing poor yields due to water scarcity. In addition, this category complained that even when rain water is available; it is not clean enough to feed their poultry. As a result, many

people have resorted to other activities that require less water such as charcoal burning and bee keeping, even though they are aware and concerned that, some of these alternative activities affect the environment. For example, charcoal burning leads to increased depletion of natural resources such as forests and wetlands, which may later affect the climate and the biodiversity of the area. This is not a new finding but just related to what has been documented that, when a wetland functions properly, it provides water quality protection, fish and wildlife habitat, natural flood water storage and reduction in the erosive potential of surface water (USEPA, 2001). Therefore, if natural resources continue being encroached because of water shortage, the effects may be adverse to the socio-economic development of Lwebitakuli.

The study further observed that in Lwebitakuli, there exist some tourist attractions such as Bigo works in the Bwera region which appears to have been a significant late Iron Age settlement. Excavations at the sight yielded iron blades (most probably used for harvesting grain), pottery with simple decorations, cattle dung and posts for fencing. During colonial times, the site was called Bigo Bya Mugyenyi (Ruhindi and Livingstone, 2008). This therefore contributes some revenue to the sub-county.

5.2.2 Infrastructure development

In line with social services, access to electricity is still limited in Lwebitakuli sub-county. Respondents commented that Electricity has just been connected but it is only distributed within the sub-county town center not in the far dispersed villages of the sub-county. This is because, community members have no money to connect their homes with electricity due to the low income base they have. Many of the respondents noted that all roads in Lwebitakuli are murrum. The total length of “Bulungi Bwansi” (literally meaning “*community roads*”) is 200 Km, secondary roads under Ministry of works and transport is 76 Km and the total length of feeder roads is 270 Km. Most of the sub-county’s road network need repair and proper maintenance since some areas become inaccessible during rainy seasons. One male respondent during an interview said that farmers were finding it hard to transport their products to Masaka for sale because of the poor roads. This therefore affects most of the socio-economic development initiatives.

5.2.3 Education

To collect data on education, district documents were reviewed and from these, it was noted that Sembabule district has a total of 171 primary schools with 129 government, 25 private and 17 community schools. For secondary schools, the district has over 19 schools, 5 are government, 10 private and 2 community (Ruhindi and Livingstone, 2008). Of these Lwebitakuli has 12 primary schools with 6 government, 4 private and 2 community owned. According to the district annual report for year 2011, the Universal primary education (UPE) enrollment in Sembabule district was 56,081 while the non-UPE children were, 1,885 and when this was compared to neighboring districts like Masaka where the total enrolment for UPE in Masaka Municipality only was 21,577 pupils (United Nations Human settlements Programme, 2010) it gave a good contrasting environment showing a very big difference in the two areas. According to the focus groups and independent interviews, most respondents said that the education sector in Lwebitakuli was getting worse instead of developing and water shortage was among the contributing factors.

The situation above possibly explains why currently, the overall literacy rate in Sembabule district where Lwebitakuli also belongs is at 40% only (Sembabule DDP, 2008). This is poor when compared to other neighboring districts like Masaka with 68% literacy rate. This situation has been partly brought by the presence of water in one area (Masaka) and scarcity in the other (Lwebitakuli). This is because, school children tend to resort to fetching water instead of attending school, while professional teachers also tend to ignore teaching in Lwebitakuli due to the fear of bad standards of living, mainly caused by water shortages. This has in turn contributed to the low socio-economic development in Lwebitakuli because of the few productive members who are illiterate. This situation in Lwebitakuli is unfortunate because, education plays a key role in the ability of a developing community to absorb modern technology and to develop the capacity for self-sustaining growth and development (Galiwango, 2008). So, if the water problem continues interfering with sectors like education, achieving socio-economic development in areas like Lwebitakuli remains a challenge.

According to (MFPED, 2001 cited in Rudaheeranwa, 2003:23), raising the average education level of workers in the household by one year of primary education raises income by about 4.3%, raising it by an extra year of secondary education potentially increases household incomes by about 9.1%, and when all workers in the household attain University education,

household incomes increase by 44%. MFPED (2001) indicates that, having primary education increases the value of per capita household consumption by about 28% while an extra year of primary education for the household head would raise productivity by about 5% (Rudaheranwa, 2003). However, this may be hard to achieve in areas like Lwebitakuli, where 40% of the children largely bear the responsibility of water collection from water sources that are invariably located far away from their homesteads (Rudaheranwa et al, 2003:5) hence interfering with their education.

5.2.4. Health situation

In order to understand the health situation of Lwebitakuli, various reports in the sub-county were reviewed accompanied by findings from respondents in both semi-structured interviews and focus group discussions. Study respondents mentioned that, Lwebitakuli sub-county does not have any health centre but instead, people with serious health problems travel to the next sub-county in Mawogola. This health centre was reported during women's focus group discussion as being 25 kms away from Lwebitakuli sub-county. According to the district report, Mawogola health sub-district covers four sub-counties (*Lwebitakuli inclusive*) and an overall total of 302 villages (Sembabule DDP, 2008). It was further expressed during the key informant interview with the sub-county Chief that Sembabule as a district only had one professional medical doctor serving a population of over 200,000. He added that, due to this situation, people in Lwebitakuli rely on self-medication. This explains the poor health situation in Lwebitakuli as documented by the District Development Plan basing on national statistics that; the maternal mortality rate is 506 per 100, 000 live births in Sembabule district while 33.1% of the people are not expected to survive to the age of 40 (UNDP, 2005).

In summary, this section has described the socio-economic features of Lwebitakuli sub-county which provides a proper background to explore the relationship between water and the nature of socio-economic development in the area. So, the subject of the next section discusses how water facilitates or constrains socio-economic development based on local people's perceptions.

5.3 Role of water in socio-economic development

5.3. How water facilitates socio-economic development

The study respondents mentioned different purposes attached to water. These included; water for health promotion, water for domestic use, water for small scale industrial activities and water for farming and agricultural activities. It is however important to note that, there was a gendered perception on this, since different segments of people in the community that is; men, women and children had different opinions of how water can facilitate development as discussed in the sub-sections below.

5.3.1 Water and Health

The role of water in promoting better health has been widely recognised and documented. Similarly, during the study, a number of respondents especially women mentioned that water availability promote good health. In an Interview, a female respondent mentioned that; during rainy seasons, they get access to clean water and because of this, incidences of disease outbreaks are less compared to dry seasons where they use dirty water due to shortage. This argument is related to Rudaheranwa's who observed that, the provision of safe water and better sanitation facilities reduces the incidence of water-borne diseases, hence its contribution to poverty reduction. He supplemented that, water born-diseases; including typhoid, malaria, bilharzias and cholera, which tend to be rampant in areas where unsafe water is used (Rudaheranwa, 2003:8) can all be avoided if water is readily available.

However, it is important to note that, even though the study respondents mentioned water as necessary for good health, few of them could establish the direct relationship between water and socio-economic development. Some of the study respondents looked at water and health as issues that don't have significant impacts on socio-economic development. It was only the male respondents during focus groups that pointed on the costs associated with lack of water and how this led to disease outbreaks hence affecting their expenditure patterns.

5.3.2 Water for Domestic Purposes

During interviews and focus group discussions with women, it was noted that most of them regarded water as necessary for domestic work. They pointed out aspects like water for

cooking, bathing and washing home utensils. Interestingly, women did not complain about water as a development constraint as men did but instead, they perceived water shortage as an obstacle to their daily home activities. This is possibly due to the gender role stereotypes within the society, which shape the social roles that men and women are expected to fulfil.

In most cultures women are socialised into feminine norms of subordination, passiveness, loyalty and silence especially about their sexuality and rights, and perform reproductive roles such as responsibility for child bearing while income earning is considered their secondary role. On the hand, men are generally depicted as strong physically, dominant over women, risk-takers and decision makers and are expected to engage primarily in productive work to financially provide for their wives and children usually referred to as ‘breadwinner role’(Kimmel, 2000). This justifies the rationale for different interpretations for the role of water in socio-economic development between men and women, because the two perform different tasks.

5.3.3 Water for Small scale industrial Activities

It was pointed out by male respondents during a focus group discussion that, water is an important tool in promoting small scale industrial development. One respondent was reported saying:

“When water is not available, everyone at home suffers because, without it there is no way how I can make bricks, yet it is the main source of livelihood in my home. Actually if we had enough water here in Kasambya (a parish in Lwebitakuli sub-county), I would be rich because every week I can produce ten thousand bricks but now I can’t”

In view of the foregoing analysis therefore, the implication is that, small scale industries can be supported if water is available in the community. However, the reverse is true in Lwebitakuli, where most of the less educated youth concentrate on brick manufacturing but affected by the inconsistency of water availability in the community.

5.3.4 Water for Farming and Agricultural Activities

It was reported during the study that, water plays an important part in facilitating farming and agricultural activities. One of the commercial farmers in Namirembe parish of Lwebitakuli sub-county mentioned during an interview that he uses water for irrigating his crops during

the dry season because rain in Lwebitakuli is in most cases unpredictable, yet he has customers to supply food crops to on a weekly basis. The role of water for irrigation purposes was also documented by FAO, when it stated that; water resources support 40% of global food production through irrigation (FAO, 1996:2). Lwebitakuli being a dry area with less rainfall, some farmers especially the commercial ones resort to irrigation as the best mechanism to ensure proper growth of their crops. This approach was however talked about by some respondents as expensive, only affordable to a few members in the community

Further, study respondents noted that, water is important for cattle and poultry feeding. During a focus group discussion with men, all unanimously agreed that, the main importance of water in their community was helping in feeding their cattle. They commented that, if water is available, pastures grow well and animals get enough drinking water hence producing quality products. One of the respondents commented during a focus group discussion in the following way:

“Although we as individuals require water, we mainly need it for our animals, because they tend to die and give poor products during water shortage”.

The above quotation implies that, male respondents largely consider water as an important tool for socio-economic development by associating it with its importance in feeding their animals. On the other side of the spectrum, other men considered water as necessary for mixing poultry feeds. It was said during one of the semi-structured interviews that, if water is available, it is easy to keep chicken and get good outputs in form of eggs. In a focus group discussion with women, some raised concern that, they were trying to keep chicken domestically but most of them died due to the lack of clean water.

With reference to the above, water can be regarded as an important tool in production activities since it facilitates crop irrigation, livestock and poultry keeping. This means, if socio-economic development is to improve in Lwebitakuli, water needs to be availed to the community as Saleth and Dinar noted that, the overall process of economic development itself, depends critically on water sector performance (Saleth & Dinar, 2004:8) and access to safe water and sanitation shapes human lives in many ways and is a key driver of development (UNDP, 2010).

The section that follows therefore, describes the different ways in which water constrains socio-economic development based on experiences and perceptions of local people in Lwebitakuli.

5.4 How water constrains socio-economic development

People expressed different views on the topic of water and how it constrains socio-economic development. The responses under this topic have been organised under the different aspects of development i.e. economic and social dimensions.

5.4.1 Economic Dimension

As already highlighted in the section on features of socio-economic development in Lwebitakuli, the dominating activity in this area is farming and agriculture. It is necessary to note that for agriculture to be a success, water is an invaluable necessity as it was described in the former section. Nearly all respondents interviewed especially commercial farmers raised concern that water scarcity was highly affecting their levels of socio-economic development. This is related to Molden's idea who noted that water is a critical constraint to agriculture in many areas of the world, keeping hundreds of millions of people from escaping poverty because most of them rely directly on agriculture for their food and income (Molden, 2007:10). One of the study respondents in Kasambya parish argued that;

“During the dry spells, the pastoralists mostly men, move their cattle for long distances between 3-20 kms, looking for sufficient water to feed livestock but in the process, some of the animals get sick on the way and end up dying”.

However, in line with the walking distance to water sources, as one of the parameters that the ministry of water and environment uses for measuring accessibility to water resources, the current acceptable distance to the water source is 1.5 km or less. From the fieldwork, findings from interviews and focus group discussions revealed that the average walking distance to water sources in Lwebitakuli is between 3-20kms during the dry period. This is why respondents argued that with this distance, even when animals survive death, the outputs still tend to be of poor quality hence affecting the pastoralists' economic livelihoods.

Further, activities such as brick laying common among the youth in Lwebitakuli are equally affected by water scarcity due to the fact that there is no way how bricks can be manufactured

without water. This means that, water scarcity in this case becomes an obstacle to small scale industries existing in Lwebitakuli, thus affecting socio-economic development.

It was also reported that water shortage wastes people's productive time, which could have otherwise been utilised for important economic activities. For example, it was noted in focus group discussions and individual interviews that, during dry spells, community members especially men who are the major users of water since they own livestock and farmland suffer from travelling very long distances searching for water and when they reach the water sources, they are asked to engage in some kind of heavy work before collecting water. This same situation was reported by the LC 1 Chairperson of one of the villages where the study took place, who said that when new people migrate to their village, they are asked to pay some money before they get access to water which was even in a bad state according to the researcher's observation. So the resultant effect is that, men resort to collecting water instead of concentrating on the productive economic activities which can provide them with some income.

As a consequence from the above, there is evidence that, the current situation in Lwebitakuli where water scarcity is affecting economic activities, hampers the achievement of goals set by the Ugandan Government under its development guiding document called "Poverty Eradication Action Plan" (PEAP) which is now the *National Development Plan (NDP)*. For example, Pillar 1 of this plan is promoting "economic development" and in this case, sufficient water is required to sustain many economic activities just like those carried out in Lwebitakuli. On the other hand, Pillar 2 which aims at increasing "production, competitiveness and incomes" similarly cannot be achieved without water because, it is required for irrigation, aquaculture and livestock in order to increase production and to ensure high yields and minimize death of livestock so as to increase incomes among the people. This is why Williams observed that; "There is no single intervention with greater overall impact upon economic development than the provision of safe drinking water and proper sanitation" (Williams, 2002: Para 5) and since majority of study respondents mentioned water as a key challenge in their community, it possibly implies that it has been greatly responsible for the low socio-economic development in the area.

5.4.2 Social Dimension

From a social perspective, most respondents, district leaders inclusive mentioned that, the water problem in Lwebitakuli has greatly worsened the health situation in the sub-county and district at large. This is mainly as a result of using dirty water from ponds and dams shared by both people and animals. The researcher also realised this problem while visiting the different water sources in Lwebitakuli, where animals shared the same water sources with human beings and the resultant effect from this according to residents was frequent water borne diseases in the community. One respondent said:

“My son, (referring to the researcher) how can you survive when you are drinking dirty water yet you share it with animals?”

This point was further stressed by a health worker at the level of enrolled nurse in one of the private clinics in Lwebitakuli sub-county who said:

“The biggest cause of sickness especially among the children in Lwebitakuli was drinking dirty water; I even find it challenging to give medicine to the patients because I lack access to clean water to give them while taking their medicine”.

It is important to note that, study respondents especially men mentioned during focus group discussions that, dirty water in Lwebitakuli had strained their economic muscles. They said, the little income they earned, was later spent to provide treatment to the family members hence keeping them in a poverty cycle year after year. The findings of this study are consistent with what the WHO and UNICEF observed that those without access to water are the poorest and least powerful since access to water for the poor is a key factor in improving health and economic productivity and is therefore an essential component of any effort to alleviate poverty (WHO and UNICEF, 2000:1).

On the education side, study respondents argued that water shortage has negatively affected education standards in Lwebitakuli sub-county. This comes in a way that, when water is scarce, the school children especially those in primary school are denied a chance to go to school in favour of collecting water. One of the primary teachers interviewed said:

“The school children in most cases lose between 4-5 hours a day during dry seasons collecting water. The situation gets worse with boarding schools, where the children and their teachers need water by all means for purposes of cooking, bathing and other things”.

As a result, school going children have continued performing poorly, dropping out from school, and failing to qualify for higher education which is a big obstacle to the development of the area. This is because a big section of people in Lwebitakuli according to the sub-county records were found to be illiterate and thus unable to benefit the community in a better productive manner. It should be noted that the more educated a community is in terms of skills and knowledge, the more productive and adaptive the members will be to the changing world (United Nations, 1997:22-23 cited in Galiwango, 2008:55). This explains why the nearby districts like Masaka with good access to water are growing faster than Sembabule district in many aspects of development.

For example, accessibility to water studies by the different households in Masaka municipality indicated that, 24% of households have water on the premises, while 66% have water in less than one kilometre from the homes and only 8% access it within a distance of 1-5kms (United Nations Human settlements Programme, 2010). On the contrary, in Lwebitakuli, accessibility rates are said to be at 21% only (MWLE, 2010). To explain the magnitude of this problem further, one teacher who was interviewed in Lwebitakuli was quoted saying;

“I am considering a transfer to another school in a district with readily available water access because, when there are acute water shortages in the sub-county, my family expenditure also increases on buying water, treatment among several other things yet my salary is low”.

All these add on the argument that, water shortage is affecting socio-economic development. This is because, education which is being sabotaged is one of the basic objectives of development and an important end in its self, since it is essential for satisfying and rewarding life hence being fundamental to the broader notion of socio-economic development.

The above discussion altogether provides an important lesson that referring to the water situation in Lwebitakuli, the champions of MDGs in Uganda and other countries where they are being implemented, need to appreciate the fact that, the water issue has to be put at the fore front if the 2015 set deadline is to be achieved to some extent as discussed further below;

5.4.3 Water Shortage and Millennium Development Goals

The world Leaders met and put forward the Eight Millennium Development Goals as discussed in chapter one. However, the situation in Lwebitakuli is daunting and one wonders how these goals will be achieved with such an acute water shortage in the community of Lwebitakuli. In other words, water access is the centre to the achievement of most goals such as poverty reduction in a way that, water scarcity affects people's economic activities such as agriculture hence crippling them to stay in a continued state of poverty. With the goal of achieving UPE, it has already been seen that, school children in primary schools do not attend school because they instead turn to searching for water hence poor performance and high dropout rates in primary schools. This later affects efforts to achieve UPE in Lwebitakuli.

It is necessary to note that the period between 2005 and 2014 was proclaimed the UN Decade of education for sustainable development (Antonio, 2005) but despite this, the WWDR, noted that many girls are prevented from attending school because they are in charge of collecting domestic water (UNESCO, 2007). The same situation happens in Lwebitakuli according to the community residents.

Further, Goals 4, 5 and 6 (concerning health) aimed at reducing infant mortality by two thirds and maternal mortality by three-fourths: stop the spread of pandemic diseases (AIDs, Malaria, and other diseases), cannot be fully achieved if water is not available. This is because, in Lwebitakuli, as already discussed, people take dirty water by sharing water sources with animals. This has made them prone to waterborne diseases as well as Malaria yet the health facilities in the district were found to be in poor conditions with no supplies and adequate personnel. Similarly, the goal to reduce infant and maternal mortality rates will be hard to meet because in Lwebitakuli, it was reported by some people that, pregnant women are forced to go to fetch water during dry spells and the end result, is poor health hence increasing on the chances of maternal mortality rates in the community, yet at the same time the water given to

the new born babies is dirty which ends up infecting them with diseases such as diarrhoea, malaria among others.

UNESCO gives more clarification about this scenario that in developing countries, there is one chance in 48 for mothers to die during child births, and access to safe water and sanitation is essential in reducing the maternal mortality rate (UNESCO, 2009). Further, with reference to WHO, in the area of health alone, improved water and sanitation can reduce morbidity and mortality rates caused by some of the most serious waterborne diseases by up to 80 % (WHO, 2002:9). This will in turn promote socio-economic development because health is a prerequisite for increased productivity, yet successful education too, relies on adequate health. Therefore, both health and education can be seen as vital components of growth and development (United Nations, 1997:22-23 cited in Galiwango, 2008:55). Even at an international level, a healthy educated person is more productive, lives a better life, and therefore creates a better taxable base, which generates more revenue that can enhance development. The implication here is that, water shortage can greatly affect development since it has a strong impact on some of the critical areas that influence development such as education and health.

Further, the goal on environmental sustainability cannot be achieved with the current water situation in Lwebitakuli. For example, the LC 3 chairperson for Lwebitakuli sub-county mentioned during an interview that, due to water shortage, the few available water reserves such as swamps have been over-used especially by the pastoralists. He complained that the environmental officers do not allow the use of these water reserves although; the pastoralists end up using them because they have no alternatives. This has in turn affected the ecological make up of the area. It was reported during focus group discussions that some people end up cutting the available trees as an alternative source of income, so that they can use it to buy food, water, pay school fees among other necessities. However, it has been widely documented that, forests play a key role in water supply since at present 75% of globally usable fresh water supplies come from forested catchments (Fischlin et al, 2007 cited in Nellemann and Corcoran, 2010:37). This implies that if people in Lwebitakuli are destroying forests due to water shortage, then achieving environmental sustainability remains in balance.

In a similar context, promoting gender equality and empowering women is hard to achieve in an environment of water shortage because, water being very far, women in most cases remain dependent on men for water, since they cannot ride bicycles for 20 kms searching for water. This has therefore kept them in a dependant situation, with fewer opportunities for being empowered to close the gap existing between them and their male counter parts. All these add up to the argument that, water is a big constraint to socio-economic development in most communities especially among the poorest of the poor in the developing world.

However, even though the discussion above has stressed the big impact water has got in promoting or constraining socio-economic development, it is important to note that, water is not the overall factor responsible for socio-economic development. The next sub-section therefore presents the other factors constraining socio-economic development, in the context of Lwebitakuli sub-county.

5.4 Water is not absolute: Other Challenges constraining socio-economic development

In the table below, a list of other challenges constraining socio-economic development in Lwebitakuli based on the experiences of local people are provided. The challenges are arranged in order of priority as presented by the respondents.

Table 5: The challenges facing community members in Lwebitakuli sub-county

<ul style="list-style-type: none">• Too much sunshine/ unreliable rainfall• Pests and diseases and Lack of money to buy insecticides• Small pieces of land• Poor marketing of agricultural products• Poor transport• Poor methods of farming• Price fluctuations• Unsuccessful government programs• Differences in political ideologies• Irresponsibility of the government• Inadequate stores for keeping harvests• Poor yields• Lack of capital• Inadequate health facilities• Tribalism• Robbery
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Source: Primary data

Despite the fact that all the study respondents mentioned water as the main challenge constraining socio-economic development in Lwebitakuli, it is important to note that water availability is not absolute to the problems of Lwebitakuli. In other words, there are other challenges pointed out as being responsible for the socio-economic situation in the area.

To start with, 70% of the respondents mentioned too much sunshine and unreliable rainfall as challenges affecting socio-economic development in the sub-county. One old woman said during a focus group discussion that;

“In this village, we no longer understand when rain will come, it just falls suddenly and this has greatly affected our agricultural seasons, thus we are living in poverty”.

This means that, the unreliable rainfall in the area has greatly contributed to under development since it is one of the primary causes of water shortage in the community.

Secondly, majority of female respondents mentioned pests and diseases as key obstacles to the agriculturalists who are the majority in Lwebitakuli. They destroy crops such as coffee, banana plants, and cattle yet these are the main sources of income. They added that, they don't have enough money to buy insecticides and the end result is poor yields, low incomes, thus remaining less developed in most sectors of their life.

Inadequate Land: Also, about 40% of the study respondents mentioned inadequate land as a constraint to their development despite the fact that, Lwebitakuli is still less populated. Respondents argued that, land belong to a few people in the community and majority of community members are squatters, with no authority to use land productively as they may wish. This has in turn kept them as small scale farmers, since they have no land to practice large scale farming and agriculture that would make an impact to their socio-economic livelihoods.

Low access to Markets: Results of the study also showed that, the issue of inadequate markets for the produce was pointed out as one of the major challenges in the community, constraining socio-economic development. Some people try to cope with the water problem through irrigation, collecting water from far places in order to feed their animals but despite this, at the end, they fail to get market for their products. According to one of the business man I talked to, this situation is mainly brought by the poor transport network in the sub-county and district at large, mainly caused by poor roads which are not accessible to potential buyers as already discussed in the infrastructural development section.

Other problems pointed out by a few respondents include, political differences among the community members, irresponsible political leaders, price fluctuations especially for the agricultural produce, inadequate stores for keeping harvests, poor methods of farming, tribalism, robbery, poor health facilities and unsuccessful government programs mainly caused by too much corruption among the leaders.

Therefore, looking at the above challenges, the implication here is that, efforts to improve socio-economic development in Lwebitakuli and Sembabule at large, need to take a holistic perspective. In other words, water as the main challenge should be dealt with while considering the fact that, it is not a standalone solution to the situation. Other issues affecting

the community equally need to be observed if socio-economic development is to be realised in the end. It is however important to note that, most of the other challenges mentioned above were just added notes by some respondents but in general water was mentioned as the main challenge for the community.

5.5 Measures put forward by the government, NGOs and community members to cope and improve water supply

The water problem having existed for quite a long time in Lwebitakuli, residents have considered the use of different coping strategies to deal with the problem. The government and Non-governmental organisations have also come up with certain policy actions to see the problem reducing. The section that follows describes the strategies which respondents talked about during interviews and focus group discussions.

Collecting water from nearby areas: This is one of the strategies used by people during the long dry spells. In this case, people especially men; collect water from the nearby areas (between 3-20kms) with spring natural water. According to focus group discussions, water is collected from other areas because, Lwebitakuli has no natural water springs and if rainfall does not fall, there are no other means of getting access to water. Important to note is that, the district reports indicated that, the amount of rainfall received in this area is relatively less as compared to other areas. For example, it is always between 300-500mm that is between October to December and March to May (Sembabule DDP, 2008). Respondents also added that, the dry spells in Lwebitakuli are always too long to the extent that, even the water collected during the rainy seasons cannot be enough for a period of one month. The researcher got a chance that, by the time this study was carried out, the rainy season had just ended for about three weeks but even for this very short period of time, people had already started suffering with the water problem, yet according to them, they said the situation was still fine although, they were sharing water sources with animals.

Therefore, during the dry seasons, what the community members do is to travel long distances to nearby districts of Masaka, Lwengo, Bukomansimbi, and Lyantonde looking for water. The distance between the homes and water sources was reported to be between 3 kms and 20 kms. One person said during an interview that:

” We sometimes wake up at around 4:30 am to go and fetch water”.

Other study respondents especially women during focus group discussions added that, most people especially men in their community resort to searching for water for almost 4 months without doing any other productive activity and this makes the development of the area to stagnate because, half of the year is almost spent looking for water.

These findings are consistent with what was found out in Eastern Uganda, where research found that women spend an average of 660 hours per year collecting water for their households, which represents two full months of labor. Cumulatively, one estimate suggests that some 40 billion hours a year, are spent collecting water in Sub-Saharan Africa – equal to a year’s labor for the entire workforce of France (UNDP, 2006 cited in WSP, 2010) thus affecting socio-economic development.

It should however be noted that, in the Ugandan rural water supply and sanitation sub-sector, the goal and targets are: Sustainable safe water supply and Sanitation facilities, based on management responsibility and ownership by the users, within easy reach of 77% or 95% of the rural population by the year 2015, with an 80%-90% effective use and functionality of facilities, with an objective to reduce the walking distance to improved water sources in rural areas to 1.5 km. This is to enable people devote the rest of the saved time to increasing their incomes as well as improving the quality of their lives (Rwamwanja, 2006). Interestingly, regardless of these goals set by Uganda rural water supply and sanitation sub-sector, the situation in Lwebitakuli is far from encouraging, because people still walk long distances looking for water which affects their quality of lives.

Use of Ponds/wells/boreholes /Dams: In Lwebitakuli, due to the fact that there are no natural spring wells, respondents reported that people use ponds, boreholes and dams as main sources of water during dry seasons. The boreholes are used in some villages but from the researcher’s observation, most of them were found to be non-functional, while those functioning had less water due to the low water table in the area. The district water officer said that, they had dug over 10 boreholes but they had failed to work due to the low water table. However, some respondents mentioned that in allocating places for constructing

boreholes, they are not consulted and the end result is drilling boreholes in places with no water yet the community members argued that, they knew areas that can produce water.

It should be noted that results obtained from quantifying levels of participation establish that participation contributed significantly to overall project effectiveness. The proportion of water systems in good condition, overall economic benefits, percentages of the target population reached and environmental benefits rose significantly with participation and it helped in ensuring quality of access to facilities (Narayan, 1995). This therefore implies that, there is a need for the government and other water suppliers to consider people's participation in designing and planning of water resources if the projects are to be a success.

On the other hand, water in the ponds and dams is collected during the rainy seasons and later used by people during drought. However, it's important to remember that, these ponds and dams also get dry during the long drought seasons. From the researcher's observation, it was found that even only after 3 weeks of very heavy rains all over Lwebitakuli, Sembabule and the whole country at large, by the time this study was carried out, some of these ponds and dams had started drying up and most residents had already started living in fear. Worse still, when water is available in the dams and ponds, it is always dirty due to the fact that, it is shared between animals and human beings.

However, what is necessary to note is that, although water in dams and ponds is not clean, it can work as an alternative than not having it at all. The problem established during the study was that, it is unfortunate that even the dirty water is not adequate to the community residents. From the researcher's observation, one dam in Lwebitakuli is shared by the whole parish with over 7-8 villages yet animals also use the same. This in turn increases pressure on the available water sources hence breaking down. This is why most water facilities such as dams and ponds visited were not in good conditions if not broken down completely. Therefore, providing enough dams atleast for every village could be a big move to increase water supply in Lwebitakuli thus promoting socio-economic development.

This is however without challenges because, according to some respondents, some community members refuse to offer their land for purposes of constructing dams and those who accept, sometimes refuse other residents to access water which later turns into water conflicts. The chairperson for one of the LCs in Lwebitakuli said that water conflicts are a big

problem in the area, since some people even sleep at the wells, guarding them, and waiting to attack anybody who comes to fetch water. This has increased tension among the community members which in turn affects efforts for socio-economic development. Uganda's PEAP, Pillar 3 is security, conflict resolution and disaster management, but this cannot easily be realized if water is not made available to people, since it is becoming a centre of conflict in areas like Lwebitakuli.

Figure 3: The picture for one of the ponds/wells shared by people and animals.



Above is one of the wells/ponds in Kisaana village of Lwebitakuli Sub-county, where community members and animals get water from.

Photo by: Author

Tap water as a best alternative: As a consequence of challenges resulting from dams, boreholes and ponds, most respondents including the district water officer, water user committee members and leaders at different levels suggested that, providing tap water could

be the most relevant and appropriate solution for the water problem in Lwebitakuli. One respondent said:

“They should bring tap water for us from Masaka and then we shall start living a better life and develop as well”.

The chairperson for Lwebitakuli sub-county equally agreed with this, though he commented that, this project is too costly to be implemented by the district, considering the little amount of money allocated to this sector. This was also a point of concern to the Ministry of water and environment which noted that there are increasing concerns over the declining funding for the water sector in general and therefore a question on the relative importance accorded to water as a driver for human and economic development in Uganda (MWLE, 2009). This is true in a way that, sector funding reduced from 4.9% of the national budget in the financial year 2007/8 to less than 2% in 2009/10. Further, according to the budget speech delivered by the Hon Minister of Finance, Planning and Economic Development in June 2011, the actual total government expenditure for the FY 2010/11 was UGX, 8,374.3 billion. Out of this total national expenditure, the water and environment sector was allocated UGX 256.4 billion which translates into 3.1% share of the total national budget, while the approved budget for the FY 2011/12 indicate a 2.4% share (MWLE, 2011:13) and this is a reduction. This is quite worrying to water stressed areas like Lwebitakuli. This situation justifies why, in Sembabule, a company called Trandit Limited, which had started distributing water to people later failed because there were no subsidies in connecting water hence being expensive for the local people.

Buying water from commercial sellers: During water scarcity periods, the study established that, some people resort to fetching water for sale as the main economic activity. This is because; some people in the community cannot manage to fetch water from the very far places. One old woman said during a focus group discussion that:

“For me I stay alone at home, my grandchildren go to school in the morning and then I remain alone, I need water but I can’t fetch it because I don’t have a bicycle and even if I had it, I would not have used it, so what I do is to sell my goats and then start using the money for buying water for almost a period of 6 months in a year”.

Another lady also contributed to the same topic that:

“I am a widow and I have no children at home, the water is 10kms away from here therefore, I can’t walk there, what I do is to buy water from those who can reach there and it is about 600-1000 Ugandan shillings”.

This situation therefore implies that, the traditional perspective of water as a free good is being replaced with a perspective of water as an economic and social good. This means that water pricing, project selection and other related policies have to be changed to reflect such a new perspective. Water users who are beneficiaries in the surplus era of water development have now become “customers” or clients in the water scarcity era. However, this situation contradicts with what the WHO and UNICEF emphasised as access to water supply and sanitation being “*a fundamental need and a human right*” which is vital for the dignity and health of all people (WHO & UNICEF, 2000:1).

Water Harvesting: The study findings revealed that in some homes, water harvesting was done as a way of coping with the water problem. The main methods used in Lwebitakuli are small underground tanks, jerricans, small buckets, saucepans and basins. From the researcher’s observation, the materials used in water harvesting by the community members were so small to keep enough water during water shortage. Also, through observation, the researcher realised that the big section of people do not harvest water and when rain falls, less water is collected and even those who harvest get small quantities of water hence less sustainable during dry seasons. When people were asked why they were not harvesting water, they argued that they lack money to buy the necessary equipments to use for water harvesting such as tanks, water gutters and others. The same issue was raised by the sub-county chairperson who said that water harvesting is an appropriate solution but people lack resources to implement it on a large scale.

This is despite the fact that, the ministry of water, lands and environment for Uganda mentioned that domestic water harvesting is being promoted through collaboration between the ministry of water and environment, the local governments, the Uganda rain water harvesting association and NGOs/ CBOs country wide (MWLE, 2009:12), so as to take advantage of the abundant rainfall in Uganda, hence providing water for multi-purpose use

within easy reach and therefore potential to increase ownership, self reliance and productivity amongst all especially the rural poor.

This is true because, rain water harvesting has a variety of benefits which range from reducing salt accumulation in the soil which can be harmful to root growth, percolating into the soil forcing salts down and away from the root zone area hence allowing greater root growth and water uptake, which increases drought tolerance of plants. Also, water harvesting not only reduces dependence on groundwater and the amount of money spent on water, but also reduces off-site flooding and erosion by holding rainwater on the site (Kasozi, 2012:33). This means, water harvesting requires more attention because it has the potential to reduce the water problem and supporting people's economic activities.

Government: The study results further established that, some government officials during water shortage, bring water on trucks and supply to the people. However, surprisingly, respondents said that this is only done during elections time; in other words, it is mainly done by politicians to win the sympathy of the people for votes but not to genuinely help the suffering community. As a result, this is a short term strategy with no long term sustainable solutions to the problem. These findings contradicted with the 2010 MWLE report on water and sanitation, which stated that among the achievements in terms of new construction of water for production facilities, it included; completion of a valley tank in Sembabule district (10,000m³) and extension of a mini-piped water supply scheme in Sembabule district as well as ongoing work on a number of sites (MWLE, 2010). When study respondents were asked about this development, the response was that they were not aware of such projects in their locality and if they existed, it seems this was happening somewhere else. They said, water resource distribution is mainly influenced by politicians, as one was quoted saying:

“ For us(meaning people in Lwebitakuli) we have not got any help because the powerful politicians in the district are not from this area, they only take good water developments to their homes, we only see them during elections”

All this is to explain how there is less synergy and collaboration between the government and people in as far as water supply is concerned, even though the Ministry of water, lands and environment reported that one of the ways to reduce water problems, is encouraging farmers to share responsibility in construction of facilities for water production. Under this public-

private partnership arrangement, MWLE takes up 62% of the construction cost and the farmers pay 38%. This involves hiring out of government-owned equipment at below-commercial rates (MWLE, 2010). However, despite this arrangement, on ground there is less that has been done, hence a need for more efforts in implementing the government plans.

Non Government Organisations in water supply: During the study, most of the respondents when asked the kind of institutions that were helping in addressing water shortage problems reported that, some Non-government organisations/ community based organisations had played a role in water supply. These were; *Lutheran World Federation (LWF)* and “*Mbarara Maazi Malungi*” organisations. They were reported to have constructed some tanks for a few people in the village although people complained that; they only served people with close relationship to NGO staff. The selection of beneficiaries was therefore biased hence causing less impact.

5.5.1 Water Resource Management as a strategy for the water problem

5.5.2 Establishment of water user committees:

Williams (2002) argues that the crisis of water is not because the world lacks water but it is a crisis of governance because at the global scale there is enough water to provide water security for all (Williams, 2002: Para 2). The study findings revealed that in Lwebitakuli, poor water management was not largely responsible for water shortage because naturally, water sources in the area are few and there exist no natural spring water. However, although this is the case, it does not mean that, water management is not necessary at all in the context of Lwebitakuli since it was established that, various measures were taken to manage the available water sources. For example, water user committees were put in place, purposely to help in the management of the available few water resources, with an aim of increasing and improving water supply.

The study results revealed that, in villages where water committees existed, the available water facilities were functioning well. For example one of the committees for a certain village had set rules for the dam such as, regular cleaning, contributing some little money for maintenance and operation works among others. Despite the existence of a few active committees, it was largely found out that other committees formulated were non-functional.

This is possibly because, they work on a voluntary basis hence lacking motivation to work as expected. According to one of the members on the existing water committees, the committees in place are selected by the community members and the criteria of selection is based on one's ability to perform. In that very village where the respondent came from, the committee consisted of 9 members of whom 4 were men and 5 women. He said all of these were selected because of their potential to do what the community expected out of them. But in general, the management of water sources in the community was not efficient since even from the researcher's observation, the water sources were in a bad state which meant that, there was less effort to manage the water sources.

The implication from this is that, there is a need for well designed institutional development at the LG level targeting private sector organisations and NGOs/CBOs, to ensure functional and technical capacity for provision and management of rural water supplies (MWLE, 2009:13). This is because water resources management is important in sustaining various socio-economic activities that are key in poverty alleviation and economic development of the country. The way water resources are managed impacts upon the successful achievement of most of the Millennium Development Goals and National Development Plan targets (MWLE, 2011:104). One critical aim of water management is to continually reconcile opposing interests of all water users, be individuals, enterprises, corporations, interest groups, administrative or sovereign entities. The management of water conflicts, confrontations, competing claims and cooperation are thus a part of water resources management in its broadest sense (UNESCO, 2007:3).

5.6 Conclusion

To conclude, this chapter has presented findings of a study to understand the role of water and how its shortage may constrain socio-economic development from the perspective of the local people. It also reflected on the way government, NGOs and community members are trying to deal and cope with the water problem in the context of Lwebitakuli sub-county. The chapter observes that, there is a great link and relationship between water and socio-economic development since its absence affects people's livelihoods by all means. The different coping strategies such as getting water from ponds and dams are less effective since they only work

for a little time yet even the water they produce is not safe for their lives. All these have contributed to the continuous underdevelopment in the area.

It is also necessary to note that, although there is some progress in rural water supply in some areas of Lwebitakuli, through the different water projects such as boreholes and dams constructed, there are some areas where efforts have not been successful. In other words, the water sector in Sembabule district needs to address the issue of generating demand from users but also improving their participation in operation and maintenance as well as payment towards investment. Planning and resource allocation need to be better informed by sound and accurate data generated by sound information, monitoring and evaluation systems and more involvement of citizens and lower LGs like sub-counties instead of being dominated by influential politicians as argued by the community members.

5.7 Limitations

Time Limit: This study was carried out in January 2012, a period that was close to the rainy season that had just ended in December 2011. Therefore because of this, the researcher did not accurately assess the extent to which people suffer with water during dry spells. However even though this was the case, the fact that by the time the study was done people had already started suffering with water, it was an early indicator of what actually happens during the long dry spells.

Language: Although the study was carried out in Uganda, where the researcher also comes from, the region where it was carried out has got mixed backgrounds of people that is, Baganda, Banyarwanda, Banyankole, Bakiga and other tribes. Since the researcher was only speaking English and Luganda, it became a challenge with some respondents who spoke other languages like Rukiga and Runyarwanda. However, with the use of research assistants from the same community who acted as interpreters in some cases, this problem was dealt with, though it was time wasting to the researcher.

Financial Resources: The study being self-financed was bound to financial related challenges. The researcher had to reach about 80 respondents but due to financial constraints, the days in the field were reduced hence failing to reach all the intended respondents. Despite this, the researcher found that, the number that was missed did not affect the results of the study. This

is because, it was representative of all the parishes in Lwebitakuli sub-county and the responses got from the population covered did not defer much to justify a need for more respondents.

CHAPTER FIVE:

CONCLUSIONS

6.0 Introduction

This chapter presents the conclusive statements drawn from the discussion of the findings and some recommendations to the government and other stakeholders, like Non-Government Organisations in line with improving the water situation in Lwebitakuli and other parts of the country at large.

6.1 Summary

According to study findings, it was found that, Lwebitakuli is economically characterised by farming and agriculture as the main economic activities. On the side of education, the enrolment rate for UPE was found to be low with a high rate of drop-out and absenteeism partly caused by water shortage. Life expectancy was found to be at 33.1%, illiteracy rates at 46.9%, people with no access to safe water are 80.5% while those with no access to health services stand at 55.6% and all these are indicators of low socio-economic development in the area.

Based on local people's experiences, it was noted that, there is a great relationship between water and the nature of socio-economic development in Lwebitakuli sub-county. Water is important because it ensures good health and promotes good education standards, yet these two sectors play a big role in the broader notion of socio-economic development. Water is also used in the different sectors such as farming and agriculture, small scale industries such as brick making among others. In Lwebitakuli, Farming and agriculture have been affected; the health situation has worsened due to the use of dirty water and people moving for long distances searching for water. The road to socio-economic development with the current water situation, is therefore one of the biggest challenges in the context of Lwebitakuli, Sembabule district and developing countries at large.

In other words, Uganda risks from not achieving its intended development goals as laid in the Poverty Eradication Action Plan (PEAP) now the National Development Plan, such as achieving economic growth, increasing competitiveness, production and incomes among others. Achievement of the MDGs might also be difficult if the water situation remains as it is currently. This is true because, dirty water and poor sanitation sicken and kill tens of thousands of people each year in Sub-Saharan Africa, and imposes a heavy economic cost on countries equal to 1.4 percent of GDP in some countries (Saghir, 2012).

The water sector generally in Uganda still lacks adequate financial investments and this is why strategies to improve water supply are not yet successful. For example, water harvesting as one of the strategies has failed because people lack financial resources to get access to better water harvesting facilities such as tanks and it is a few NGOs trying to construct tanks for a few selected community members. Distribution of tap water has been affected by inadequate financial resources hence supply being limited to only the few well-off people in the community. This situation confirms the validity of findings in a recent World Bank study of water and sanitation services in 15 countries of Sub-Saharan Africa, which found out that public spending still falls considerably short of government commitments and of international and national policy goals, because, on average, governments spent \$1.71 per person on water supply and sanitation. This corresponds to less than half a percent of gross domestic product (GDP) and is five times lower than what is estimated to be needed each year to meet Sub-Saharan MDG targets (Saghir, 2012).

As a response to the water problem, strategies such as digging wells/ponds and boreholes have been partly successful due to the fact that, they are not reliable and the quality of water provided from these sources is not good. Buying water as a coping strategy is not a sustainable solution to the problem and only a few people can afford it.

The poor water management system was found to be a big problem in Lwebitakuli and it has partly accounted to the persistence of water shortage in the area. There are no active water user committees in Lwebitakuli and thus available water sources have been degraded. The committees in place work on a voluntary basis hence less committed to their work. Surprisingly, even those on these committees lack skills to perform their duties well hence a

need for water education programmes among the user committees so as to perform their duties with adequate knowledge and experience.

All this is happening despite the fact that, the water sector in Uganda has got a good conducive legal framework as laid down in the first chapter, explaining the different sectors responsible for water provision and regulation such as the Ministry of Water and Environment, National Water and Sewerage Corporation, Ministry of Finance, Labor and Social Development, Ministry of Local Government among others. With all the above players in the sector, there is still less impact on the water situation in areas like Lwebitakuli, to the extent that, there is even degradation of available resources such as swamps, forests and others but no action is being taken from the responsible organs.

6.2 Recommendations

There is a need to encourage community participation while dealing with the water problem. For example, some respondents complained that, they needed water in their community than electricity because they cannot eat and bathe electricity. In other words, sector policies, project design and implementation strategies need to change fundamentally and encompass a shift from centralised ownership of systems to local ownership and control. The approaches must change as well instead of being supply-oriented; they must become demand-responsive and participatory (Narayan, 1995).

While doing all these, there is need to consider the participation of all stakeholders including the community members, since they have been always ignored yet the water issue is regarded as a household and individual issue which requires people at the grassroots to take part. The Ministry of Water, Lands and Environment also observed that, there is a need for greater focus into improving the management and development of water resources through participation of all stakeholders so that water resources continue to provide the services and benefit to the people of Uganda (MWLE, 2011:105). In otherwords, Uganda water sector decision making processes have to learn to accommodate an increasing role of user organisations, NGO agencies, women, environmental and other self-help groups in the planning and implementation process of water sources(Saleth and Dinar, 2004:11).

Also, financial constraints being key in the prevailing water crisis, there is a need to increase on the water budgets, to enable more distribution of water to the vulnerable communities which currently has failed due to less financial resource allocations to the sector. Also, investments in the water sector would reduce the burden women and children face collecting water from long distances and thus save time for other productive activities. More crucial, it would enable children that miss attending school on account of collecting water to attend school and thereby increase their prospects for better incomes in future as well as reducing the incidence of water borne diseases thus improving the quality of life (Rudaheranwa et al, 2003:5). This is because of the indispensable relationship between education, health and development. Therefore, if socio-economic development is to be promoted in Lwebitakuli and other regions with water challenges, financial resources especially for rural water supply should be increased to ensure success of the planned government programmes.

There is also a need to encourage ecosystem restoration since this is largely responsible for the quality and amount of water received in an area. In Lwebitakuli it was established that, there is an increasing degradation for the quality of natural resources such as swamps and forests, threatening water quality and quantity, public health and food supply. The situation requires a holistic focus on water resources, quality management which is an important factor in the achievement of the MDGs, NDP and several other policies for an industrialized and modern Uganda.

Water management should be improved since it has been argued by people like Williams that the world has enough water to supply everyone, but the problem is with the way it is managed. In this case, there is a need for proper regulation of water distribution in the different communities, particularly to ensure that underserved areas can be targeted. Also, there is a need to put more emphasis on other appropriate technologies such as rain water harvesting, so as to increase on water supply in the communities.

Related to the above, if water shortage is to reduce in Lwebitakuli, mechanisms to enable significant borehole rehabilitation need to be established so as to ensure the sustainability of the existing water sources which are currently non-functional hence affecting socio-economic development in the different communities.

However, on the other hand, it is important to note that, water alone cannot guarantee socio-economic development in Lwebitakuli. Other factors such as finding market for agricultural products, dealing with corruption, poor road networks, poor governance, limited access to credit facilities, and others need to be dealt with simultaneously with the water problem since they are equally important in facilitating socio-economic development.

The researcher also recommends that, further research should be done on water management since during this study, it was mentioned several times that, it is one of the best mechanisms to reduce the water challenge in most areas. This study did not take much focus on water management and therefore, further research is encouraged in the field of water management on aspects like water harvesting, role of water user committees and how these can help in reducing the water problem.

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APPENDICES

Appendix 1: Semi-structured Interview for Ordinary Community Members

Dear Respondent,

I am Kaliisa Rogers a graduate student at the University of Agder in Norway. As a partial requirement for the fulfillment of the requirements for the award of a Master of Science Degree in Development Management, I am carrying out a study entitled, Water as a Development Constraint- A case study of Lwebitakuli sub-county. It is therefore from this background that, I request you to voluntarily participate in the study by answering the questions that will be asked you. Information from this study will be used in decision making in regards to improving water supply by the Government of Uganda and other stakeholders in the water sector such as Non-governmental organizations, since it will provide them with information regarding the link that exists between water and socio-economic development from the perspective of the stakeholders. The information you will provide will be kept in confidence and will only be used for purposes of this study.

Thank you in advance

Kaliisa Rogers

Researcher.

Background information

- a) County.....
- b) Sub-county.....
- c) Parish.....
- d) Village.....
- e) Sex.....
- f) Occupation.....

Socio-economic characteristics of Lwebitakuli sub-county

1. What socio-economic development are predominant in your community?
2. What are some of the factors constraining this kind of development in your area?
(Probe more on what the ordinary community members take as the main factors affecting socio-economic development)

Perceptions concerning water and socio-economic development

3. What are the main uses of water in your community?
4. Mention in order of priority, the main challenges in your community?
5. Is water availability a problem in your community? How and why? (Probe about the different issues they know about water in the area, e.g. its scarcity or availability, its role, distance to water sources etc).
6. What are the main sources of water supply in this household? (Try to ask whether they are comfortable with these water sources)
7. How important is water in your occupation? (Under this question try to probe in particular the main activities undertaken by the respondent or his/her family and ask him/her to relate it to water)
8. What in your opinion can you rate as the biggest challenge resulting from water shortages?
9. What kind of people are most affected by the problem?

Measures/coping strategies for the water problem

10. How does your household cope in the absence of water? (Probe the extent to which these strategies have been successful).
11. What institutions in your community handle matters concerning water problems and how effective are they if any? (Here try to see which institutions are helping in water supply e.g. is it government, NGOs, individuals within the community etc. Probe on the category that plays the most important role in this matter, is the local community involved in the management?)

Water Management issues

12. Do you manage water in your house and how?
13. What problems are related to water distribution and possible management of water distribution systems, is there any payment for water etc
14. Do you think there are shortcomings in the way they are managed?
15. In your opinion, what advice or suggestions can you give in line with water resources management or in improving the challenge of water in Lwebitakuli sub-county? (Try to ask the respondents on what in their opinion is the best way to handle the water problem in this community?)
16. Do you have any question regarding the discussion we have had?

17. Do you have any general question outside the topics discussed?

Thank you very much for your time.

End

Appendix 2: Focus Group Interview Guides for Ordinary Community Members (Both Men and Women)

Dear Respondent,

I am Kaliisa Rogers a graduate student at the University of Agder in Norway. As a partial requirement for the fulfillment of the requirements for the award of a Masters degree in Development Management, I am carrying out a study entitled, *Water as a development Constraint- A case study of Lwebitakuli sub-county*. It is therefore from this background that, I request you to voluntarily participate in the study by answering the questions that will be asked you. Information from this study will be used in decision making in regards to improving water supply by the Government of Uganda and other stakeholders in the water sector such as Non-governmental organizations, since it will provide them with information regarding the link that exists between water and socio-economic development from the perspective of the stakeholders. The information you will provide will be kept in confidence and will only be used for purposes of this study.

Thank you in advance

Kaliisa Rogers

Researcher

Background information

- a) County.....
- b) Sub-county.....
- c) Parish.....
- d) Village.....
- e) Sex of Respondents.....
- f) Occupation.....

Socio-economic development features in Lwebitakuli

1. What are the main factors responsible for socio-economic development in your area?(Try to probe what the respondents view as the most important factor responsible for their socio-economic development and why)
2. What are the main sources of income in your community? (Probe whether the source of income depends on water and how?)

Perceptions concerning water and its impact on socio-economic development

3. Is water a problem in your community?
4. What is your perception of the water problem in your community (probe about the different issues they know about water in the area, eg its scarcity or availability, its role, distance to water sources, distribution and problems related to these issues etc)
5. What are the factors responsible for this problem in Lwebitakuli sub-county?(probe about the ones they take to be the most important and why?)
6. How does water play a role in the socio-economic development of the community? (Try to ask the respondents to explain more on how water plays a role in socio-economic development)
7. Who is more affected by the scarcity of water? (Here try to probe and see whether there are some particular categories of people, more affected by the scarcity of water).

Measures/coping strategies for the water problem

8. Which institutions have come up to assist in overcoming the problem?(Probe whether these are government, Non-government, community based, individuals etc)
9. To what extent have these institutions been successful in dealing with the water issue?
10. In your opinion, what should be done to reduce the problem of water in this community?

11. Water Management issues

12. What are the major sources of water in this community? (Try to find out from the respondents.
13. Do you think they provide adequate water for your community?
14. How are they managed (Probe whether they think that, the way they are managed is good, if it is not good, what is their view on how their management can be improved?
15. What is your local initiative of managing the problem aside outside help from government or NGO. Ask about community participation in water management and distribution, help in cleaning, maintenance, are there problems related to conflict between water users and activities etc)
16. What is your overall recommendation for the water situation/problem in your community?
17. Do you have any question regarding the topics we have discussed?

18. Do you have any other question, not related with what we have been discussing?

End

Thank you very much for your time!!

Appendix 3: Semi-structured Interview for District Leaders/ District Water Officers

Dear Respondent,

I am Kaliisa Rogers a postgraduate student at the University of Agder in Norway. As a partial requirement for the fulfillment of the requirements for the award of a Masters degree in Development Management, I am carrying out a study entitled, Water as a development Constraint- A case study of Lwebitakuli sub-county. It is therefore from this background that, I request you to voluntarily participate in the study by answering the questions that will be asked you. Information from this study will be used in decision making in regards to improving water supply by the Government of Uganda and other stakeholders in the water sector such as Non-governmental organizations, since it will provide them with information regarding the link that exists between water and socio-economic development from the perspective of the stakeholders. The information you will provide will be kept in confidence and will only be used for purposes of this study.

Thank you in advance

Kaliisa Rogers

Researcher

Background information

- a) County.....
 - b) Sub-county.....
 - c) Parish.....
 - d) Village.....
 - e) Sex.....
1. What are the main indicators of socio-economic development in your community?
 2. What are the main factors responsible for this kind of development in your community (Probe the most important factors responsible for socio-economic development in the area.
 3. What are the main uses of water in this community?
 4. How do you perceive the water problem in this community?(probe about the different issues they know about water in the area, e.g. its scarcity or availability, its role, distance to water sources etc).
 5. What are the main issues responsible for the water shortages in this area?
 6. What effects does it have on the socio-economic development of the people in this community? (Try to probe which sectors of life are more affected by the problem?

7. Do you normally receive cases of water challenges in your office? if yes how often?
8. How are water resources managed or maintained? are there problems related to conflict between water users and activities
9. What measures are in place or have been put forward by the government to cope with the water problem?
10. What recommendations would you make to help assist in handling challenges of water shortages?
11. Do you have any question regarding the topics we have discussed about?

Appendix 4: Semi-structured Interview for Village Water User Committee Members

Dear Respondent,

I am Kaliisa Rogers a postgraduate student at the University of Agder in Norway. As a partial requirement for the fulfillment of the requirements for the award of a Masters degree in Development Management, I am carrying out a study entitled, Water as a development Constraint- A case study of Lwebitakuli sub-county. It is therefore from this background that, I request you to voluntarily participate in the study by answering the questions that will be asked you. Information from this study will be used in decision making in regards to improving water supply by the Government of Uganda and other stakeholders in the water sector such as Non-governmental organizations, since it will provide them with information regarding the link that exists between water and socio-economic development from the perspective of the stakeholders. The information you will provide will be kept in confidence and will only be used for purposes of this study.

Thank you in advance

Kaliisa Rogers

Researcher

Background information

- a) County.....
- b) Sub-county.....
- c) Parish.....
- d) Village.....
- e) Sex.....
- f) Occupation

1. What are the main uses of water in this community?
2. How do you perceive the water problem in this community?(probe about the different issues they know about water in the area, eg its scarcity or availability, its role, distance to water sources, distribution etc).
3. What are the main factors responsible for the water shortages in this area?
4. What effects does it have on the socio-economic development of the people in this community? (Try to probe which sectors of life are more affected by the problem?)
5. Is there any conflict over water use, between users and activities? How are such problems resolved, if there are any problems?

6. What strategies have been put forward by the government and communities to cope with the problem? (Probe on the way these strategies are successful)
7. How do water committees help in improving the water situation? (Probe on the roles they play in improving water supply in the community, ask who funds their activities ie which resources are available for the committees, whether the funds are adequate and whether they get any support from the community).
8. How are the water committees formed?(Probe about who is involved, methods of selecting the members, gender representation, how they are funded etc)
9. What challenges do water committees face while dealing with water issues in this community? Ask more about what needs to be done to improve water resources management)
10. What is your overall recommendation for the water situation/problem in your community? Ask more about what needs to be done to improve water resources management)

Thank you very much

Appendix 5: Observation Checklist

- a) The water situation in Lwebitakuli sub-county
- b) The available water resources in the sub-county
- c) The way these sources are managed
- d) Quality of the water sources in the sub-county
- e) How people cope with the water problem
- f) The observable effects of water shortages in the community
- g) Measures or coping strategies available in the community

Appendix 6: Photo 2: Focus Group Discussion for Men at Kasambya Village



Above, the author (dressed in red T-shirt) was conducting a male Focus-group discussion at Kasambya village in Lwebitakuli sub-county

Appendix 7: Photo 3: The Researcher Conducting an Interview with the LC 1 Leader of Namirembe Village



In the photo above, the author was interviewing the Local council one chairperson of Namirembe village in Lwebitakuli sub-county.

