BASELINE STUDY OF KITGUM TOWN COUNCIL

JUNE 2007

EXECUTIVE SUMMARY

Kitgum district is located in northern Uganda, 452 km from Kampala. The district has an area of 9,774 square kilometres. Kitgum Town Council (KTC), the project study area, is the district headquarter and commercial centre of Kitgum district. It is located in Chua County and bordered by sub counties of Labongo, Layamo in the North and West and Labongo, Amida in the East and South respectively. The town council has 42,493 inhabitants and 7,228 households all found in 7 parishes and 28 villages. The area includes urban, peri urban and rural typical settlement structures in terms of housing and population density. The indigenous people are from the Acholi ethnic group although there are a number of other tribes living there as a result of a number of NGOs present hence creating employment opportunities for them.

Northern Uganda has experienced civil war for the last two decades. This resulted into abduction, rape, death, and destruction of social infrastructures and displacement of the people. Child abduction has been the main method of recruitment of the rebels of the Lord's Resistance Army (LRA). Thousands of children have been abducted and turned into child soldiers or sexual slaves. These children have suffered some of the worst forms of child abuses in the world like torture, murder, forced fighting and killing, sexual abuse and starvation. In addition, this conflict has forced children and adults especially those living within 0-6km near Town Council to commute from their homes to sleep in KTC. Night commuting in the TC town started in November 2004 due to the intense insecurity in the region. People living at the suburb would move every evening to seek shelter in town for fear of the rebels. They would sleep on verandas in Town, hospitals, schools and churches and return to their homes in the morning.

As a result of this instability, poor sanitation and lack of safe water are the biggest problems encountered in the TC. This has led to a number of NGOs like ROSA working in the TC, in order to improve the water and sanitation situation. ROSA Project aims at adding to the current efforts for promoting resource oriented sanitation concepts as a route to sustainable sanitation.

Sanitation

The existing sanitation facilities in KTC are traditional pit latrines, Ventilated Improved Pit latrines (VIPs), flush toilets, dry toilets, cat method, and open defecation. Of these systems, pit latrines are the most commonly used. 93% of the population have access to a pit latrine or sanitation facility in their homes and neighbourhood. However, the other 7% of the population practice open defecation. In addition, there are two public sanitation facilities owned by the TC. The users of these public facilities are the people in transit, those who work in places where there are no toilets and those who have no toilets in their homes and can afford the public ones. Pit latrines are demolished and abandoned on getting full. There are at least two pit latrines in most homesteads implying that there is potential risk for groundwater contamination.

Emptying of septic tanks and public toilets in the TC is done by 4 existing cess pool emptiers Despite the existence of sanitation legislation and regulations on waste discharge, the collected faecal sludge from the pit latrines is disposed onto a piece of land out side the TC without any treatment.

Water Supply

The main water sources in KTC are boreholes serving 89% of the population, with only 9% of the people connected to the central water system (CWS) and 2% getting water from shallow wells. The CWS gets water pumped from four production wells to three overhead tanks each with a total capacity of 83m^3, located on a hill top. The water from the overhead tanks is then distributed through a piped network system to the user communities through public tap stands, water kiosks, and private household taps.

Majority of the people consume water from boreholes without boiling it because it is believed to be safe enough. Since 2006, the people have been supplied with chlorination tablets, which they add to the water they collect from the tap stands so that they can consume it without any fear of getting diseases.

The main problems faced with respect to water supply services in the area are water shortages for those communities supplied by the CWS, especially in cases when there is no electricity and lack of enough boreholes. As a result, people have to walk long distances to look for water and subsequently the queues at the water points are so long. To avoid this, one has to wake up as early as 4 am to get water to use in the morning else they would have to spend the entire day lining up to get water. There has also been a problem of water borne diseases. Of the households visited during the baseline survey, 50.9% reported as having had one or more persons suffering from water borne diseases especially typhoid.

Drainage and wastewater management

KTC is traversed with storm water drains that are lined with hard core stones. These drains discharge into River Pager. The drain channels are not properly maintained as evidenced from the cracked sidewalls, which characterise most of them. The drains are rather narrow and usually during a heavy down pour, soil and other materials are washed into the drains by the runoff hence causing clogging. Most city drains are clogged with garbage and silt leading to stagnant water. The latter provides a breeding place of vectors like mosquitoes that cause malaria and is an eye sore. In addition, the stagnant water is also a health risk especially for the children who play and or step with bare feet in it. There is no treatment of the storm water prior to discharge. Currently, there is no re-use of grey water in the TC and it is either disposed of in soak pits or house compounds.

Solid waste

Solid waste management is one of the biggest problems in the TC. Solid waste generated in the town centre and slightly outside the town centre is managed by the TC. However, the collection frequency is low and can be even up to a month instead of daily. As a result, there is waste accumulation by the roadsides, in the homestead compounds and drainage channel banks waiting to be collected. The solid waste in the town centre is collected by TC trucks and deposited at the official damping site. In the outskirts of the TC, solid waste is managed at household level, and hence people have compost pits behind their houses or tend to burn the waste, on accumulation. There is one official

dumping site in the TC and a number of illegal dumping sites, which the communities use to dispose of the ever increasing solid waste. Further from the TC, most inhabitants manage their solid waste by burning or by use of a compost pit.

51.4% of the households visited are aware of the use of solid waste especially in the gardens but do not practice it because of lack of resources and information on solid waste separation. The biodegradable and non-biodegradable solid wastes are typically collected in one container.

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AIDS	Acquired Immune Deficiency Syndrome
ARDC	Agricultural Research and Development Center
CAO	Chief Administrative Officers
CSOPNU	Civil Society Organisations for Peace in Northern Uganda
DDHS	Director of District Heath Services
DFI	District Farm Institute
DHO	District Health Officer
DRC	Democratic Republic of Congo
EHD	Environmental Health Division
EIA	Environmental Impact Assessment
FGD	Focus Group Discussion
FM	Frequency Module
GoSS	Government of Southern Sudan
GoU	Government of Uganda
HIV	Human Immune Virus
IBEA	Imperial British East African Community
IDP	Internally Displaced People
KTC	Kitgum Town Council
LC	Local Council
LRA	Lord Resistance Army
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries)
MDGs	Millennium Development Goals
MoES	Ministry of Education and Sport
MoH	Ministry of Health
MTN	Mobile Telecom Network
MW&E	Ministry of Water and Environment
NEMA	National Environmental Management Authority
NGO	Non Governmental Organisation
ROSA	Resource Oriented Sanitation concepts for peri urban areas in Africa
SPSS	Statistical Package for Social Scientists

SSWP	Strategic Sanitation and Waste Plan
TC	Town Council
UBOS	Uganda Bureau of Statistics
UNICEF	United Nations International Children's Education Fund
UPDF	Uganda Peoples Defence Forces
UTL	Uganda Telecom Limited
VIP	Ventilated Improved Pit latrines
WATSAN	Water and Sanitation
WFP	World Food Programme
WHO	World Health Organization

CHAPTER ONE - INTRODUCTION AND STUDY OBJECTIVES

1.1 Background Information

Kitgum district is located in northern Uganda with an area of 9,773.63 km^2 of which only 3,200km^2 are under production (32.74%). The head quarter of the district, Kitgum Town, is 452 km from Kampala the capital city of Uganda. Along with Gulu and Pader districts, Kitgum composes the Acholi land, which is considered to be the heartland of the Acholi ethnic group. Kitgum district is boarded by the Republic of Sudan to the north, the districts of Kotido to the east, Pader to the south and Gulu to the southwest. The district is composed of two counties (Lamwo and Chua), seven parishes, and twenty nine villages (Table 1, Appendix 2).

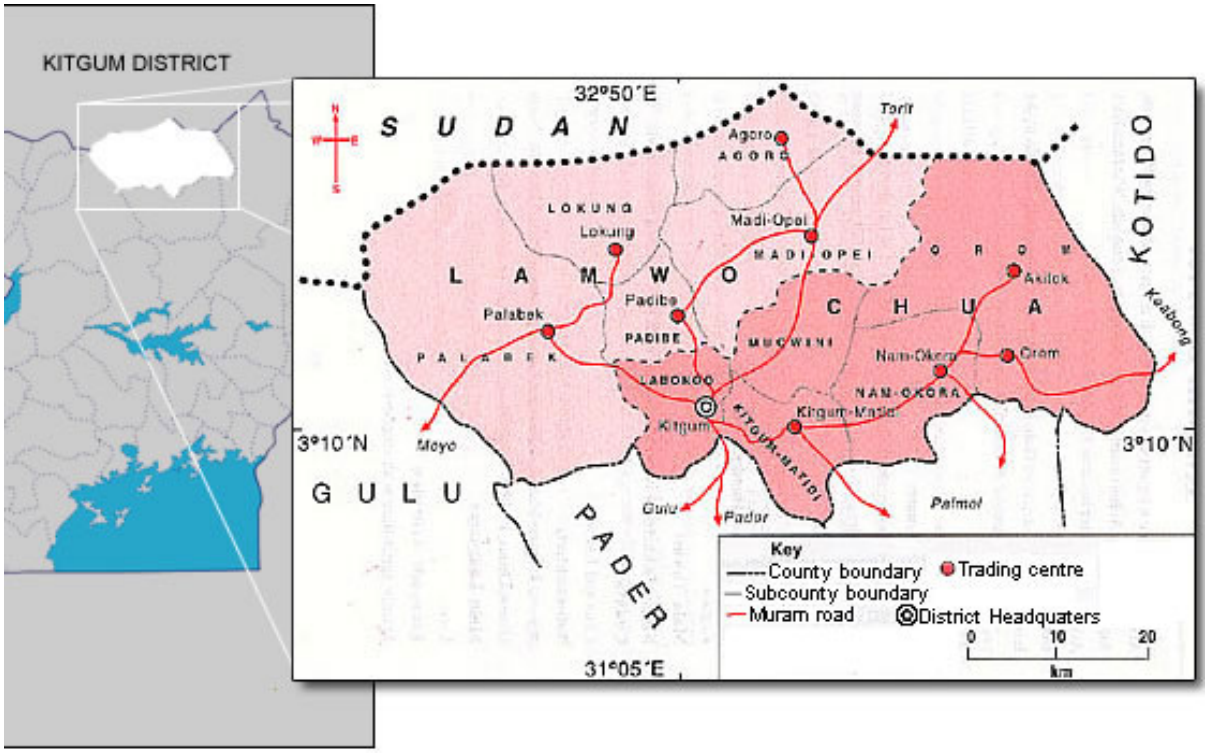

Figure 1: Map of Uganda showing the location of Kitgum District

(Source www.kitgum.go.ug)

1.2 History of Kitgum

When the Imperial British East Africa (IBEA) was trying to establish authority and control in Uganda, it initially intended to form two administrative units in areas occupied by the Acholi-speaking ethnic group. The first district called Acholi was to occupy present-day Gulu district

and extend up to Nimule in today's Southern Sudan. The second district should have been called Chua with its headquarters in Dibolyec (meaning an arena of elephants) in present-day Lokung sub-county, Lamwo County, Kitgum district.

The advance team of colonialists led by Corporal Musa, who was an agent of Semei Kakungulu, the colonialist's chief agent in the country, who was still in Eastern Uganda,
brought to Acholiland some aspects of the Kiganda culture. One of them that failed was having all men to concede that the Buganda Kabaka would take any of the Acholi wives at will, yet, the Acholis treasured their wives because they earned them in exchange for ivory. Corporal Musa and his soldiers then began building a fort at Dibolyec using forced local labor. The fundamental mistake they made was that while the able-bodied men were working on the fort, Corporal Musa and his soldiers got busy raping the wives of these men. When the locals learnt of it, they immediately hatched a plan to kill them, which they did during a pre-arranged Otole dance at Dibolyec. The evidence of this amongst the Acholis is recorded in one Otole dance song: "Lugot oneko Musa nyong; Odong Kakungulu." meaning, "It is good the people from the mountain (read hills) have killed Corporal Musa indeed, we are left with Kakungulu". The survivors retreated to a small hill, about 50km further south of Dibolyec in present day Kitgum town, which the Acholi call "Kidi Guu", but because the colonialists could not easily pronounce 'Kidi Guu' they instead called it Kitgum, a name adopted up to date.

1.2.1 Acholi losses land

In 1926, during the demarcating of boundary between Imperial British East Africa (IBEA) and Anglo-Egyptian Rule, the colonial masters decided to cut away part of northern Acholiland and make it part of Sudan. The areas affected included volcanic soil-rich Upper Talanga, Katire, Palutaka, Parjok, Owiny-Kibul, Opari and Nimule. The two reasons that can be advanced for this act were, to punish the Acholi ethnic community for resisting colonialism, many leaders like Rwot Awich (Payira), Rwot Ogwok (Padibe) and Rwot Olyaa (Atiak) are known to have fought colonialism, and to divide the Acholi and reduce their resistance to colonial authority.

1.2.2 Acholiland gets districts

On the 9th October 1962 (Ugandan Independence), there was one Acholi district in Northern Uganda with a second chunk of Acholi speaking ethnic group occupying the immediate borderline in Southern Sudan.

During the reign of Idi Amin (1971-1979), East Acholi district renamed Kitgum was curved out of a united Acholi while the West Acholi district was renamed Gulu, remained west of Aswa River, which flows through the two districts.

On December 4th 2001, Pader district was curved out of Aruu and Agago counties of Kitgum district. In view of the aforementioned, the Acholi ethnical community now occupies three districts.

1.3 Insurgency in Northern Uganda

Since 1986, Northern Ugandan districts (Gulu, Kitgum, Lira, Pader etc) have suffered insurgence by the Lord Resistance Army (LRA) lead by Joseph Kony and have seen thousands of people massacred by these rebels. This insurgency made thousands of people leave their homes and seek protection in Internally Displaced Camps (IDPs) that were organized by the Government in the vicinity of the main towns where they are guarded by the army. Seven of these camps, which were established in January 1997 were established when the rebels killed 430 locals over a period of only two days. As a result an estimated 1.6 million people have since been displaced and are living in the IDPs that are found scattered through out the districts. The phenomenon of 'night commuters' also became a normal facet of life where many people living in villages outside the towns walk or send their children to sleep in shelters in the towns at night, for fear of being abducted by rebel militia. This then resulted into thousands of adults and children commuting daily between the night shelters where they sleep and their homes and schools where they spend the days. As a result of the insurgency about 90% of the population in Kitgum District lived in IDP Camps (WFP, 2004), until the Juba peace talks that will be discussed later in details.

The town council however, has only one recognized IDP called Labujje, but is very closely neighboured by two others IDPs namely Labongo Amida and Akwang IDPs. There are however, some settlements within the town council area whose conditions are very similar to those in the IDPs. This then creates an IDP atmosphere within the town council area and its peripherals.

1.3.1 Organization of the IDPs

The IDPs camps are organized with the intent of enabling the people maintain their origins and interact with their relatives. So a camp is demarcated in terms of counties, sub counties, parishes and villages. With these demarcations, the people then build their grass thatched huts (made of mud and wattle) in their respective origins. Each IPD camp has a leader that is referred to as Camp Commander, while all the parishes and villages also have their local cultural leader. Some of the IDPs (e.g., Labujje) in Kitgum town council areas have been organized to represent the whole sub-county. Small huts are constructed with pit latrines sited as close to these as are other huts (Plate 1). However, pit latrines are only constructed by those who either have land or resources, thereby limiting the number of pit latrines within the camps. Households that don't have pit latrines typically share with neighbours. It is noted that the shared pit latrines fill up very fast, following which they are broken and new ones constructed. The latter is practiced until land becomes a limiting factor after which most people then resort to open defecation. The camps also have communal solid waste damping sites that may either be within or outside the IDPs and are re-dug on filling (Plate 1).

Plate 1: **The dense settlements in the IDP camps. Left- a row of pit latrines, Right - a communal open dumping site**

1.3.2 Characteristics of IDPs

Given that the IDPs are settlements with security, the area coverage is normally kept small to enable efficient monitoring by army of any intrusions or infiltrations from rebel attacks. However, given the fact that several people would be in need of security and they cannot be chased away, they are then absorbed. This increased population results in dense settlements with

huts closely constructed to each other (Plate 2). Besides congestion, there is shortage in basic services such as inadequate and/or poor latrines, inadequate water supply, poor solid waste management and drainage systems (unlined storm water and/or shallow grey water drains). The resulting poor environmental sanitation, increases potential for the spread of disease, and highlights the need for improved hygiene behavioural change, which in most cases does not come easily.

Plate 2: Congested Labujje IDP with unlined storm water and/ or shallow grey water drain adjacent to the borehole

1.4 Juba Peace Talks

However, since 2006, there has been a peace talk between the Government of Uganda and the Lords Resistance Army (details discussed in Chapter 6). The peace talk that is being hosted by the Government of South Sudan is viewed by many as an opportunity to end the war that has paralysed this region for over two decades. The involvement of such a strategic third party mediator, coupled with the apparent openness of the LRA and GoU to end the war, and mounting pressure on all parties to resolve the conflict, gives this process serious potential to succeed in both ending active violence and providing a framework to address deeper social and political grievances.

The ongoing peace talk has greatly ushered in a level of calmness, peace and hope amongst the local people and the nation as a whole. Because of this therefore there has been a consistent and steady increase in activities and free movement (both by road and air) in and out of this

region. Given the relative peace in this region the government through its resettlement scheme has now resettled at least 100,000 of the internally displaced persons back to their villages. It is therefore hoped that when finally the peace talk is successfully completed, total peace will return to this region, the local people will then live normal life and enjoy the national social, economic developments that all other regions in the nation are currently enjoying.

1.5 Population

According to the 2002 Uganda Population and Housing Census, Kitgum district has 283,546 people with an annual population growth rate of 4.1%. The population comprises of 137,186 males and 144,188 females of which Lamwo County has 114,168 people while Chua County (in which the town council is) has 169,378 people. It is estimated that the district has 53,170 households. Kitgum Town Council approximately has 7,228 households totalling up to 42,493 inhabitants. (See Table 1, Appendix 2).

1.6 Kitgum town sanitation situation analysis

The sanitation situation in Kitgum town council as will be later discussed in detail is very low with only a minority of people having access to the facilities. This coupled with the IDP camps in and around the town and similar congested settlements in the town area, has exceeded the carrying capacity of the existing sanitation facilities. As a result, the overloaded sanitation facilities are no longer efficient and are poorly operated and maintained.

The current sanitation situation is characterized by three major factors;

- the exponential growth of the population worsened by influx of people both semi permanent and as night commuters,
- the extremely low per capita income and inadequate access to external funding (government or international) and
- the lack of human resource as a result of the insecurity in the area.

Even though the Town Council ranks solid waste management and uncontrolled wastewater discharge in the central areas of town as the major sanitation problems, the lack of adequate facilities in the peri-urban areas of town seems equally important, particularly when considering the number of people concerned and the problems faced with conventional solutions. Hence the

current sanitation situation in Kitgum town can best be described by a rapidly growing, extremely poor population without acceptable facilities and an immediate view for a solution.

CHAPTER TWO - RESOURCE-ORIENTED SANITATION CONCEPT FOR PERI-URBAN AREA IN AFRICA PROJECT (ROSA)

2.1 Areas of implementation

ROSA project promotes resource-oriented sanitation concepts as a route to sanitation and ecological sound sanitation in order to meet the millennium development goals (MDGs). This concept will be applied in four pilot cities in East Africa namely Arbaminch (Ethiopia), Nakuru (Kenya), Arusha (Tanzania) and Kitgum (Uganda). These cities have a population of several 10,000 inhabitants and share common problems e.g. they are situated in dry regions resulting in lack of water, have relatively high population growth rates and poor sanitation facilities, if available.

The World Health Organization (WHO/UNICEF, 2003) states that around 1.1 billion people globally do not have access to improved water supply sources, whereas 2.4 billion people do not have access to any type of improved sanitation facilities. About 2 million people die every year due to diarrhoeal diseases, majority of these being children, especially in peri urban or rural areas. Provision of facilities for sanitary disposal of excreta and introduction of sound hygiene behaviour are of capital importance with respect to reduction of the disease burden caused by these risks factors.

In developing countries the main focus of sanitation is to reduce the associated health risks in urban, peri-urban and rural areas with the intent of minimizing health risks and environmental pollution. While this is also true for resource oriented sanitation concept, it however, moves a step further by applying an ecological view to the problem of sanitation by relying on the perception of waste as a resource within the system. The ecological concept unlike the conventional one (Figure 2) that looks at waste as a dirty and unwanted material, considers waste as a resource which therefore can be separated and recycled/ reused.

2.2 Conventional sanitation concept

Conventional sanitation systems (Figure 2) apply the "drop and store" principles, where the pit latrine or solid waste dumping sites are still dominantly used in developing countries (Esrey *et al*., 2001). These systems have more fundamental shortcomings than their high costs such as over-exploitation of limited renewable water resources and waste of valuable components in wastewater (Wilderer, 2001). In addition to this, they exhibit obvious disadvantages of soil pollution and groundwater contamination with pathogens, bad odour, fly/mosquito breading, pit collapse or the distance from the house. Hence these systems cannot be a viable alternative, in view of the aforementioned and given the difficulty of effective removal of pollutants. Even in developed countries, these conventional systems are directly cross subsidized and the chances to ever become financially sustainable are low.

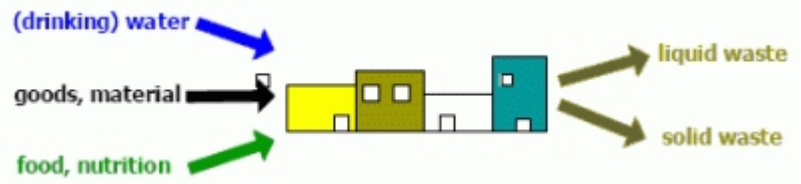

Figure 2: Conventional sanitation concept

(source: Langergraber and Müllegger, 2005)

A conventional system is not sustainable in densely populated areas, for example the case of Kitgum town council, where having to dig a new pit when the old one is full often leads to the question of where to build the new one. Further problems greatly concern the agricultural sector, where the produced nutrients on farms (in terms of food) are transported on a one-way flow to municipalities and discharged as waste. At present, this steady loss of nutrients on farms is compensated for by mineral fertilizers of fossil origin of which the people in Kitgum Town council area are too poor to afford, consequently resulting in very poor crop yields and reduced productivity.

2.3 Resource-oriented or ecological sanitation concepts

This is an alternative approach to avoid the disadvantages of conventional systems. The ecological sanitation paradigm is based on ecosystem approaches and the closure of material flow cycles (Figure 3). Human excreta and water from households are recognized as a resource (not as a waste), which should be made available for re-use.

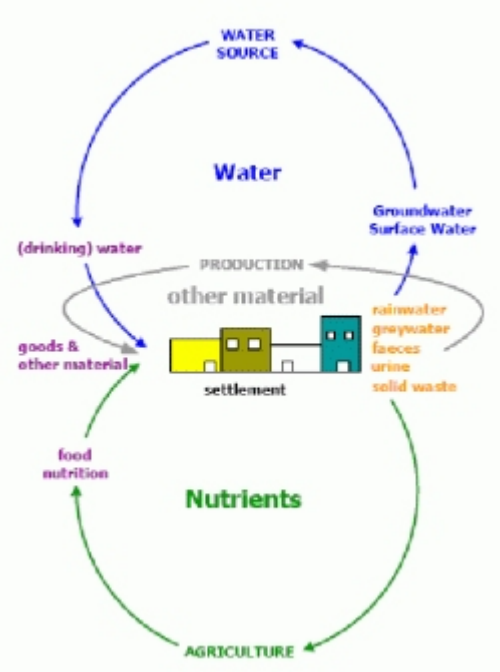

Figure 3: Resource-oriented or ecological sanitation system

(source: Langergraber and Müllegger, 2005)

Ecological sanitation therefore represents a holistic approach towards ecologically and economically sound sanitation. It is a systematic approach where single technologies are the only means to an end and are not ecological per se but only in relation to the observed environment. The applied technologies may range from natural wastewater treatment techniques to compost toilets, simple household installations to complex, mainly decentralized systems (Otterpohl, 2004). According to Werner *et al.* (2004), the advantages of resource-oriented sanitation systems are:

- reduced health risks related to sanitation, contaminated water and waste,
- prevention of pollution of surface and groundwater,
- prevention of degradation of soil fertility, and
- optimization of the management of nutrients and water resources.

2.3.1 Resource- oriented sanitation in other parts of the world

The principles underlying ecological sanitation are not novel. In different cultures, sanitation systems based on ecological principles have been used for hundreds of years. Ecosan systems are still widely used in parts of East and Southeast Asia. In Western countries, this option was largely abandoned as "flush and discharge" became the norm. Only in recent years, has there been a revival of interest in these techniques (Esrey et al., 1998).

2.3.2 Basics of resource-oriented sanitation

Resource-oriented sanitation systems are based on collecting and treating the different wastewater (black, grey, and yellow) flows and faecal sludge separation to optimize the potential for reuse (Esrey *et al*., 1998; Wilderer, 2001). Also proper means and methods of collection and separation of solid waste (garbage and rubbish) are a prerequisite for reuse of this resource. Most of the soluble nutrients are found in urine. If urine is separated and converted to agricultural usage, the biggest step towards nutrient reuse and highly efficient water protection will be taken. The hygienic hazards of wastewater originate mainly from faecal matter. Separation opens the way to hygienisation and finally to an excellent end product. Wastewater that is not mixed with faeces and urine is a great resource for high quality reuse of water. Source control should include evaluating all products that end up in the water. High quality reuse will be far easier when household chemicals are not only degradable but can be mineralized with the available technology.

2.4 Project Objective

Resource-oriented sanitation concepts aim at promoting more ecologically sound sanitation. The concepts are based on source separation and reuse. Hygienic hazards are well known and guidelines for treatment and safe use of urine and faeces are available. There are many technological options so that most social and economic conditions can be met. Creativity is needed to find the appropriate technology and the best way of implementing, operating and financing it.

The specific objectives of the ROSA project are to:

(i) develop a generally applicable and adaptable framework for the development of a strategic sanitation and waste plans (SSWPs), combining several techniques and come up with the best solutions for the city in accordance with the local requirements,

(ii) develop adoptable, affordable and replicable solutions for an integrated approach to sustainable sanitation that are based on resource-oriented sanitation concepts

(iii) develop innovative low cost technologies together with a community based management concept for sustainable implementation of solutions in corporation with local government,

(iv) assess the gaps for the implementation of resource-oriented sanitation concepts in Kitgum town areas, and

(v) promote stakeholder participation at all levels through information dissemination, education and communication materials

2.5 Objective of the baseline survey

A baseline survey was conducted in Kitgum Town Council by the ROSA- Uganda team (Kitgum town council and Makerere University ROSA staff) between February and May 2007. The specific objectives of the baseline study were to:

(i) collect information and data regarding demographic, environmental, settlement patterns, agricultural, technical, cultural, social and economic dynamics,

(ii) assess the water supply situation, hygiene and behavioural habits, and the sanitation situation,

(iii) have an understanding of the public and private institutional set-up

(iv) and to generate information that will lead to the development of a SSWPs for the entire Kitgum town council area.

CHAPTER THREE - LAWS, POLICY AND INSTITUTIONAL FRAMEWORK REGARDING WATER AND SANITATION

The National regulatory frameworks and institutional arrangement regarding water and sanitation are presented in this chapter.

3.1 Policies

3.1.1 The National Environment Management Policy, 1994

The overall goal of this policy is the promotion of sustainable economic and social development that enhances environmental quality without compromising the ability of the future generations to meet their own needs. It is stated in this policy that pollution of water, land and air from domestic, industrial or other emissions and discharges must be controlled so as to promote environmentally sound management of waste and hazardous materials.

The guiding principals of this policy that concern waste management are;

- discharges of substances that are harmful should be minimised and where possible prevented,
- pollution minimisation and prevention should be coordinated by a single agency,
- the "Polluter Pays Principle" where the polluting industry or municipality pays a fee based on the location, nature volume, and chemical composition of the effluent which is discharged into the environment.

The other strategy in the policy that is geared towards achieving the overall goal of environmental management is the process of conducting an Environmental Impact Assessment (EIA). It is stated in the policy that an EIA should be conducted for any policy or project that is likely to have adverse impacts on the environment. This statement is further embedded in the *National Environment Act, Cap 153 Laws of Uganda 2000*, which makes EIA a legal requirement for eligible projects and policies. In view of the fact that construction of a waste management site/ drying/ sludge bed may be required in the project area, this necessitates having to carry out an EIA so as to be in line with the policy.

3.1.2 The National Policy for the Conservation and Management of Wetland Resources, 1995

This was put in place to control the rampant loss of wetland resources and ensure that benefits from wetlands are sustainably and equitably distributed to all the people of Uganda. The policy calls for the application of EIA procedures on all activities to be carried out in a wetland to ensure that wetland development is well planned and managed. It further emphasizes that all wetlands are a public resource to be controlled by the Government on behalf of the public. There should be no leasing of any wetland to any person or organization in Uganda at any given moment, however, a temporary Wetland Resource Use Permit may be applied for from the Executive Director, NEMA.

Considering that river Pagee flows across Kitgum town council; it has river and flood plain type of wetlands that necessitate protection from further degradation emanating from poor solid waste management. This permit can be obtained in the event that ROSA project activities require the services of a natural wetland for purification and recycling of wastewater.

3.1.3 National Health Policy (1999)

The National Health Policy was formulated within the context of the provisions of the Constitution of the Republic of Uganda 1995 and the Local Governments Act, 1997 that decentralized governance and service delivery. The overall objective of the health sector policy is to reduce mortality, morbidity and fertility, and the disparities therein. This policy reiterates that the struggle for improved sanitation has to be intensified and maintained in order to consolidate and improve on the gains and the key priorities. This therefore calls for continued support to local governments and authorities to improve sanitation and general hygiene for which the ROSA project is in line.

3.2 The Legal and Regulatory Framework

3.2.1 The Constitution of the Republic of Uganda, 1995

Laws have been enacted in Uganda in the recent years to ensure sound environmental management. Of these, the Constitution of the Republic of Uganda, 1995 is the supreme law. It provides for environmental protection and conservation and in its national objectives and directive of the state policy, it provides that the state shall promote sustainable development and public awareness of the need to manage land, air and water resources in balanced and sustainable manner for the present and future generations.

Articles 39 and 41 of the constitution of the Republic of Uganda (1995) provide that every one has a duty to maintain a clean, healthy and safe environment. It further states that every person in Uganda has a right to a clean and health environment and as such can bring action to pollution or improper disposal of waste. Subject to Article 237 of the Constitution, under the Land Act, a person who acquires land is required to manage and utilize it in accordance with existing environmental laws. Any use of land must conform to the law relating to town and country planning. The Land Act further stipulates in chapter III, section 245 that parliament shall by law provide measures intended to protect and preserve the environment from abuse, pollution and degradation. It is stated in chapter XIII of the constitution that the state shall protect important natural resources including land, water, wetland, oils, minerals, fauna and flora on behalf of the government and the people of Uganda.

3.2.2 The Public Health Act, Cap 281

The Public Act consolidates the law in respect of Public Health. It places duties on the Urban and Local authorities under section 103 in matters pertaining to public Health e.g. setting standards for housing, sanitary facilities to prevent any pollution dangerous to water, which the public has a right to use for drinking, or for domestic purposes.

Waste (solid and liquid) generated from the town council if not properly managed will pollute water sources and be a cause of diseases to the public. This legal provision is therefore, a very relevant tool for the project because it advocates for safe and proper solid and sewage

management in the town council in an attempt to protect the communities and improve their public and environmental health situation/conditions.

3.2.3 National Environment Act, Cap 153

This Act establishes the National Environment Management Authority (NEMA) as the overall body, charged with the management of environmental issues. In brief, the Authority in consultation with lead agencies is empowered to issue guidelines and prescribe measures and standards for the management and conservation of natural resources and the environment. This act provides for principles of environmental management that include;

a) to publish relevant data on environmental quality and resource use;

b) ensure that environmental awareness is treated as an integral part of all educational levels; and

c) to promote international co-operation between Uganda and other states in the field of environment.

Part VII Management of the environment

Section 52 Duty to manage and minimise waste

The National Environment Act provides for management of materials and processes that are dangerous to human health and the environment. It states that it is the duty of every person to manage any waste generated by his or her activities or the activities of those persons working under his or her direction. The waste manager should manage the waste in such a manner that he or she does not cause ill health to the person or damage to the environment. It further prevents disposal of any waste whether generated within or outside Uganda and that every person whose activities generate waste shall employ measures for the minimisation of waste through treatment, reclamation and recycling.

Section 53 Prohibition of discharge of hazardous substances, chemicals, oil etc into the environment and spiller's liability

This section states that no person shall discharge any hazardous substance, chemical, oil or a mixture containing oil in any water to other segment of the environment except in accordance with the guidelines and in consultation with the NEMA that is the lead agency.

Part VIII Control of Pollution

Section 57 Prohibition of pollution contrary to established standards

No person shall pollute or lead any other person to pollute the environment contrary to prescribed standards or guidelines, except with authorisation by a pollution licence. Notwithstanding the pollution licence, the polluter may not exceed the standards or guidelines stated in the pollution licence issued by NEMA.

Part IX Environmental Restoration Orders and Environmental Easement

Section 72 Environmental Easement

Court may grant an environmental easement over the burdened land with the objective of furthering the principles of environmental management by facilitating the conservation and enhancement of the environment set out in section 2 of this Act. This law may come into effect at a time when the project may require land for construction of various structures, for example a sludge drying bed, communal solid waste or toilet structures.

3.2.4 The National Environment Statute, 1995

The National Environment statute has provisions to ensure that the generator of waste that could pollute the environment has a legal duty to ensure that the waste generated by their actions is safely disposed off. The "Polluter Pays" principal mentioned in the statute provides that breach of this duty may lead to fines and heavy clean up costs, besides loss of reputation. The Environmental Statue also requires that certain categories of projects listed in Schedule III of the statute be subjected to EIA.

In view that the ROSA project may be involved in waste disposal activities and may be generally undertaking an activity that is out of character and scale not keeping with its surrounding and involve major changes in land, will necessitate carrying out an EIA so as to be in line with the legal requirements regarding environmental management.

3.2.5 The National Environment (Waste Management) Regulations, 1999

This regulation requires that the generator of domestic waste shall sort the waste by separating hazardous from non- hazardous waste; he/she shall dispose of the non- hazardous waste in an

environmentally sound manner in accordance to by-laws made by a competent local authority. The regulation however, requires that a person intending to transport or store waste shall apply for a license from the authority in a prescribed manner. The District Environmental Officer of the district in which the waste is intended to be disposed, shall verify as to whether the intended location of the waste is appropriate. He will also assess whether the proposed methods of disposal or transportation or waste collection schedule or storage are in accordance with sound environmental criteria after which recommend the applicant to NEMA for consideration of the grant of a licence.

The regulation furthers states that a person intending to operate a waste treatment plant or disposal site shall apply to the authority but ensure that:

- the waste treatment disposal site is at a radius of at least one thousand meters (1,000) away from a residential or commercial area and from water sources,
- the site is enclosed and secure from scavengers and that the waste treatment or disposal site has hazard and safety signs displayed at appropriate places and,
- that the facility should be operated in a way which avoids surface or ground water pollution.

3.2.6 The Water Statute 1995

This is a fundamental code for the use, protection and management of water resources. The Statute provides the basic declarations of Government and individual rights to water. It is the fundamental code for investigation, planning and management of water resources.

Section 31, subsection (1) of the Water Statute, 1995, prohibits pollution of water and states that any person commits an offence if, unless otherwise authorised under the Water Statute clauses…..(looks incomplete). It prohibits waste to come in contact with any water, or to be discharged directly or indirectly into water. Section 100, states that all rights to invest, control, protect and manage water in Uganda is vested in the Government and in Section 34 it makes it an offence to pollute or cause risks of water pollution

3.2.7 Environmental Impact Assessment Regulations, 1998

Environmental Impact Assessment (EIA) is a legal requirement and should be carried out for all proposed developments that are likely to have significant environmental impacts so that the

negative impacts can be minimized or eliminated and positive ones enhanced. The overall goal is the promotion of economic and social development that enhances environmental quality without compromising the ability of the future generations to meet their own needs.

3.2.8 National Environment Act, Cap 153 and Regulations

The National Environment Act provides the tools for environmental management and it imposes a mandatory duty on a project developer to have an environmental impact assessment conducted before embarking on a project. The Third Schedule to the Act made under section 18 of the Act specifies the types of projects to be subjected to EIA. An EIA should be conducted for planned activities that may, are likely to, or will have significant impacts on the environment. The EIA required should be appropriate to the scale and possible effects of the project, and conducted in the prescribed manner in the EIA regulations, 1998.

3.2.9 Water Act, Cap 152

The Water Act provides for the use, protection and management of water resources and supply. Promotion of the provision of a clean, safe and sufficient supply of water for domestic purposes to all persons is a major objective of the Act (section 4). The specific objectives of the Act are to promote

i) the rational management and use of waters through the introduction and application of standards and techniques,
ii) the coordination of all public and private activities that may influence water quality and quantity and
iii) to allow for the orderly development and use of water resources.

The Act gives general rights to use water that naturally exists on the land to the occupier of that land for domestic use, fire fighting or irrigating a subsistence garden. Water that exists under the land occupied may be used by the occupier with the approval of the water authority responsible for the area. The general rights to use water do not per se authorize a person to construct any works. According to section 6 of the Act, no person acquires any rights to use water or to construct or operate any works unless authorized under Part II of this Act. Water is defined to include surface waters whether contained in a river, stream, lakes, swamp or elsewhere on the surface of land, groundwater, and such water as the Minister may from time to time declare to be

water (Section 7). Thus, unless a person is an occupier of land on which surface water exists, water may not be used for any purpose without the approval of an authority. The general rights to use surface water are limited to domestic use and fire fighting once again indicating the importance attached to water supply for domestic purposes. The Act also ensures the control of water pollution and promotes the safe storage, treatment, discharge and disposal of waste, which may pollute waters or otherwise harm the environment and human health.

This Act is relevant to this study by way of safeguarding potential significant impact on water resources in the proposed project area, highlighting the priority accorded to domestic use, which is widely defined, and other regulatory requirements. It requires that activities that would result in the generation of effluent and waste water, the provisions of *The Water (Waste Discharge) Regulations, 1998* that makes provision for waste water discharge permits and related matters should be considered, in addition to the effluent discharge standards prescribed under the National Environment Act, Cap 153.

3.2.10 The National Environment (Standards for the Discharge of Effluent into Water or on Land) Regulations, 1999

The Government is well aware of the implication of pollution on the quality of water bodies and has prescribed standards that need to be met prior to discharge of any effluent into the environment to ensure sustainable development. The goal of the water quality and effluent standards is to ensure that people living in Uganda have a fundamental right to clean potable water for their health and well being and secondly to virtually eliminate toxic contaminants from municipal and industrial waste to water bodies and the land of Uganda. Similarly, provision is made in The National Environment (Waste Management) Regulations, 1999, for management of all waste, hazardous and non-hazardous, in an environmentally sound manner. The duty to manage waste in accordance with the provisions of the law is placed on the owner of an installation or premise.

3.2.11 The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000

These regulations recognize the ecological relationship among wetlands, rivers and the lakes and provides for integrated approach in the management of these ecosystems. It states that the government or local government holds in trust for the people and protect river banks and lake shores for the common good of the citizens of Uganda. It prohibits government or a local government from leasing out or otherwise alienate any river bank and lake shore. It further states that environmental impact assessment is mandatory for all major activities on riverbanks and lakeshores, and special measures are essential for protection of such areas against soil erosion, siltation and water pollution. The purpose for which is; a) to facilitate the sustainable utilization and conservation of resources on river banks and lake shores by and for the benefit of the people and community living in the area; (b) to promote the integration of wise use of resources on rivers and lakes into the local and national management of natural resources for socio-economic development. (c) to provide for the regulated public use and enjoyment of river banks and lake shores; (d) prevent siltation of rivers and lakes and control polluting or degrading activities.

These regulations allow the local governments to make byelaws, incase a wetland, riverbank or lake shore within their areas of jurisdiction are at risks from environmental degradation. The Environmental officer in such an area then ensures that the communities living near a wetland participate in its conservation and he/she assists the environment committees in implementing these regulations and any other law that protects riverbanks.

The regulations further states that all rivers shall have a protected zone of thirty meters from the highest water mark of the river after which no activities shall be permitted within these protected zones without the written authority of NEMA. In view that river Pager that crosses through the town council is currently undergoing degradation, mostly due to anthropogenic activities, the town council authority should enact byelaws that prohibit activities near the river bank and gazette off 30m of the immediate river pager area.

3.3 Institutional Arrangement

3.3.1 Ministry of Water and Environment (MW&E)

Ministry of Water and Environment is the parent ministry as far as environmental issues are concerned. The Ministry would have a lot of interests in this project since the concept of resource-orientated sanitation will reduce the health risks related to sanitation, and prevent contamination/pollution of surface and ground water pollution and promote sound environmental management.

3.3.2 National Environment Management Authority (NEMA)

NEMA is the principal institution that is responsible for overseeing and conducting all aspects of the environment and to coordinate, monitor and supervise all activities in the field of the environment. It was established by law under the *National Environment Statute, 1995* (GoU, 1995) and is under the Ministry of Water and Environment. The actual implementation of management however, remains a function of the relevant line ministries and departments, the private sector, NGOs and the general public.

3.3.3 Directorate of Water Development

The Water Statute, 1995 (GoU, 1995b) created the Directorate of Water Development, which provides for the use, protection and management of water resources and supply in Uganda. The main functions of the water body are to i) promote the rational management and use of the waters of Uganda through the introduction and application of standards and techniques, ii) coordinate all public and private activities that are likely to influence water quality and quantity and, ii) to allow for the orderly development and use of water resources including such activities as irrigation and water for industrial use.

3.3.4 Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

MAAIF is the institution responsible for the promotion of agricultural activities in the country. The Ministry ensures that correct policies to warrant sustainable farming policies are put in place and are adequately implemented. The MAAIF in collaboration with other relevant sectors ensures that household food security and healthier eating habits are promoted to improve the nutrition status of the population, with special attention to young children, pregnant and lactating

mothers. Special education and other measures are undertaken to protect the population against micronutrient deficiencies, obesity, and other nutrition related diseases.

In view that ROSA Project intends to promote the use of sanitized faeces and urine for agricultural purposes, consultation of MAAIF is very critical.

3.3.5 Ministry of Health (MoH)

Ministry of health is the ministry responsible for the overall goal of the health sector and is charged with attainment of a good standard of health for all Ugandans, thereby ensuring a healthy and productive life. One of the major key priorities being pursued by the ministry of health is improvement of water and sanitation in the communities for which the ROSA project is solely intending to address. Cooperation with this ministry in attaining objectives of ROSA is very important.

3.3.5.1 The Environmental Health Division (EHD)

The EHD is the lead division within MOH charged with the overall responsibility of promoting public health. The aim of EHD is to focus on the needs of the rural areas by addressing the increasing burden of disease resulting from poor Environmental health, particularly by placing greater emphasis on rural areas where the population has low access to safe water and poor latrine coverage. It promotes household sanitation in Uganda in addition to undertaking technical support supervision with a view of strengthening capacity amongst the environmental health workers in the districts.

3.3.7 Ministry of Education and Sport (MoES)

MoES is the ministry responsible with the promotion, provision, improvement of environmental sanitation and personal hygiene in schools. The ministry achieves this by intensifying information, education and communication of activities to improve health awareness, effect desired changes in knowledge, attitude and behaviour directed towards the prevention and control of the major health problems, and in promoting healthy lifestyles.

3.3.8 Town and Country Planning Board

The 1995, Uganda Constitution Cap 30 provides for the formation of the Town and Country Planning Board. This Board provides for the orderly and progressive development of land in towns and other rural areas of the country. It defines building operations to include the making accessible of electrical installations and development in relation to any land. Therefore, any activity related to change of land use must pass through the Town and Country Planning Board of the affected districts.

3.3.9 District Level Institutional Structure

The districts level institutional structure was created under the Local Governments Act 1997. The top administration includes the Chairman Local Council Five (LC Vs) and the Chief Administrative Officer (CAOs). The departments at the district level which are directly involved in the project as a whole are the Environment , the Medical , the Fisheries , Security, Water , Community Development , Forest , Agriculture, Education , and Engineering.

Although not all technical expertise for the proposed development may exist among the district officials, their proximity to, and knowledge of the project area facilitates their participation. The Local Councils at the village level (LC 1 and LC 11) and the villagers can be organized and mobilized for consultations so as to establish good co-operative arrangements so as to enable the smooth operation and maintenance the facilities.

3.3.10 Private Sector and Civil Society Institutions

Interested private sector, institutions and NGOs are also encouraged to participate in any water and sanitation related activities. Some of these are or have already been involved in water and sanitation related activities and social community development work. The private sector and civil society institutions therefore have relevant experiences in the districts and can play an important role in providing information or indirectly participate or promoting the studies, in particular those related to social, health and educational issues.

As a whole, Kitgum district has a number of NGOs that are working in water and sanitation; these include CARITUS, UNICEF, ICRC, World Vision, MSF, OXFAM, AMREF, IRC, AVIS and LWF. Most of these NGOs have specifically work in IDPs including Labujje IDP that is

located in the town council area. The NGOs that have however, worked in Labujje IDP are UNICEF, IRC, AMREF, CARITUS and World vision (Table 1). For instance during the cholera outbreak in the district (2006), UNICEF sensitised the masses, supplied them with slabs for latrine construction and distributed chlorine powder for household drinking water disinfections. Currently, UNICEF is drilling 24 boreholes in all the seven parishes within the town.

Table 1: NGOs working on water and sanitation within the Town council areas

NGO	Activities done	Up coming activities
IRC	• Trained one Hygiene Promotion Monitor who in turn trained 16 Community Health Workers • Provided the IDPs with slabs and door shutters for latrine construction • Drilled Bore holes and motorised one • Sensitised the community on cholera and other sanitation related diseases	- Organised Hygiene promotion competition in which the best 50HHs and cleanest block shall be awarded prizes. - Plan to carry out continuous sensitisation on diarrhoeal diseases.
CARITAS	• Trained one Hygiene Promotion Monitor who in turn trained 12 Community Health Workers to carry out community sanitation on hygiene and sanitation.	
WORLD VISION	• Trained one Hygiene Promotion Monitor who in turn trained 10 Community Health Workers. • Casted about 300 slabs for latrine construction	

N.B: Currently, it's only IRC working in the Labujje IDP, whereas World Vision is decongesting the IDP and Caritas has ended their programmes.

CHAPTER FOUR - METHODOLOGY

4.1 Objectives

A baseline survey is one, which is designed to establish initial conditions against which the effects of a finished project can be compared (Online dictionary). A baseline survey was carried out in Kitgum Town Council, by the ROSA- Uganda team. The objectives of the baseline study were to collect various data types including technical, social and economic sanitation practices, to have an understanding of the institutional set-up and socio-economic dynamics, and to assess the sanitation situation in Kitgum Town council. This information will eventually be used in the development of a Strategic Sanitation and Waste Plan (SSWP) for the Town council as well as to facilitate the choice of an area of implementation for resource oriented sanitation options. The various data types of interest included:

- Existing sanitation systems used at household and public levels,
- Operation and maintenance of the sanitation systems,
- Available water sources and how they are utilized in KTC,
- Mode of solid waste management,
- Communities' views on the different type of facilities in place,
- Communities' knowledge of Ecosan and their opinions of it,
- The Socio-economic status of the local people,
- The laws and regulations concerning the activities of ROSA project,
- Capture the problems faced by the locals regarding sanitation,
- Grey water and storm water management,
- Farming techniques used in the TC, the problems faced by farmers, and
- The institutional setup and framework of the Town council.

The Baseline survey was comprised of preparation and actual field work activities. The preparation phase included a desk study of what a base line is, the components involved, working out a list of all the stakeholders involved, the required data and the sample space to be considered. Fieldwork, on the other hand involved the actual data collection from households, key informants from the Town council leaders, institution heads, service providers and country

records. More data was also collected through direct observations, and mapping techniques like geo-referencing. Details of these activities are elaborated in the subsequent sections.

4.2 Preparation

In the preparation phase, an initial detailed study of what a baseline survey is and its purpose was done by the ROSA staff. A trip was then made by the team to Kitgum so as to have a good introduction to the local circumstances. Basic information such as spatial orientation in the study area, settlement structure and the existing road and path networks was necessary to give a better understanding of the data to be collected. This was also done in order come up with practical ways of collecting information. Following from the aforementioned,

- A desk study on the various methods of collecting data was done and discussed in details. The methods applicable to KTC were then agreed on.
- A desk study of each of the agreed methods of data collection was done.
- Household and key informant questionnaires as well as household checklists were then drafted. The questionnaires were aimed at collecting information such as; Background characteristics of the people, location of houses, income factors, sanitation options known of and those used, people's feelings about these options, water coverage, and usage, solid waste management, grey water and storm water management and farming practices as well as possible solutions and their feelings on waste recycling to use in the gardens. The checklists on the other hand were aimed at assessing the general cleanliness of the homes and hence were designed in such a way that the person administering should be able to do a lot of observation in the home and less questioning.
- A Focus Group Discussion (FGD) guide was developed. The focus group discussion was meant to target small groups of people, service providers, and beneficiaries of the different sanitation facilities in the Town Council (TC). In this guide, a FGD was defined, the steps taken in carrying out an FGD outlined, expected out comes and the dos and the don'ts of a FGD were clearly stated. In an attempt to put KTC into context, guiding questions for the various groups of people were documented. This tool was used to target community health workers, caretakers of public facilities, market vendors, institution

heads, policy makers (Mayor, town clerk, health inspectors, environmental officers, Local council leaders, disabled people and the elderly.

- A semi structured interview guide was also developed to enable the team to get information about the ownership, operation and maintenance of the public sanitation facilities. The targeted people included owners of public sanitation facilities, service providers of all the public sanitation facilities, cesspool emptiers, operators and caretakers of public sanitation facilities, and users of public sanitation facilities.
- 20 questionnaires and 20 checklists were tested in eight randomly selected villages, so as to check for the practicability of the questionnaires and establish whether there is any repetition or missing questions. These were later edited to come up with the final questionnaires and checklists (Appendix 1 & 2) that were administered.

4.3 Field work

KTC is divided into 7 parishes and 34 villages. The fieldwork was carried out in all the parishes and villages.

4.3.1 Local Community maps

The first activity of fieldwork was the community based mapping. This was done with the help of the Local council and a few local people. It was necessary for the team to become confident with the study area and to get an overview of the local circumstances, the major properties of the different settlements and the large technical systems. These maps showed the main road network in each village, the institutions, households with dry toilets, important sanitation features like water points, public toilets, solid waste damping sites and any other features that were important in the village. Movement through the villages was made easier with the help of these maps, and must visit homes (those with dry toilets) were marked.

4.3.2 Questionnaires

Using questionnaires, 400 randomly selected households in KTC were interviewed by eight members of the ROSA team. The villages and percentages of questionnaires administered are shown in

Table 2.

Table 2: Percentages of questionnaires administered in each village.

Village	Percentage of households
Alango East	5.03
Alango West	7.60
Apollo Grounds	6.00
Awuch	7.54
Ayul A	7.50
Ayul B	7.00
Central	7.82
East Village A	4.00
East Village B	5.00
East Ward A	6.42
Gand dyang	3.07
Langa Langa	7.26
Nyikinyiki	4.47
Pandwong	5.00
Police	3.00
Prisons	4.00
Tangi agoro	2.79
Pager	4.00
Achute men	2.50

The situation at household level is one main key for judging the functioning and potential for improvement or upgrading of any technical system. (Sterkele and Zurbrugg, 2003). Since the households are producers of human excreta, solid waste and wastewater, decisions on how to handle wastes are taken here. One of the principles of the Household Centred Environmental Sanitation approach, which is applicable to the ROSA project, is to respond to the household needs and priorities. It was there fore important to establish these needs by visiting the households in the TC. The ROSA team administered the questionnaires.

Questions concerning source of income and actual income were often not answered or false answers given because the people thought that only the poor will be attended to when it comes to the implementation, and hence preferred income to be a mystery. In some interview situations one had the impression that the respondent felt embarrassed that he did not know a proper answer and the atmosphere was similar to the one in a school examination. This forced some of the respondents to give false answers in an attempt to impress the interviewer. Nevertheless most of the answers received are a true reflection of what is taking place in the households and is therefore considered important information.

4.3.3 Checklists

400 randomly selected households were visited using the checklists. The villages with very high density of housing were chosen since it was decided that administering the checklists in this areas would be easier than the questionnaires. The villages and percentages of checklists administered are shown in Table 3.

Table 3: Percentages of checklists administered in each village.

Village	Percentage
1st Jenge	5.6
Bardege	14.9
West land	14.0
Lamit Lapim north	12.0
Lamit Lapim South	9.7
Lemobongolewie East	7.0
Lemobongolewie South	6.5
Cam cam	15.1
Ginnery	5.2
Lilojo	5.0
Oryang ojuma	5.0

The checklist was used to get a quick assessment of the sanitation situation, have a feel of the income rates and sources of the people, to determine the average number of people in the households, as well as the water sources and their accessibility. The checklist required the interviewer to do a lot of observation even after an answer had been given. For example, if the respondent said that she had a clean kitchen, the interviewer would be required to go ahead and look at the kitchen. Many of the questions did not even require actual questioning of the people but just simple observation of what was available in the homestead. The background characteristics of the households where the questionnaires and checklists were administered are shown in Appendix 2, Table III.

4.3.4 Focus Group Discussions

The main purpose of the FGDs was to establish the knowledge of participants on various sanitation options more specifically ecological sanitation. In addition, it was a forum used to determine views of participants on resource reuse and to find out the opportunities and challenges faced in promoting sanitation facilities that incorporate resource reuse. to discuss with

the participants what they thought about their current sanitation situation and what they think can be done to better their situation.

A list of people meant to participate in the different discussion groups was made and letters of invitation sent out. Those involved were elderly people, disabled people, women (specifically because they spend more time at home and are more familiar with sanitation facilities), farmers, health inspectors, local council leaders, caretakers of public sanitation facilities, contractors of sanitation facilities, Policy makers/ Regulators (the Mayor, Town Clerk), Environmental Officer, Strategic Planner, Town Engineer, Water Officer, Secretary for Health, District Agricultural Officer, NGO Representatives, market vendors and bus park operators

A total of 8 FGDs were carried out in the Kitgum Town Council main hall, each discussion taking about 4 hours. Care was taken to ensure that the groups were not from the same village or area so as to allow them to participate freely and also to have diverse information from the TC.

Each FGD consisted of six to twelve participants, a moderator and *repertoire*. An introduction about ROSA project and its activities was presented to the participants. Following this, the participants were given guiding questions to stimulate discussion. The FGD was divided into four parts, namely;

Introduction –This was time given to the facilitator to welcome the group, introduce the purpose and context of the focus group, explain what a focus group is and how it will flow, and make all the necessary introductions.

Rapport building stage – In this stage, the easily answered questions for example "what kind of sanitation facility do you have at home?" e.t.c were asked to encourage participants to begin talking and sharing.

In-depth Discussion – This was seen as the most important stage in which the moderator focused on the main questions in the topic guide, encouraging conversation that revealed the participants' feelings and thoughts. Care was taken to ensure that not only one person dominated the FGD but that all members of the group participated.

Closure –The closing section wrapped up the focus group. This included thanking the participants, giving them an opportunity and avenue for further input, informing them how the data will be used.

Categories and number of focus group discussions to be conducted

No.	Category	Time	
		Morning	Afternoon
1.	Hygiene promoters, Caretakers, latrine builders, empters	✓	
2.	Group of households (neighborhood level)	✓	
3.	Users of shared facilities	✓	
4.	Health workers, Local lower level leaders (LC I,II; parish leaders	✓	
5.	Local small scale enterprises in WS & San, Markets, vendors, bus park, car park		✓
6.	Utility providers (water supply)		✓
7.	Farmers		✓
8.	Special interest groups (old, disabled, children)		✓
9.	Regulators at Town Council level, Local higher level leaders (mayor, LC V representative)	✓	
10.	Institutions (schools, churches, hospitals, health centers, mosques, hotels)	✓	

4.3.5 Semi structured interviews

Semi structured interviews focused on persons using or directly involved in the use, operation and maintenance of public sanitation facilities. These included the users, cesspool emptiers, public sanitation facility caretakers and owners of public sanitation facilities. It was deemed necessary to meet these persons since they know best about details of the installations, operation as well as temporary and seasonal challenges faced regarding the facilities. These interviews were conducted at the places of work of the different people of interest (that is, where the facility is situated or where the users of the facilities were).

Direct observation, inspections, picture taking of these facilities was concurrently done to expound on the interview. At some instances, neighbouring communities were also interviewed to ascertain the status of a given facility e.g. dumping sites, cesspool emptying sites e.t.c

4.3.6 Interviews with key informants

Interviews with key persons is not only a powerful tool to get detailed information about the system but also helps to understand and get to know the stakeholders, their intentions, motivations and the involved decision-making processes. Understanding the decision-making processes is an essential step in order to eventually recommend feasible suggestions for improvement.

Questionnaires were availed to only a specific category of people (authorities) who were technically informed and mandated with the required information. These were statistical and or fact finding interviews. The key informants contacted were; the environment officer, urban strategic planner, urban water officer, urban health inspector, town engineer and farm manager-Agricultural Research and Development Centre (ARDC) formerly DFI (District Farm Institute). Since ROSA is working with Kitgum Town Council, it was possible to get information from most of the officials, since the team was identified as KTC employees. It was however important to explain what ROSA is planning to do before administering the tool. All the interviewed officials were cooperative and willing to provide any information asked for.

4.3.7 Laws and regulation collection

National laws and regulations concerning water, sanitation, reuse of wastes, solid waste management were reviewed and those relevant to the project were documented. Details of these laws and regulations are found in chapter three of this document.

4.3.8 Town wide collection of data

It was necessary to collect information that could not be obtained from interviews and observations, for example, geology, hydrogeology, topography, hydro met data (climate, precipitation, temperature) e.t.c. Collection of this information was done by reviewing the KTC three year development plan, the Kitgum District five years development plan, holding interviews with KTC strategic planner, Kitgum District Water, Environment and Agricultural Officers, Urban Water Department Chairman, Kitgum District Land Board and Urban Water Officer. The climatic data from Kitgum District meteorological station at DFI and past reports on Kitgum Town Council were also reviewed.

4.3.9 Geo-referencing of key features

GPS readings for the different water and sanitation facilities of interest like public toilets, ecosan toilets, pit latrines and water supply points were taken.

4.4 Data Analysis

Data from questionnaires and checklists was analyzed using EPI info

CHAPTER FIVE - GEOGRAPHIC AND DEMOGRAPHIC CHARACTERISTICS OF KITGUM TOWN COUNCIL

5.1 Geographical Location of Kitgum Town Council

Kitgum town council is the district headquarter and commercial centre of Kitgum district. It is located in Chua County and bordered by Sub Counties of Labongo and Layamo in the North and West and, Labongo and Amida in the East and South respectively. Figure 4 shows the map of Kitgum Town Council (3.5º N, 32.53º E), which is located about 105km North East of Gulu town and covers an approximate area of 30km^{2}with an altitude of 937meters above sea level. The land consists of gentle sloping plains rising to two hills of Hilltop and Guu.

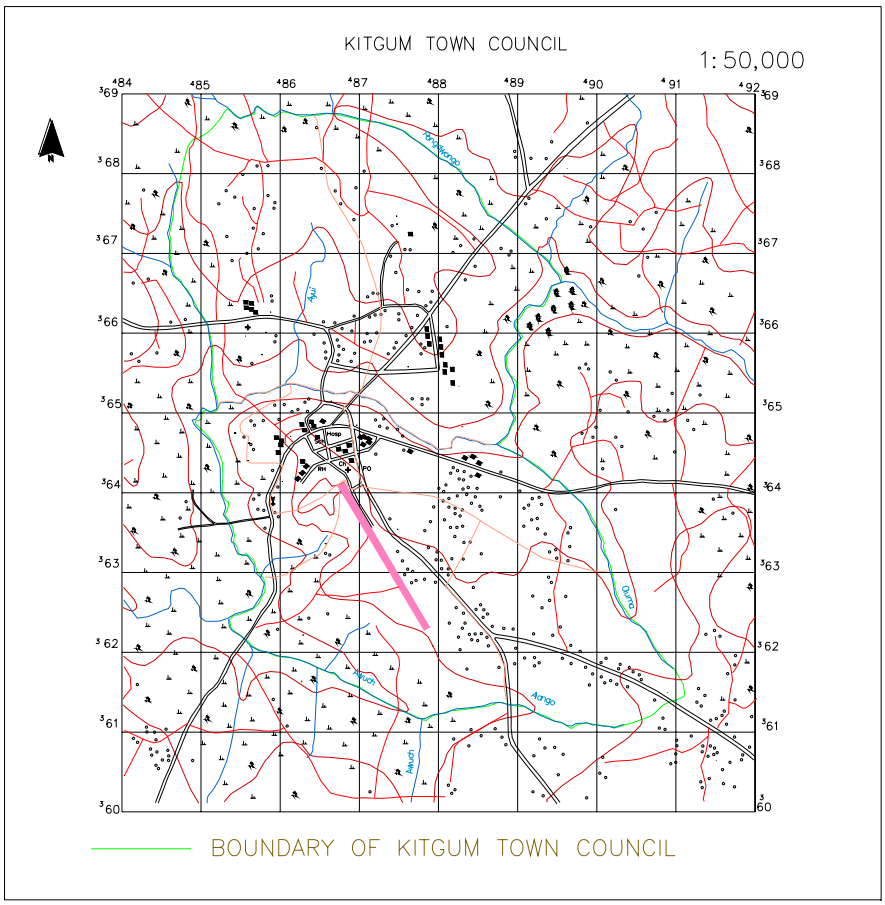

Figure 4: Map of Kitgum Town Council

5.2 Climate

Kitgum district experiences two marked rainy seasons from March to June and August to November (with peaks in April and August) and always strongly dry-hot and windy from December to mid March. The district receives an average annual rainfall of 1330mm with annual maximum and minimum temperatures of 31.8 ºC and 17.3 ºC respectively, giving a mean annual temperature of 24.6 ºC.

5.3 Soil conditions

In general the soil types are well-drained sandy loam with patches of clayish loam, this however, is not uniform but varies from place to place. The soils are clayish loam along rivers and streams and sandy-loams in Guu, Pongdwongo, Pandwong and Pager Parishes. The soils are relatively suitable for agriculture though due to continuous cultivation, poor soil conservation and agricultural practices, the soils have been degraded and therefore lost fertility as evidenced by the poor crop yields (also see section 5.4).

5.4 Environment

Currently there is a great and increasing concern of environmental degradation in KTC. The rate at which the beautiful, clean, healthy and productive surroundings are getting destroyed especially in areas around IDPs is appalling. An evaluation of the agricultural crop yields indicate evidence of soil degradation and crop harvests of millet, maize, sorghum, cassava etc have greatly deteriorated in the recent years.

Wetlands are one of those invaluable resources that have been greatly affected due to the increased population, cultivation, construction, solid waste dumping, grazing animals and burning during dry season. Deforestation has increased over the years, for reasons of having to obtain timber for wood fuel, charcoal, building poles especially around IDP camps and Town Council. Currently, getting firewood in the IDP camps and town as a whole is becoming more and more difficult, with several families having to walk several kilometres in search of fuel wood and timber for construction of houses. Poor solid waste management is also one of the major

problems within the KTC, due to the increasing population and animals. This has resulted in a smelly and dirty environment all over the town.

5.5 Water resources

Just like Uganda, Kitgum district is well endowed with water resources (ground and surface water). The surface waters include River Aswa to the west, Rivers Lamwo and Agoro mountain ranges to the northeast. Rivers Agoro and Lamwo, which have rich volcanic soil, extend to the Southern Sudan. Most rivers, which flow through Kitgum, are seasonal tributaries to the River Nile and these include Aswa, which runs through the border with Gulu district; Pager in the heart of Kitgum Town; Aringa to the east and other smaller streams.

River Pager is the major surface water resource within the KTC with several tributaries for example Alango, Itt okello, Auch, Pongdwongo, Bungaladyel, Abongonyara, Akweko and Ojuma. As a result of the insurgency, river Pager catchment area has undergone degradation in the recent years. The riverbank has for along time been used as a solid waste dumping site, cleared for settlements, and cultivated for crop growing. These activities have therefore resulted into severe soil erosion, sedimentation, which, has greatly lead to deterioration of the quality and reduced the quantity of the river (Plate 3).

Plate 3: R. Pager Left - with reduced water quantity, Right - poor water quality and reduced quantities

5.6 Geology and Hydrogeology information

The geology in Uganda is best considered in the context of the broader features of East and Central Africa. Rocks within this area range in age from the Archaean (over two billion years old) to present. Uganda lies on the African Plate, which is possibly the largest area of continental

crust. This plate consists of accretion of small cratons welded together by mobile belts. The intense folding and metamorphism found in the mobile belts often involves the fringes of the cratons, ages of some rocks forming some cratons have been found to be over 2.5 billion years.

Uganda was eroded into a flat, peneplain in late Precambrian time characterized by great disruptions of the rift faulting that started in the Tertiary period and continues to recent times. Outliers of flat-bedded sediments occur upon this ancient surface. Much fundamental geological work in recent years has clarified the broader features of the Pre-cambrian rocks of central Africa but much remains to be done especially in the north of Uganda where geological observations are hampered by combination of lack of outcrop, deep weathering, and dense vegetation.

Information on the hydrogeology of Kitgum town council is not yet presently available from the water resources management department, Entebbe, however, observations from the baseline study (Table 4) revealed the following that may gives and impression of the nature of the hydrogeology in the seven parishes.

Table 4: Hydro-geological information of Kitgum Town Council as observed by the ROSA team

Parish	*Description of the hydrogeology*
Pandwong	- Part of it e.g. Acutomer in Auch Village is very rocky with low water table. - Acutomer is also hilly. - The rocky nature greatly hampers sinking of pits for latrine construction. As a result a couple of homes do not have decent places for defecation.
Alango	- Relatively flat - Not rocky, pit latrines go as far as 30m deep - Low water table
Guu	- The entire parish share a common characteristic; it has a high water table making construction of pit latrines difficult. - Pits sunk at 7ft usually reach the water table. Discussion with a few people revealed that people either sink shallow pits or very deep so that the faecal content are sacked away by groundwater during dry seasons. - East Ward A which lies along river Pager is the most affected as result most people resort to open defecation at the river bank.
Town	- Relatively flat except part of Langa langa village which is on a hill called Hill top. - Part of Langa langa on the Hill top has Very low water table so no difficulty in sinking pitlatrines.
Pager	- Two villages (Lamit Kapim North and South) have very high water tables also hindering latrine construction. - Part of Ayul B in particular a place called Ogwal wor has high water table. This place borders river Pager north of the town area.
Pongdwongo	- With the exception of Parabongo in Nyiki nyiki village which is a bit rocky with high water table, the rest of the villages are relatively flat, not rocky etc.
West land	- Nearly the whole of West village in this parish has high water table because it borders river Pager.

5.7 Vegetation

Kitgum is generally a Savannah woodland characterized by woody covers and grass layers. The woodland becomes sparse northwards. The most common types of grasses are *Hypanthernia sp, Penicum sp, Brachania sp.* The dominate tree sp include *Seteria sp and Accasia cambrelium.* The trees normally shade off their leaves during the dry season. However, the prolonged 20 years insurgency has resulted into population influx to the town areas coupled with the fast rate of town development, thus most of the natural vegetation has been destroyed for settlement, fuel wood, agriculture and other activities and/ or replaced with artificial vegetations. The common artificial tree species in the town council area are, *Caliandra sp, Leucena sp, Eucalyptus sp,* Neem, Mvule, Musisi, Umbrella trees, Ever green, Mangoes, Oranges, Pawpaw and others.

5.8 Population distribution and dynamics

According to the 2002 population and Housing census, Kitgum town council had a population of 42,493 people according to the Wards (Parishes) population sizes (Appendix 2, Table 1). In May 2006 another census was conducted and the results as per gender and parishes were as seen in Table 5.

Table 5: The population of Kitgum Town Council by parishes Source; Population and housing census conducted by UBOS (2002)

Ward	No. of Villages	No. of Households	Population
Town	3	907	5,445
Guu	4	1,265	7,317
Alango	4	540	2,994
Pager	4	1,050	6,040
Pongdwongo	5	1,067	6,809
Pandwong	4	999	6,060
Westland	4	1,400	7.828
Total	**28**	**7,228**	**42,493**

CHAPTER SIX - SOCIAL ECONOMIC SITUATION

6.1 Political situation

Northern Uganda is in the grip of what may be the world's most serious protection crisis. The insurgency in the region is a war in which civilians have become the principle strategic targets, victims of violence, the field upon which the conflict is fought, and through which victory is being sought (CSOPNU, 2004). Sustained attacks by the LRA in the mid-1990s forced the bulk of the ethnic Acholi population to flee their homes in the northern districts of Gulu, and Kitgum (IRIN Reuter, 2005). When the rebels were attacked from their base in Sudan at Imatong hill, they vented their wrath on the civilian population – sharply escalating attacks on villages and trading centres, killing hundreds of civilians and kidnapping thousands of children. A number of rebel movements and other related activities including cattle rustling in 1986/87 have contributed to the insurgency in Northern Uganda hence disrupting livelihoods, abducting children and adults, burning and looting homesteads, causing death, IDP and refugees (OCHA, 1998 and Ministry of Finance, Economic Planning and Development, 2001).

The situation in northern Uganda worsened in 2003 with the LRA expanding to the southeast, away from its traditional area of attack in the Acholi districts of Kitgum, Gulu and Pader, and into Lira and Apac, and launched a series of attacks on civilians in the five districts of the Teso region from June 2003. The attacks in Teso in particular caught both the UPDF army and the local population totally by surprise (IRIN Reuter, 2005). The United Nations Office for Coordination of Humanitarian Affairs (OCHA, 2004) estimates that the number of internally displaced persons (IDPs) fleeing LRA terror rose from around 800,000 to at least 1.2 million. Most of the IDPs live in squalid makeshift camps, or "protected villages". Populated largely by malnourished children, the camps lack adequate food or water, sanitation is nonexistent and there's no medicine. The risk of being attacked still prevents people from cultivating the fertile land around the camps, whose residents consequently have to rely almost entirely on World Food Programme hand-outs (WFP, 2004). The year 2003 also witnessed a record increase in the number of child abductions. It is estimated that about 8,500 children were abducted by the rebels in 2002 and most have not been seen since then (United Nations Children's Fund, 2003).

Most obviously and seriously, the LRA have threatened civilians with a brutal cocktail of psychological violence, physical violence and coercion that has consumed everyday life. Every moment of their daily lives has been touched by the fear of attack; every action taken has become governed by the ever-present threats of murder and abduction. Thousands have been killed, thousands more have been abducted, in attacks on civilians which constitute a serious breach of the major articles of international humanitarian and human rights law. These threats have also caused thousands of civilians to seek refuge in IDP camps and in night-dweller centres across the region, and have contributed to the collapse of the livelihoods system in northern Uganda.

Many people living in villages and outside the towns in Kitgum have had to send their children to sleep in shelters in the town at night, for fear of them being abducted by rebels. This has resulted in thousands of children commuting daily between the night shelters where they sleep and their homes and schools where they spend the days. In May 2004 it was estimated Kitgum had twenty thousand (20,000) night commuters. In some cases children were accompanied by their mothers, while in most cases they travelled alone, often covering many miles on foot each day. (IRIN Reuter, 2005).

During the peak of the war (from 2002 and 2004), there were massive attacks of the nearby villages by the LRA that led to a great influx of people into the town area. As a result an IDP Camp –Labuje was created within Kitgum Town Council and many people who came from far and did not have their relatives within town settled in the camp, but those who had relatives in town settled with them. Most of the people who settled at the peri urban areas of the town would either move and sleep at the verandahs in town, or go to sleep at night commuters' shelters or churches, schools and hospitals.

At the time of undertaking the baseline study, the situation was quite calm as a result of the Juba peace talks, some people have already started moving out of the main camp to smaller settlement areas. Those who had settled in the dense peri urban areas are also moving back to gazetted decongestion areas where they can have access to their land.

Juba Peace Talks

Currently, there are on going peace talks between the Government of Uganda (GoU) and the Lord's Resistance Army (LRA), an opportunity in over a decade to end the twenty-year war in northern Uganda. Since the end of 2006, the Government of South Sudan (GoSS), by its own initiative, has offered to mediate and host these talks. The involvement of such a strategic third party mediator, coupled with the apparent openness of the LRA and GoU to end the war, and mounting pressure on all parties to resolve the conflict, gives this process serious potential to succeed in both ending active violence and providing a framework to address deeper social and political grievances (Quaranto and Poffenberger, 2006) .

The foundation for the Juba peace talks began with an ultimatum issued by Sudan's First Vice President Salva Kiir to the LRA as early as September 2005 in which he presented three options for the rebel group: engage peace talks, leave southern Sudan, or face military confrontation. In December 2006, the LRA accepted an offer by the GoSS to mediate peace talks. In the early months of 2006, traditional leaders, including Acholi Paramount Chief Rwot Acana II, traveled to Juba to discuss prospects for this peace initiative. In March 2006, the GoSS and LRA had reached an agreement on three points: that the GoSS would provide honest mediation for negotiations, that LRA hostilities in southern Sudan would cease, and that LRA fighters would leave Sudan if negotiations failed. Kiir made these points public to the Ugandan President, Mr. Museveni, setting in motion the events of the last two months to initiate the peace talks presently taking place.

The war has become an increasing liability to the reputation of the GoU. Northern leaders have united their voices and increased pressure. The crisis in northern Uganda has become an embarrassment for the government and a stain on its once exalted reputation with the West. With Museveni's repeal of term limits to win a third term in elections, his regime has suffered a significant fall from grace, and currently enjoys only cautious support from donor countries. Ending the war would redeem President Museveni's image abroad, especially if it were accomplished before the 2007 British Commonwealth meeting to be held in Uganda. As the GoU has not secured permission to enter DR Congo because of past illegal incursions, they

have to accept other means to end the war, namely these talks. Moreover, the GoU has sought a strong diplomatic and trading partnership with the GoSS; ill will in these talks could jeopardize that relationship with regional economic and security implications. With the rise of the GoSS, potential secession of northern Uganda to a state with southern Sudan raises additional concerns for the national government and provides another incentive to engage the Juba process in full (Quaranto and Poffenberger, 2006*)*

In view of the aforementioned, the return of relative peace to the region has resulted in at least 100,000 internally displaced persons (IDPs) returning to their villages since the Ugandan government kicked off its resettlement scheme in the war-ravaged north last month. .

6.2 Administrative aspects

The administrative organization of KTC is based on the already established Local Council (LC) Government structure. The TC is at the Local Council III level. The Town Council is divided into 11 Wards/parishes, all of which are at LCII levels. These Wards/parishes are then sub-divided into villages, which are at the level of LCI. The political leader is the TC Mayor and the Town Clerk is the Chief Executive Officer who heads the technical wing. The political leadership includes the Mayor, Deputy Mayor and Local Council representatives (LC III). The technical leadership includes the Town Clerk, Deputy Town Clerk and Heads of Department (Finance, Health, Education, Community, Works, Social Services, and Environment)

6.3 Employment types and Income sources

Employment or being able to have a source of income is necessary for the survival of any community. On average, 33.24% of the population have no one employed in their household, 40.2% have one person employed. The remaining households (26.56%) have an average of 4 people employed. The majority of the employed people are men. Figure 5 shows the proportion of men and women employed in the households.

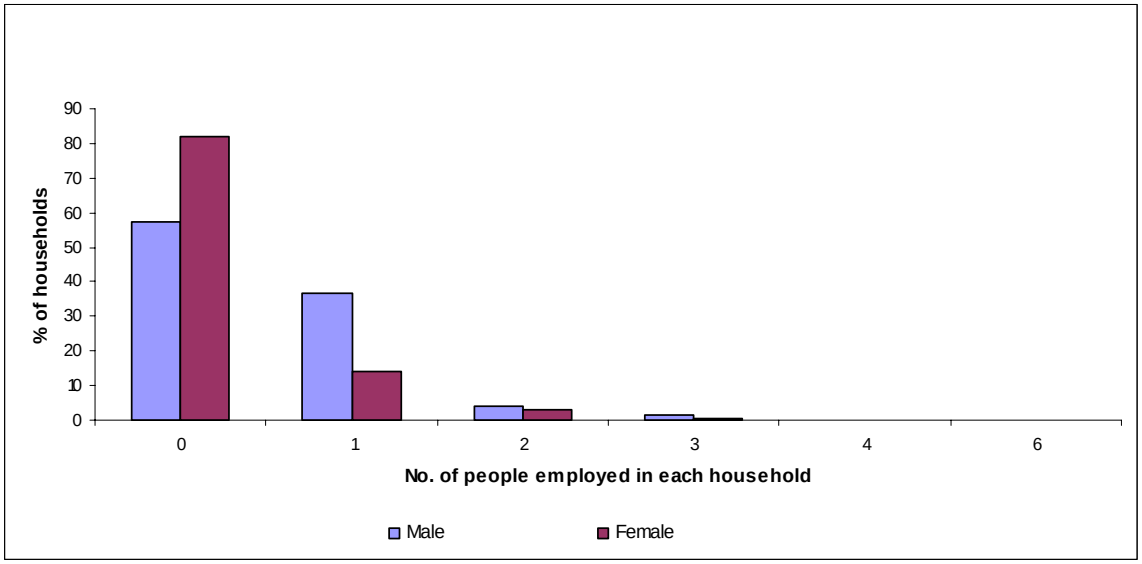

Figure 5: Proportion of men and women employed

In the villages of 1st Jenge, Bardege, Westland, Lamit Lamit Lapim north, Lamit Lapim South, Lemobongolewie East, Oryang ojuma, Cam cam, Ginnery and Lilojo Lemobongolewie South, more than 90% of the adults have no employment at all. The situation gets better as one moves to Apollo grounds, East village B, Tangi agoro and Alango East where the percentage of the unemployed people is about 75%. In central, Police and Apollo grounds, it was found that there is at least one person employed in each household. The majority of the employed people (56.07%) are civil servants, 36% work in the private sector while the rest are peasants or work as casual labourers.

In view of the employment statistics, a question arises "how do the majority of the people survive in the town council without employment?" It was however noted that 62.3% of the households have some form of income. The percentages of households with specified alternative sources of income are presented in Figure 6. From the graph, it is evident that 37% own small-scale businesses, which include shops, kiosks, brewing alcohol, operating workshops, and market vending. From these activities, the people are able to afford their basic needs.

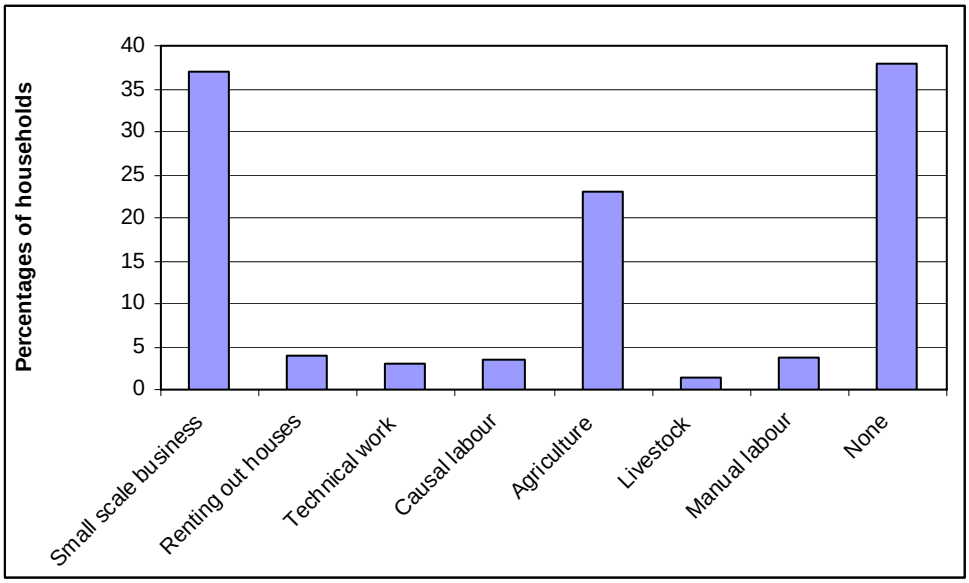

Figure 6: Other sources of income present in the TC

From the survey, it was found that the majority of the people earn less than 5000/= per month (details on Figure 7). The income rates vary from one village to another, for example, 81.5% of the people in Lamit lapim North earn less than 5000/= as compared to Apollo grounds where none of the people earn that kind of money. Details of the percentages in each village that earn different amounts of money are shown in Table II found Appendix 2.

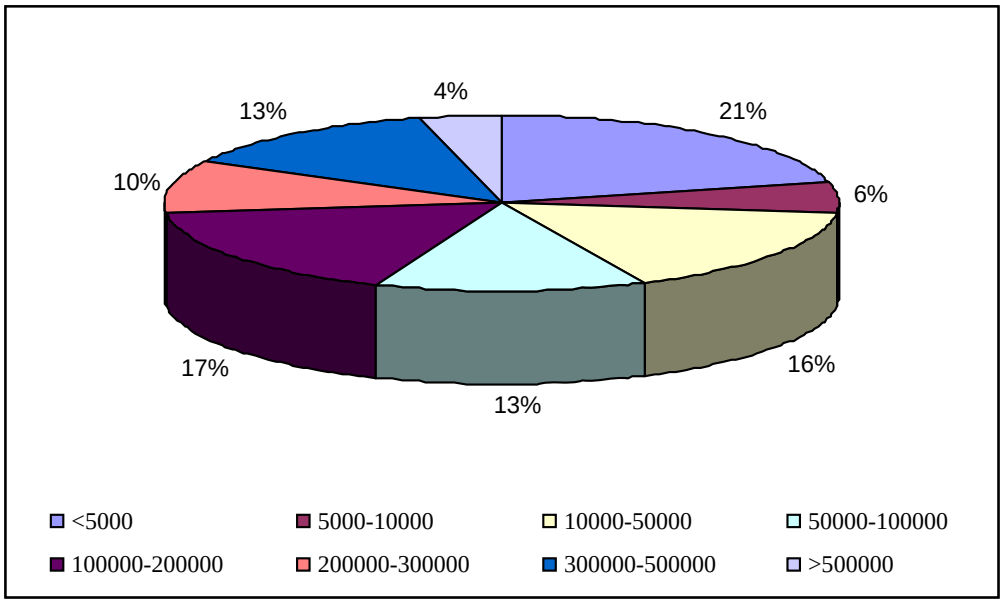

Figure 7: The income rates of the population

The amount of income in the homesteads can be reflected in the types of houses in the different villages. 42.31% of the households were grass thatched 37.45%, had iron sheet roofing but were not plastered, 17.35% of the houses were plastered, and the rest (2.89%) were storeyed and bungalow types of houses. Regarding ownership of the houses, 67.6% of the population lives in their own houses while the remaining 32.4% rent houses. The housing types were grouped into 3 categories namely; permanent, semi permanent and temporary houses (Figure 8). Permanent houses are usually brick and cement houses with iron or tile roofs, semi permanent are built with mud and wattle but are plastered and roofed with iron sheets, while temporary houses are mud and wattle houses mainly with grass thatch.

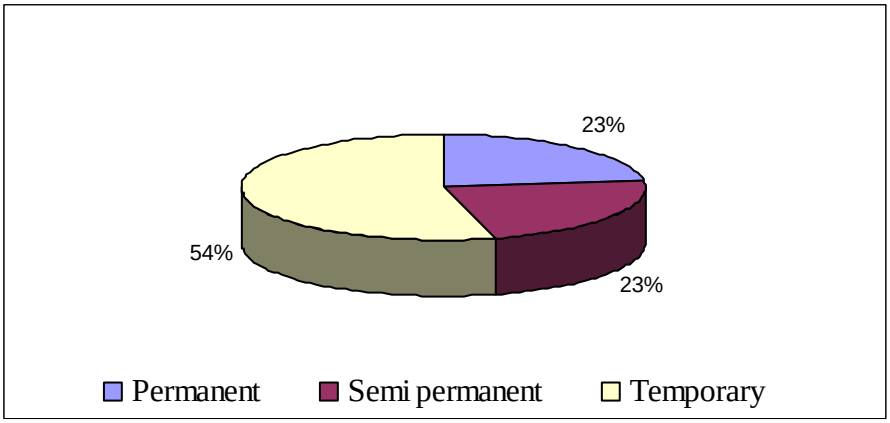

Figure 8: Percentages of the different types of housing in the TC

6.4 Life styles of the people

From the survey, it was found that the average number of people living in each homestead is 6 people. During the survey, women were mostly found at home since most men had gone to work during the day, no wonder 41.97% of the people interviewed wives to the heads of the homes, 36.34% were heads of the families, 10.4% were children in the homes while the rest were relatives and housekeepers. Majority of the women stay home to look after the homes and children. This was confirmed by the results shown in Figure 6, which indicate that the majority of the people employed are men.

Many of the people interviewed (53.1%) have lived in their houses for over 10 years indicating a level of permanence in the area.

6.5 Forms of entertainments

There are a number of ways in which the people of KTC entertain them selves during their free time. These include; games and sports; leagues- Kids league, Peace league, Inter schools and sub county leagues, and competition amongst KTC teams. The games include; foot ball, netball, volleyball, badminton, bicycle races, athletics e.t.c. Playing board games like draft, chess, and pool table is also a common practice of men and youth in the TC. Watching sensitization dramas mainly organized by NGOs, watching traditional dances (Larakaraka, Bwola, Otole, Apiti and others) is common pass time for both women and men. The youth resort to attending disco shows and watching movies in the local cinemas. There are however, activities that are shared by women men and youth, like drinking alcohol at different joints after work and on week ends as well as watching football matches on DSTV.

6.6 Education systems and levels attained

KTC has 10 nursery schools, 17 primary schools, 11 secondary school and 7 tertiary institutions. The primary schools have a total enrolment of 16015. Of these, 9544 are girls while 7471 are boys. This is contrary to the traditional belief that girls should not be educated. For secondary schools, a total of 3859 students are enrolled out of which 67% are boys. From these, it can be seen that there are more boys than girls in secondary school. This could probably be as a result of lack of enough money for secondary education, many girls getting married at a tender age, and preference of the parents to educate the boys rather than the girls. The survey also discovered that of the households with children, 81.9% of them go to school (primary, secondary or tertiary) while 18.1% cannot afford to take their children to school.

The tertiary institutions found in KTC are Child Care International Junior Technical, Kitgum Technical Institute, Kitgum Core Primary Teachers college, Kitgum Tailoring School, Challenge vocational school, Dragon Art and design Vocational Training school and Ellite driving school.

The displacement of tens of thousands of people by war had led to the closure of several schools, while many classrooms were destroyed. As a result, teachers were reluctant to serve in some parts of the district creating a shortage of staff in many areas of the district. As a result, there has been a poor performance by the TC students, in the national examinations. The study revealed

that 26% of the respondents had completed the Ordinary level stage. Figure 9 further illustrates the percentages of people that have attained the different levels of education.

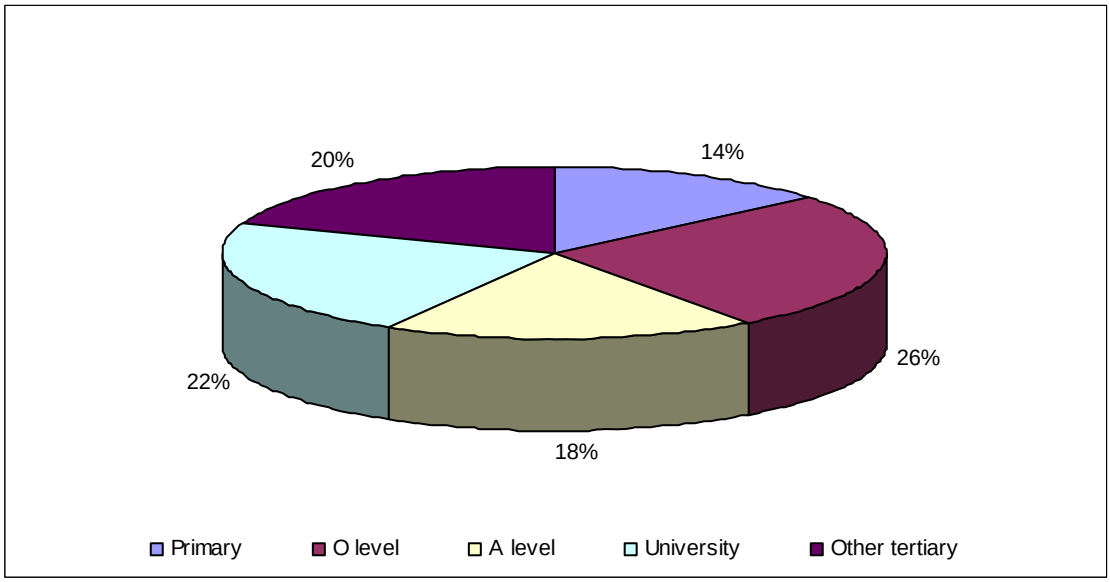

Figure 9: Levels of education attained

6.6 Transport and Communication

In most developing countries, Uganda inclusive, the demand for the transport sector is very high yet the resources available to government to provide adequate transport services are limited. The growth of transport is important for the development of the economy because it facilitates trade, tourism, mobility and cultural exchange. Uganda's transport infrastructure includes roads, railways, piers, jetties, aerodromes, runways and taxiways. It has been noted that the growth of transport and communications increased by 14.4 per cent in the year 2003/04 from the previous year (UBOS 2004a).

The modes of transport in KTC are road and air. The majority of the people use road transport mainly because it is cheaper. Kitgum has a total road network of 37.69km grouped in three classes, paved, gravelled and earthed roads. The earthed roads take up only 23.96km, gravelled take up to 10km while the paved roads cover the remaining 3.73km.

6.6.1 Road transport

There are four bus companies operating in KTC, that is, Felista, Olet Iliak (White Coach), Redeemer and Otada. These buses enable people to travel from and to Kitgum. Each day, 2 buses

leave for Kampala while the other 3 return from Kampala and vice versa through out the week. Departure time is from 4:00 am to 8:00 am while arrival is from 11:00 am till late in the day. Bus fares are Ugshs 20,000 to Kampala and 8,000 to Gulu. Other forms of transport are omnibuses, open tracks, taxi pick ups, tippers and lorries on different routes from KTC to other districts, sub counties and to Sudan. There has been a sudden increase in motor cycles; this is mainly explained by the growing intermediate transport, informally known as "boda-boda" in many parts of the TC. This form of transport is attractive in areas where the roads are still poorly developed for use by vehicles. It is also attractive to customers who cannot afford more expensive means. There are also bicycles, which are the most common and cheapest means of transport within KTC for short distance journeys. Accidents are rare in KTC with only 2-5 motor accident reports recorded in each month (KITODA office), probably because of low traffic volume.

6.6.2 Air Transport

Eagle airline is operational in KTC with flights to and from Entebbe airport every Monday, Wednesday, and Friday, however due to poor air field conditions, there are currently no flights in Kitgum. Plans to construct a new airfield around Kitgum Core Primary Teachers' College, 4 km North of Town are underway.

6.6.3 Communication

There are three phone networks in Uganda. Uganda Telecom Limited (UTL), MTN Uganda Limited and Celtel Uganda. All these networks are operational in Kitgum Town Council. There are 6 internet cafes owned by different NGOs. In addition, during the study, it was found that 2% of the population own televisions meaning that if any information is disseminated by means of a television, then it is more likely that the majority will not be reached. However, since the majority of the households (68%) own radios and hence publicity using radios may be more effective. Of these, 55% prefer Kiti FM, 38%, Peace Fm while 7%,Mega FM.

CHAPTER SEVEN - HEALTH

7.1 Hospitals and Health Units

The district has 25 health units of which 22 are government and the other three are privately owned. The major and largest government referral hospital is Kitgum Hospital followed by St. Joseph Hospital that is a privately owned by the Catholic Church. However, government owns so many other smaller health units that are sited through out the district. The district has two ambulances for transporting patients under emergency conditions and whose cases cannot be handled in smaller health units to the major hospitals.

7.2 Health Staff

The district has a district health officer (DHO) who is responsible for all its health issues. The DHO is assisted by several district health staff including health and hygiene promoters that form the water and sanitation team. With the recurrent cholera out break in the district, the health and hygiene promoters were deployed in most of the IDPs and charged with the responsibility of:

- Sensitising and training the community on personal hygiene and construction of sanitation facilities like pit latrines, bath shelters, hand washing facilities and drying racks; and on proper disposal of solid and liquid wastes
- Inspecting homes to ensure good hygiene and sanitation
- Detecting and reporting cases of cholera for immediate treatment

7.3 Director of District Heath Services (DDHS)

The mandate for household sanitation at district level lies with the DDHS but this extends only to the provision of guidelines and promotion of hygienic behaviour. Household sanitation is an individual responsibility of the householder. The householders can be enforced under law to construct their own pit latrine. The DDHS has neither the mandate nor capacity to do this whereas enforcement is the responsibility of the LC1 (village) chairperson, who as an elected official is unlikely to do so for fear of losing popularity. The need for an enabling environment for sanitation provision remains. Currently, the responsibility for facilitating services often falls on NGOs.

7.4 Environmental health

Health is a state of complete physical, mental and social well being and not merely the absence of disease or infirmity. There is a strong relationship between environmental quality and the health status of the human population living in an area. Poor living and working conditions expose people to physical, chemical and biological pollution and to adverse psychological and social factors that may harm their health (MoH 2004/2005). Again, people through their endeavours to survive do often negatively influence the environment. Therefore, a complete state of health can only be obtained with a healthy environment. The majority of the population in Kitgum live in rural areas and IDP camps where they have limited access to health care facilities, inadequate water and poor sanitation, characterised by poverty, illiteracy etc. This state of affairs has primarily resulted from the insurgency that has dominated the area for the past 20 years.

Despite the number of health units in Kitgum district, access to basic elements of the health care package is far from optimal for the parishes in Kitgum town council. Furthermore, the distribution of health workers in the town council is very low compared to the population size that demands for their services. District health staff has for a very long time been complaining of the low funding allocated to sanitation and hygiene activities which constrains their work.

7.5 Cholera out break in Kitgum District

In 2006 Kitgum District had a long cholera outbreak which probably may be ongoing given that no major water and sanitation situation of the district has changed. The outbreak started in April 2006 and was believed to originate from southern Sudan after a major market activity. On 5th July 2006 there were 876 cholera cases and 12 deaths and by August 2006 the cases and death incidents had doubled. The cholera cases in Kitgum District hit all the 18 sub counties including the town council area. The reoccurrence of the outbreak showed persistent in some sub counties than others. Kitgum town council was one of the areas that showed consistent and persistent cholera incidents mainly because of poor personal hygiene and inadequate water and sanitation (Report by Water Resources Management Department, August 2006).

7.6 Morbidity and Mortality rate

According to health information at the district the rates of; infant mortality, children mortality, maternal mortality, crude death and life expectancy are as seen in Table 6

Table 6: Health indicators

	District figure Per 1000	**National average per 1000**
Infant mortality rate	165	97
Children (under 5 years) mortality rate	279	147
Maternal Mortality rate	532	506
Crude death rate	21.7	17
Life expectancy at birth	42	47

Source: Kitgum district health information desk

As seen therefore, the health indicators in Kitgum fall far below the national averages. The deplorable health situation can be attributed to the poor district revenues and problems caused by insecurity. This indicates that a lot of initiatives have to be undertaken to promote the health sector in the district. The town council intends to reduce mortality and morbidity rates by promoting preventive medicine, constructing health units at parish levels, training nursing assistants, and increasing advocacy, epidemic control and disaster preparedness.

7.6.1 Hospital Record

According to the 2001-2002 Annual Report of St. Joseph's Hospital, 470 patients (26.4% of the patients treated) suffered from malaria, followed by HIV/Aids with 273 patients (15.4%), intestinal infections with 269 patients (15.1%) while tuberculosis had 221 patients (12.4%). HIV/Aids caused more deaths among patients than any other disease. Other than the above - mentioned disease the other common diseases in the area are respiratory track infections, diarrhoea, intestine worms, pneumonia, skin diseases, eye infections, common injuries, anaemia and malnutrition.

7.6.2 Household results

Household results showed that there were mainly four major water borne diseases (Figure 10) that the households in KTC had suffered from or perhaps the only diseases the communities

know compared to the data from the hospital source. 59.9% of the households have had at least one member that suffered from water borne disease. It was also noted that typhoid was the most prevalent disease (Figure 10).

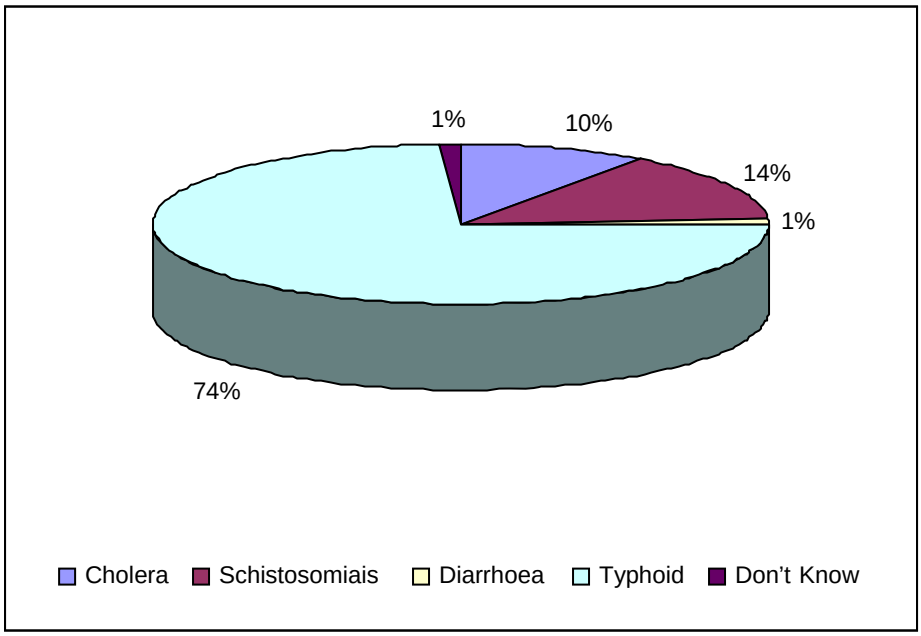

Figure 10: Percentage of respondents that have suffered from the common diseases

7.6.2.1 Cholera

Cholera is a disease caused by a bacteriological infection of the small intestines. The bacteria produce a toxin that prompts the small intestine to secrete large amounts of water, fluid, salts, and minerals, leading to watery diarrhoea within 24 hours. Cholera is spread through contaminated water and food via hands as well as poorly disposed of faecal material. It spreads rapidly in densely populated communities with poor hygiene, sanitation and drainage systems with children being more susceptible to the disease. The disease may be mild, but in serious cases can cause severe dehydration and death.

The findings showed that there were more occurrences of cholera cases in Pager and Alango Villages (10%). This may be due to use of contaminated waters from river Pager by some households.

7.6.2.2 Typhoid

Typhoid fever is a serious, life threatening and acute illness associated with fever caused by the *Salmonellae* Typhi bacteria. The bacterium is deposited in water or food by a human carrier, and is then spread to other people. Typhoid fever is passed between humans through poor hygiene practices and improper sanitation, and therefore thrives in areas where human faeces and water get in contact. Contamination/transmission occurs when people handle food without adequately washing their hands with water and soap, or when sewage/ human excreta get into contact with drinking water. On treatment some people recover but continue to be contagious and are considered carriers of the illness. It is therefore very important that secondary infection is prevented by improving on the general hygiene and sanitation in the community.

The survey findings showed that typhoid is the most prevalent disease (74%) with occurrences recorded mostly in Ayul A & B, Central and Apollo ground, Alango west and Langalanga villages.

7.6.2.2 Schistosomiasis (Bilharzia)

Plate 4: Activities at the river Pager-water being collected, used as solid waste damping site, vehicle and cloth washing

Schistosomiasis also known as bilharzia is a disease caused by parasitic (flatworms) worms. People are exposed to these worms when their skin comes in contact with infected freshwater. In KTC many people still use river Pager water for various purposes like washing clothes, bathing, car washing, drinking water for animals e.t.c as seen in Plate 3 and yet, several people still practice open defection as was evidently seen by the many faecal deposits as seen in Plate 5. implying that in case of, a heavy rain down pour all the faeces would get washed into the river and if infectious eggs are present then infection proliferates.

Plate 5: Open defecation still practised in the town council areas.

The eggs hatch and the parasites grow and develop inside the snails. *Schistosoma* parasites can penetrate the skin of persons who are wading, swimming, bathing, or washing in contaminated water. Once the worms enter the skin, they migrate to the liver, intestines, or urinary bladder, where they cause inflammation and tissue damage. The parasites can also enter through the lining of mouth or intestinal tract of people who drink untreated water. Within several weeks, worms grow inside the blood vessels of the body and produce eggs. Some of these eggs travel to the bladder or intestines and are passed into the urine or stool. Although most symptoms don't show in the early days they include a rash or itchy skin, fever, chills, cough, and muscle aches.

Results showed that Bilharzia occurred mostly (14%) in Awuch, Ayul A and East Ward villages. This may be due to the locales using the waters from river Pager for domestic water purposes, swimming, car washing e.t.c, as seen in Plate 3 above, considering that these villages are located on the river banks.

7.6.2.2 Dysentery

Dysentery is a condition where a person has diarrhoea with visible blood in the stool and usually accompanied by abdominal pain. The disease is basically due to poor sanitation and hygiene

practices amongst a community. The survey revealed that dysentery was the least disease that affect the community in KTC with only 1% occurrence reported in Ayul A village.

7.7 Conclusion

Given the fact that all the above diseases are water and sanitation related, hygiene behaviour plays an important role in the prevention of these diseases. Water supply and sanitation makes hygiene easier to practice, but the mere provision of facilities has proven to be less effective. In 1991, Esrey found that better hygiene and sanitation through hand washing, food protection, proper waste management and domestic hygiene brought a reduction of 33% in diarrhoea incidence, whereas improved water supply led to an average reduction of only 15-20%.

Therefore efforts combining water supply, hygiene and sanitation situation improvement and sensitisation and awareness creation campaigns, will go along way in addressing the burden of disease in KTC area, which is in line with the concepts of the ROSA project.

CHAPTER EIGHT-SANITATION (EXCRETA MANAGEMENT)

Sanitation may be defined as the science and practice of effecting healthful and hygienic conditions, and involves the study and use of hygienic measures (Ahmed and Rahman, 2000). These measures include; safe, reliable water supply, proper drainage of wastewater and disposal of all human wastes and prompt removal of all refuse.

Sanitation in the ROSA project refers to the principles and practices relating to the collection, removal or disposal of human excreta (faeces and urine), household waste water, grey water, storm water and solid waste as they impact upon people and the environment. In developing countries, the main focus of sanitation is to reduce health risks in urban, peri urban and rural areas. In this chapter, however, emphasis will be on collection, removal, or disposal of human excreta.

8.1 General cleanliness

Most of the households that were visited were generally clean (82.4%), as compared to the clean toilets that had a lower percentage of 62% implying that the community generally pays more attention to their homes than the cleanliness of their toilets. For example, majority of households in Lemobongolewie South, Lamit Lapim North and Bardege villages had very clean homes but dirty toilets.

Most of families (66%) in KTC keep animals (goats, cows, sheep and pigs) as a means of survival, of these only 30% have shelter houses for their animals. It was also observed that 62% of the households did not have separate kitchens implying that their houses were multipurpose. The latter entails using the houses as bedrooms, cooking places and animal shelters. In some households, the cooking is done outside and the animals are left outside even in the night. The majority of the homes (63%), regardless of whether they had kitchens or not had drying racks for their utensils.

It noted that all the households that had faeces littered in the compound (5%) claimed that it was children's faeces, as can be seen in Plate 6 implying that there could be a cultural belief that

children's faeces are harmless and therefore, justified to be anywhere. It was however, noted that most of the house compounds (81%) were swept and clean.

Plate 6: Open defecation, Left- mainly done by children, Right – Faeces left in the compound

Regarding bath shelters, it was noted that a high number of homes (83.2%) had them, while the rest either use their toilets or wait for it to become dark and then use their compounds. The bath shelters of most households however, are in very poor condition; there is lack of privacy, since the superstructures are almost non existence. More so, they have no roofs and hence can not be used during rains, as can be seen in Plate 7.

Plate 7: A bath shelter

8.1.1 Existing sanitation facilities

The prevalent excreta disposal technologies in KTC include traditional pit latrines, ventilated improved pit latrines (VIP), flush toilets, dry toilets, make shift (cat method) toilets and open defecation.

8.1.2 Accessibility to toilets

Access to toilets in the KTC was very high with 93% of the households either owning a toilet or can at least use the neighbour's. The remaining households were most likely practicing open defecation. An assessment on the knowledge of the various types of toilets revealed that most of the households in the KTC are aware of at least more than one type of toilet. The Table 7 shows details of the percentages of people aware of different types of toilets.

Table 7: Assessment of knowledge of sanitation facilities

Sanitation facility	Percentage
Traditional and VIP	15.64
Traditional and dry toilets	1.68
Traditional and flush toilets	1.12
Traditional and cat method	7.54
Traditional, VIP and flush	30.17
Traditional, VIP, flush and dry	18.44
Traditional only	0.56
Traditional, VIP, flush, dry and cat method	24.30

8.2 Household level

8.2.1 Criteria for the toilet choices

Results revealed that of the households with faecal disposal facilities, traditional pit latrines were the most commonly used, followed by VIP (Plate 8) and dry toilets (

Table 8). At the village level, it was found that East village B and Police villages have 100% traditional pit latrines (

Table 8). It was however, noted that a great majority (77.8%) of the households in prison village did not have toilets. Different household had different reasons for their sanitation choice as shown in

Table 9.

Table 8: Percentages of sanitation facilities in each village

Percentages of toilets in each village

Villages	Traditional	VIP	Flush toilet	Ecosan	Open defecation
Alango East	80.9	11.8	0.0	5.5	1.9
Alango West	83.7	10.3	0.0	3.4	2.5
Apollo Grounds	70.6	5.9	23.5	0.0	0.0
Awuch	74.1	18.5	3.7	0.0	3.7
Ayul A	68.5	24.4	0.0	6.7	0.4
Ayul B	55.3	26.3	0.0	15.8	2.7
Central	36.5	10.5	48.5	3.8	0.7
East Village A	77.7	0.0	0.0	11.2	11.1
East Village B	100.0	0.0	0.0	0.0	0.0
East Ward A	65.2	21.7	0.0	8.7	4.3
Gand dyang	81.8	0.0	0.0	18.2	0.0
Langa Langa	76.9	7.7	3.8	7.7	3.8
Nyikinyiki	57.1	42.9	0.0	0.0	0.0
Police	100.0	0.0	0.0	0.0	0.0
Prisons	22.2	0.0	0.0	0.0	77.8
Tangi agoro	70.0	10.0	0.0	20.0	0.0
Pager	90.9	4.5	0.0	4.5	0.0
Achute men	83.3	0.0	0.0	0.0	16.7
1st Jenge	81.8	9.1	0.0	0.0	9.1
Bardege	76.8	14.5	5.8	1.4	1.5
West land	78.6	4.3	2.9	4.3	10.0
Lamit Lapim north	63.0	5.6	1.9	3.7	25.9
Lamit Lapim South	69.2	20.5	0.0	2.6	7.7
Lemobongolewie East	81.0	9.5	0.0	4.8	4.8
Lemobongolewie South	63.2	26.3	0.0	5.3	5.3
Cam cam	85.2	3.3	0.0	3.3	8.2
Ginnery	90.5	0.0	4.8	0.0	4.8
Lilojo	84.2	0.0	15.8	0.0	0.0
Oryang ojuma	84.2	10.5	0.0	0.0	5.3

Plate 8: Left- A corridor of VIP toilets, Right – A number of pit latrines next to homesteads

Table 9: Types of toilets used at household level

Sanitation facility	Reasons for choice of toilet type	Percentage of households
Traditional	Easy O&M, Easy to use Can be constructed using low costs local materials Affordability/ cheap for low class Not much technical skills required in construction	71.62
VIP	More hygienic Less stench Easy O&M Easy to use	11.30
Ecosan	No flies Less stench Good for limited land Nutrient recycle Cheap	3.55
Flash	Prestige Affordability for high class Most hygienic Security reasons (one does not have to walk out at night)	5.12
Open defecation	Air conditioned Convenient Always available at zero costs Last resort for the poor Lack of money to excavate pit Places with high water table	7
Traditional with VIP	It is convenient One toilet is for children To avoid being stuck when one gets full	0.13
Traditional with Ecosan	Not sure how the Ecosan is used so the 2nd one is what is used most of the time The Ecosan was given free of charge	1.31
Traditional with flush	It is convenient One toilet is for children In case there is no water, the pit latrine can be used.	0.39

8.2.2 Anal cleansing material

According to the survey, 82% of the households use papers as the anal cleansing material because it is cheap and readily available while 15% use toilet paper because it is more comfortable and is affordable to them. 2% however resort to leaves and earth because they cannot afford the other options. The remaining 1% is the practicing Moslems who use water.

8.2.3 Pit latrines

Kitgum Town Council has a number of latrines, some in use and others are abandoned. The Figure 11 shows the mapping of latrines in the Town Council and hence the level of soil and ground water contamination in the area. The pit latrines were constructed using locally available materials.

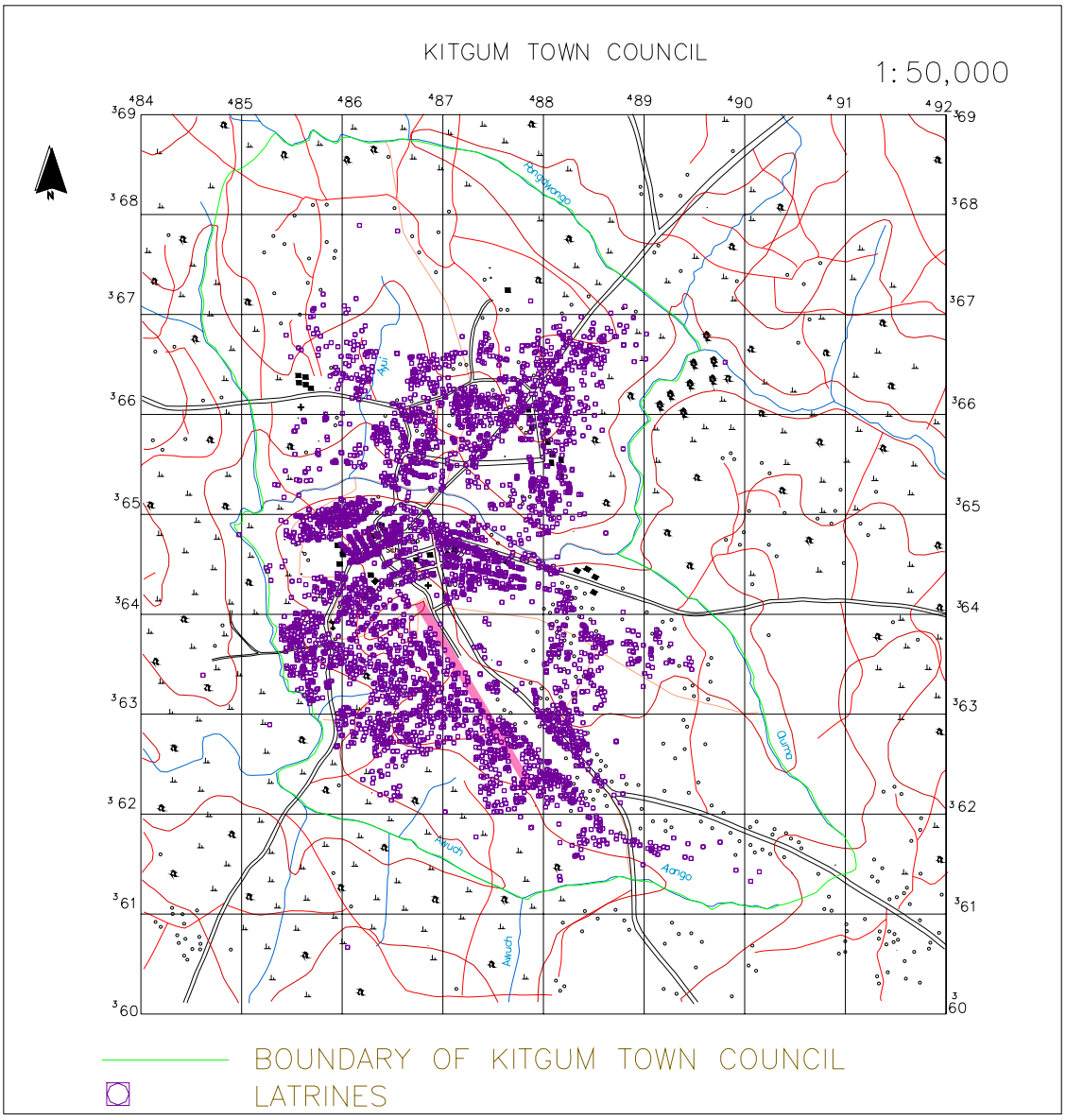

Figure 11: Map showing the pit latrines in Kitgum Town Council

The pit depths varied across the households with more than half of the households (57%) digging 10-15 ft below the ground level, 38% more than 20 ft while the remaining 5.73% less than 10ft. The variation in the depth of the dug pits was a result of occurrence of high water tables and rocky grounds in some areas. The results revealed that 44.4%, 30%, and 34% of the respondents in Westland, Lamit lapim North, Lamit lapim South villages respectively could not excavate deep into the ground because of rocky ground. It was however noted that in some parts of these towns, a high water table was encountered by 27.8%, 25.5% and 34.3% of the households in the same villages respectively during pit excavation. It was observed that some pit latrines

had no superstructure but were simply a deep hole dug into the ground

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Plate 9).

Plate 9: Pit latrine without a super structure

The survey revealed that faecal disposal facilities were shared among households. More than half of the households (54.4%) share their pit latrines with neighbours, which is probably the reason why most (75%) of the households have more than one stance. 60% of the households have 2 stances, 25% have 1 stance and the rest have more than 2 stances. Of the people with shared facilities, the majority (44%) have 20-30 people using the toilet while 40% have more than 30 people and the rest is less than 10 people. The results also revealed that 15.6% of the households do not share the toilets with children suggesting that in some cases, the children do not use the same latrine with the older people. Of these, 41% feel that it is better that the children have a separate toilet, while 23.5% of the respondents have their children practicing open defecation

because they believe that children's faeces are not harmful. The rest of the respondents' children use potties and cat method.

Regarding the number of toilets held up to date, 59% of the respondents had built more than one toilet indicating that the toilet facilities constructed in the homesteads are not permanent. In most cases these are abandoned and or demolished (Plate 10) when full. (Table 10).

Plate 10: Left - An abandoned pit latrine, Right – demolished pit latrine

Table 10: Reason for change of the Pit Latrine

Question	Percentage
Location of 1st pit latrine	
Next to the existing one	81.90%
Opposite the existing one	8.62%
Some meters away from the existing one	8.62%
What happened to the 1st pit?	
Got full	68.28%
Collapsed	30.34%
What is done when pit is full	
Emptied	8.31%
Covered and new pit dug	80.07%
Abandoned	11.63%

8.2.2 Public Toilets

There are two public toilets in KTC; one in the bus park and the other in the main market of the TC (Plate 11) both owned by the town council. Both facilities were constructed of bricks and cement at a cost of 25,000,000/= each. Both facilities have separate sections for men and women, for better privacy. The facilities are used by people on transit and anyone who does not have

access to a toilet at the particular time of need. The users are charged a fee of 100 Ugshs, for both short and long calls. The facilities also have bathroom facilities, whose water is supplied by the CWS of the TC. A comparison of the two TC facilities is shown in Table 11.

For better management, the town council tenders them out to operators, who may in turn employ caretakers. The facility at the bus park is managed by an operator while the one at the market place is managed by a caretaker. A health inspector is also employed by the TC to monitor these facilities daily to ensure that they are in good condition. Table 6 depicts the operational aspects of the two public facilities.

Plate 11: Public toilets, Left- in the bus park, Right - in the main market

Table 11: Operational aspects of the Public toilets in KTC

Parameter	Bus park	Market place
Opening time	6:30 am	8:00 am
Closing time	7:00 pm	7:30 pm
Average no. of people visiting per day	150 - 200	50
Fee per short call	100	100
Fee per long call	100	100
Fee for bathing	200	200
Anal cleansing material provided	Toilet paper and water	Toilet paper and water
Average no. of Moslems visiting per day	38 - 50	12
Frequency of cleaning	Twice a day	Thrice a day
Cleaning material used	Water, OMO, JIK and a brush	Water, OMO, JIK and a brush
Separate facilities for women	Yes	Yes
Different fee for women?	No	No
Presence of urinals	Yes, currently non functional	Yes
Other services provided by the facility	Bath shelters	Bath shelters

8.3 Operation and Maintenance of the facilities

8.3.1. Public facilities

There are four cess emptiers, two of them owned and managed by Lee Wright Company, one by ODTSAN and the other has just been procured by the TC. Currently, the emptiers managed by Lee Wright are operational. The capacities of the emptiers are in the region of 1300, 1400, 1500, and 3700 litres. The costs of the emptiers vary with the capacity; an emptier with the capacity of 1300 litres, is charged 50,000/= while the one of 1500 litres is charged 70,000/= per trip.

The dumping site for the operational cesspool emptiers is a piece of land (privately owned by Lee Wright Company) located in Alango Parish within Kitgum town council. The excavated pits into which the faecal sludge is finally disposed of do not have consistent dimensions. When a pit is full, it is abandoned and a new one dug (Plate 12) On visiting the site, it was observed that there was healthy grass growing around one of the filled up/abandoned pits meaning the waste improves the condition of the soil which when applied in the garden, can nature plants. The collected faecal sludge is not treated prior to dumping, and neither is it reused. The caretakers of the two facilities however believe that the faecal sludge can be re used if properly treated

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Plate 12: Damping site for cesspool emptiers, Left- Newly dug pit, Right -A full and abandoned pit

To have an insight into the operational and maintenance aspects of the public facilities, one of the ROSA staff had a consultative meeting with one of the caretakers of these facilities. The responses to the various issues are presented in

Table 12.

Table 12: Care taker's responses to operation and maintenance aspects of public toilets in KTC.

S/No.	QUESTIONS	RESPONSE		
		Bus Park Toilet	**Main Market Toilet**	**Remarks**
1	How frequent do you monitor the public sanitation facility?	Daily	Twice a week	
2	How do you select your caretakers and how much do you pay them?	Service provider or operator is the caretaker	No criteria was followed 15,000/= per month	
3	How often do they empty the toilets? How much is charged for emptying and who pays?	Twice a month	Once every two months	Emptying is charged at 50000= per trip according to operators at both toilets and it is the responsibility of Kitgum Town Council to pay for the services.
4	What channel is in place for notification in case the sanitation facility gets filled up, and how fast do authorities respond to notifications?	The operators usually report verbally to the Health Inspector's office at Kitgum Town Council and action is taken.		Both operators complained that most of the time the response is not immediate.
5	In case the emptiers do not respond to your notification, what do you normally do?	Report to the Town Clerk and action is taken immediately	The facility is usually closed	
6	In your opinion, do you think the waste could be reused?	Yes	Yes	The waste can be used as manures in garden when properly treated.
7	What do you say about constructing Dry toilets for public use?	Operator agreed that it can work provided there are several vaults with relatively large sizes. He cited problems associated with operation and maintenance such as difficulty in getting ash and negative attitude of users to pouring ash	Operator ignorant about dry toilets	

In the event that there is no water in the town council, the facility at the bus park facility is closed till there is water. The facility at the market on the other hand, procures water fetched from river Pager at 200/= per jerry can provided there are adequate funds. Lack of the latter, results in closure of the facility.

8.3.2 Private (Household) toilets

In 41.3% of the households, the responsibility of operation and maintenance of privately owned facilities was by the head of the family in 41.3% and by the landlord in 33.5% of the households. The rest of the households including those with shared facilities (22.3%) contribute towards the operational and maintenance costs of the facilities. The remaining 2.5% of the households share toilets with schools, and hence leave it to the school to undertake the maintenance. Table 13 shows the frequency, methods used to clean the toilets and associated percentages of respondents using these in the town council.

Table 13: Frequency and methods of cleaning toilets

		Percentage
No of times of cleaning	daily	61.7%
	once a week	10.4%
	2 to 4 times a week	19.1%
	whenever necessary	8.7%
Cleaning means	sweeping	59.7%
	plain water	21.3%
	water with detergents	19.0%

The study showed that of the people that empty their pit latrines, 83% use cesspool emptiers while the rest do it manually using local people. The latter method is used mainly because the former is unaffordable to some people. For those with septic tanks, 79% of them depend on the cess pool emptiers owned by the TC while the rest resort to privately owned cesspool emptiers.

8.4 Problems encountered regarding the existing facilities

- The commonly used existing sanitation facilities are the traditional pit latrines. These are poorly constructed and managed and hence a source of risk of pubic health and shallow groundwater sources.
- Open defecation is still practised primarily due to lack of land for construction of the latrines. This practice is common near river pager and hence poses a very big health risk to the communities in the town council.
- Of the households that own pit latrines, 54.4% have to share pit latrines with their neighbours which is inconvenience to both parties.
- In an effort to dispose of their faeces, 7% of the households resort to desperate means like use of mobile, ‘flying’ toilets, and open defecation.

- The current sanitation facilities are inadequate with regard to the population in the town council area. As a result the locales resort to alternative disposal methods (e.g., using open grounds/bushes around river Pager). The affordability of these systems is limited by the abject poverty characterising the majority of people who as a result view the fee levied for use of public toilets as exorbitant.
- The current number of cesspool emptiers used for emptying of the pit latrines in KTC are inadequate to cater for the whole town area
- Communities view the dry toilets as an expensive sanitation option.
- The (hydro) geology of the town council area varies spatially such that in certain areas such e.g some parts of Ayul B, Lamit lapim, East Ward A etc, the water table is high and here, excavation of pit latrines is not possible. Some parts of Westland, Lamit lapim North and Lamit Lapim south have rocky grounds and hence excavation of pitlatrines is difficult.
- There are operational and maintenance challenges faced by the caretakers of the public toilets. These include: water shortage especially during periods of power shut down, blocked toilets as a result of misuse, damaged cisterns, blocked bathing shelters due to misuse by the public, some users do not flush after toilet use, and limited availability of male toilets at the park facility (one only is available) and yet the majority of the users are male.

Suggestions

During the focus group discussions and semi-structured interviews, the local population and caretakers made the following suggestions regarding the above highlighted problems:

- The masses should be sensitised on the danger of open defecation,
- Capacity building of masons should be done so that quality and long lasting toilets can be constructed,
- People living in areas with high water table and/or rocky place should be advised on suitable latrine options,
- Sewer lines should be extended to cater for the people with in the town centre,
- The number of public toilets should be increased,
- Kitgum Town Council should devise a means of providing each one with a sanitation facility at an affordable price,

- The town council should plan for all sanitation components like garbage, water and toilets to balance the sanitation cycle,
- The capacity of the water storage tanks at the public facilities should be increased to cater for days when there is not enough water,
- Stances for men should be increased,
- The users should be sensitized on importance of proper use of the toilets.

8.5 Knowledge and usage of Ecological sanitation

Ecosan is not a very new concept in KTC considering the fact that more than half of the respondents (54%) have heard about it from the different sources (Figure 12). 10% of the respondents who know about the dry toilets actually own an ecosan toilet and hence about 65% of the respondents have seen an ecosan toilet before (Figure 12).

Respondents that don't own a dry toilet but have heard about it or seen it had this to say about it. 23% know it to be the toilet that uses ash, 22% as a urine diverting toilet, 10% as one where excavation is not done, 10% as one where nutrients are recycled, 5% as a permanent toilet, 3% know it to be expensive, 5% as a clean toilet that does not smell while the rest know nothing about it and have only seen the structure.

For the respondents that have ecosan toilets, 64.5% said that it is an expensive toilet that cost them over Ugshs.1,000,000/= while 24.5% spent between 500,000/= and 1,000,000/=. The rest (11%) were given the ecosan free of charge. The high cost of ecosan may have been a result of the materials used that is bricks and cement. In the surveyed area, there was no ecosan toilet built with local materials (e.g., mud, wattle, grass etc).

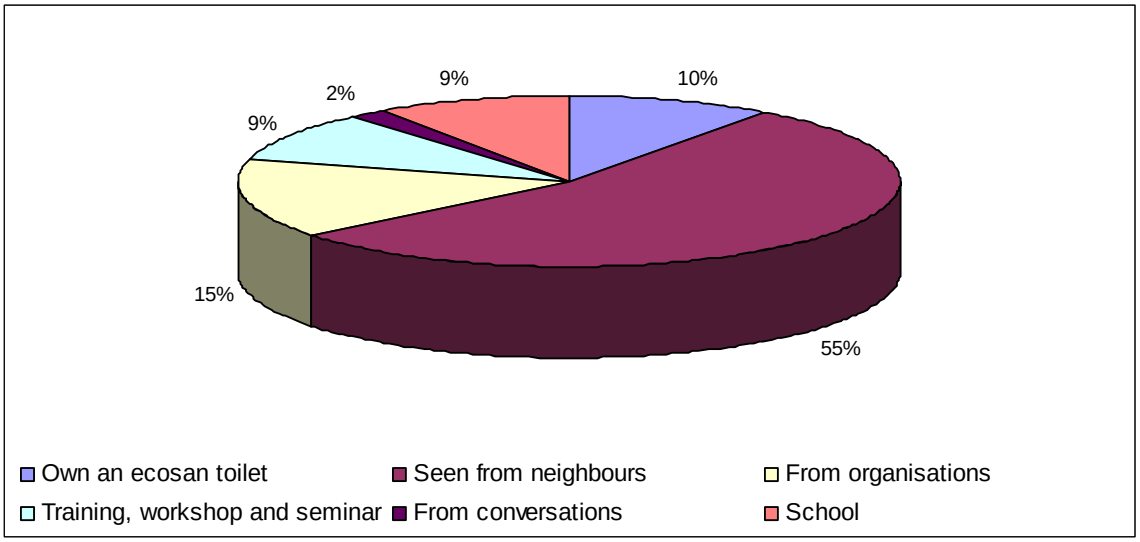

Figure 12: Source of information on Ecosan by the respondents

Regarding the length of utilization of dry toilets, 52% of the households with them have had them for a year, 26% for two years, while the rest for more than 3 years. The construction of these facilities was undertaken by ODTSAN (60%), NUSAF (13%) and 17% by local masons as a result of personal initiatives.

Before they acquired dry toilets, 73% of the households with them, were using traditional pit latrines, 11% VIP, 10.5% flush toilets and the rest had no sanitation facility and were using bushes. To ascertain their reasons for changing to dry toilets, the respondents were asked by the ROSA staff and their responses are presented in Figure 13.

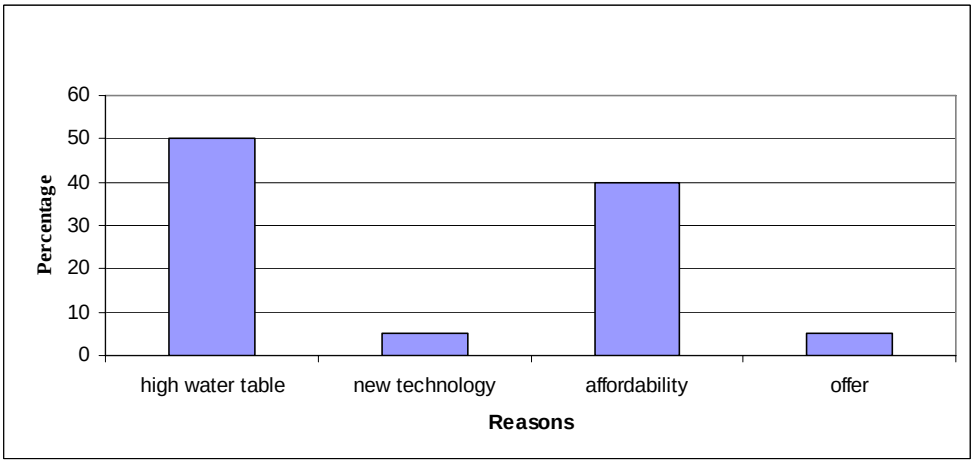

Figure 13: Respondents' reasons for changing to the dry Toilet

The re-use of the waste material is however not greatly practised in the area. Only 26% of the people with dry toilets use the faecal or compost manure in their gardens and 5% sell it off to farmers. The rest (69%) just throw it away in the rubbish pits because they don't know what it is used for. The urine is led to a soak pit or septic tank for all the households.

Behaviour regarding the handling of excreta varies from culture to culture, as such, it was necessary to find out from the people what their feelings were about handling human excreta. 80% of the households that know about dry toilets feel that it does not conflict with their culture at all, while the other 20% feel that it is not culturally accepted. When the latter were asked for the reasons why, the majority (80%) feel that adding ash to faeces is against their culture and may cause death while the remaining 10% had no reasons but just felt that it was not right.

A question was also posed to the respondents as to whether they would opt for dry toilets if a chance were given to them. 80% of the respondents said they would accept the offer mainly because it is a permanent option, they would be able to recycle, has easy maintenance, they don't have a toilet at the moment and because it is a clean toilet. A few of these (10.5%), however, would also accept the offer simply because it is free. The respondents who would not accept the offer (20%), pointed out that they do not have an urgent need for the dry toilet, do not have enough information on the toilet, it seems a complicated toilet to use, it is expensive and they have no space for an extra toilet.

CHAPTER NINE – WATER COVERAGE

9.1 Water Resources

Uganda is among the few fortunate countries that well endowed with sizeable fresh water resources (surface and ground water). As the saying goes "water is life", in adequate quantities and good quality, water is a major factor in socio-economic fabric of the Ugandan society and a major determinant of development of the country. The country's lakes, rivers and underground aquifers are sources of drinking water, fisheries resources, transportation and security. While water may have been adequate in most parts of Uganda, the sources now face new pressures mainly due to increased population, industrialization and to some extent the internationalization or rationalization of water politics (State of the environment report, 2004/05). Apart from surface water resources, Uganda has sizeable ground water resources that are being used by several of its districts of which Kitgum district and in particular the Town Council is no exception.

9.1.1 Groundwater

A large proportion of the rural population in Uganda entirely depends on ground water for all their water usage. Although the Ugandan Government has put in place efforts to reform its' water sector and introduce an enabling legislative framework to better meet the emerging challenges, groundwater has received less attention over abstraction and contamination could be of serious concern in the near future. For example, groundwater easily gets polluted through on-site siltation, improper waste disposal, high water table and seepage of mineral or chemical wastes deep into the ground etc.

9.1.2 Surface water

The major surface water resource in the town council is river Pager that flows across the town. Because of the insurgency in this part of the country, many families left their villages in search of security and settled in the town council. This has therefore resulted into clearing of most of the areas around the riverbank, for settlement, agricultural activities, etc. Because of the poor level of sanitation in the town council area, the river and or bank has been an area of open defecation and solid waste dumping by the neighbouring population. In addition, the riverbank is used as a washing bay for vehicles. Considering, that some people still use this water source for cooking,

washing, and brewing, its' quality is a major concern (Plate 16). The domestic use of this water source is not about to stop since the households find it an accessible source without any long queues that are typical at the water points, while others say they cannot afford the monthly user fees. Previous water quality tests conducted by NGOs in the area show widespread faecal contamination of the river Pager. High counts of *Escherichia coli* (TNTC /100mls) were obtained in these waters during the period of the cholera out-break in the district (2006).

9.2 Water supply

The major water source for Kitgum town council area is groundwater and it has been motorised and piped. Some wells have about 6-9 tap stands (Plate 13) so as to serve more people while all boreholes and shallow wells have been fitted with hand pumps.

Plate 13: Water analyst (DWD) taking a sample from a motorised borehole with six outlets

9.2.1 Central water supply system

Kitgum town council has a central water supply system. There are four motorised production wells (Table 14), the fifth ($5m^3$/hr) that was installed with support from the Austrian Government has never functioned due to the recurrent power supply problems, but can function once a generator is used.

Water is pumped from the four production wells to three overhead tanks with a capacity of $83cm^3$ located on Hill Top. From the overhead tanks, the water is distributed through a piped network system to the user communities through public tap stands, water kiosks, and private household taps. It is estimated that the system supplies water to about 30% of the town

population. The production of water ranges from 350m^3/day (without national power supply) to 700m^3/day (with national power supply). There is no water treatment (even chlorination) of the water supply by the operators. However, water samples are taken from the pumps, tanks and other distribution points like kiosks/taps after every three months and taken for bacteriological analysis.

Table 14: Details of the motorised production wells in the KTC

S/no.	Borehole name	Yield m^3/hr	Power source
1	Kitgum Technical Institute	14	Solar and National supply
2	YY Okot	6	Solar and National supply
3	K-Flag	5	Generator and National supply
4	K-New	10	Generator and National supply
5	Langa langa	5	Generator and National supply

The central water supply system is managed by the town council through a private operator named Trandint Company whose contract ends in June 2007 but subject to renewal. About six million shillings (6,000,000Ug.shs) is collected as revenue per month. However, almost all the money is spent on operation and maintenance of the system (electricity bills, labour and material costs etc).

9.2.2 Boreholes and shallow wells

Currently, there are 75 boreholes and 22 shallow wells in the TC all of which have been fitted with hand pumps. In order to supplement the district's and Town Council effort in increasing safe water coverage, NGOs have constructed motorised boreholes, protected springs and dug valley dams (Table 15).

For instance UNICEF is in the initial process of drilling 24 more boreholes with at least 2-3 boreholes in each parish of the TC.

Table 15: Distribution of safe water points by Parish

S/N	Parish	Water Kiosks	Boreholes	Shallow wells	Total
1	Westland	7	7	4	18
2	Central	3	10	0	13
3	Alango	1	4	1	6
4	Guu	5	11	5	21
5	Pandwong	5	13	4	22
6	Pager	3	11	4	18
7	Pongdwongo	3	19	4	26
	Total	**27**	**75**	**22**	**124**

(Source: WSSB Water Sewerage and Sanitation Board, KTC three year development plans. 2006/07 – 2008/09**)**

9.2.3 Rainwater harvesting

During the rainy seasons a few households with iron sheet roofed houses harvest rainwater and store it for use during times of scarcity. On larger scale rainwater harvesting is commonly practiced by institutions such as schools, hospitals etc to enable them meet their water demand.

9.2.4 Hand dug wells

The town council also has a few hand dug wells, from which water is drawn by use of a rope and a bucket (Plate 14). Hand dug wells are mainly in the areas where the water table is high such that digging a few meters (3-6) into the ground causes water to gasp out and fill the pit which in turn is used as a well in some cases instead of the intended pit latrine usage. These water sources in particular are very prone to contamination given the method and handling of the scooping containers (bucket).

Plate 14: A hand dug well in the TC, the inset is the interior of the well

9.3 Operation and maintenance of the water sources

9.3.1 Without cholera outbreak

Operation and maintenance of water sources is the responsibility of the beneficiary community. The community is required to either select a Water User Committee (WUC) or elect a caretaker. In the case of selecting a committee, 9 members plus a caretaker are selected. The WUC or the caretaker is then charged with the responsibility of carrying out the overall management of the water sources as well as ensuring that the water sources are clean and well maintained. In order

to execute their/his duties, the committee or the caretaker requires that each household collects a small amount of user monthly fee ranging between two hundred and five hundred Uganda shillings (200 – 500Ug Shs) depending on the location and two thousand shillings (2,000) for repair, in the event that the water source experiences a mechanical break down.

9.3.2 With Cholera outbreak

With the re-occurring cholera out-break in the district, payment of the monthly user fees was waived by the TC. This attempt aimed at deterring households from using unsafe water sources (e.g., river Pager) due to non-affordability of the user fee. However, this effort was not without challenges; management of the water sources by the committee and caretakers became so difficult without funds, resulting in deteriorated hygiene and sanitation around many water sources (boreholes and protected springs) as seen in Plate 15 This followed from litter and stagnant water around many boreholes, lack of soak pits, rainwater diversions and animals being watered at boreholes.

Plate 15: Poor hygiene at some boreholes, the stagnant water can be a potential water source contaminant

9.4 Water demand

There are three major factors causing increasing water demand in Uganda today. These are population growth, economic development, and to a lesser extent, the expansion of irrigated agriculture. By 2010, water use is expected to increase by 40%, but 17% more water will still be required for food production to meet the needs of the growing population all over the world (WCWQ, 2000). In economic terms, it is argued that water is a free good but in reality, it is not because once polluted, the costs of its purification and treatment to prevent water borne diseases are very high.

In KTC, the long years of insurgency have seen an overwhelming increase in population of both humans and livestock within the TC areas. This however, has not matched with the corresponding increasing in the basic services. As a result, there has been a tremendous increase in water usage/demand leading to water shortage in the town council. Currently, most people spend a lot of time at the water points (as seen in Plate 16). To avoid this, others get up at dawn while others have to wait till dusk to collect water.


Plate 16: Showing a common scenario at most water points in KTC

9.5 Water shortage

Clean and safe water is particularly inaccessible to the poor, yet it is one of the most crucial natural resources. According to Constitution of Uganda, 1995, "*free, safe and clean water is a fundamental right of the people*". However, as mentioned in section 9.4 the increased population in the TC has resulted into increased water demand and consequent shortage. This coupled with the several hours of power failure (interfering with water pumping) and financial constraints are the major reasons for water shortage in KTC areas.

9.6 Water quality Monitoring

The quality of any water body is influenced by both natural and man-made factors. Over the last two decades, the quality of Uganda's surface water has been steadily deteriorating. Although water quality problems can often be as severe as those of water availability, these problems have so far drawn less attention in Uganda. The directorate of water development (DWD), through the Water Supply and Water Resources Management Departments have and are still monitoring

most of the drinking water sources in the districts of Uganda. However, given the long years of insurgency in Kitgum district, water quality monitoring has not been conducted creating a limitation of water quality information of KTC water sources. Despite having a district water office in place, no water quality monitoring has and is being carried out primarily because of lack of equipment and shortage of technical staff. Nevertheless, available water quality results from some NGOs (AMREF and OXFAM) showed that most boreholes have acceptable drinking water quality with respect to physical, chemical and bacteriological characteristics in comparison to WHO guidelines and Ugandan drinking water quality standards.

9.7 Discussion of results

In order to study the water related beliefs and practices, a questionnaires were administered to one adult in each of the sampled 761 households in each village. Based upon the data collected, the picture that emerges is elaborated in the subsequent subsections.

9.7.1 Drinking Water Sources

Results showed that a larger proportion of the households (85%) in all the seven parishes in the town council collect water from borehole sources (Figure 14). This then is followed by tap stands and protected springs from which 9% and 3% of the households respectively collect their water.

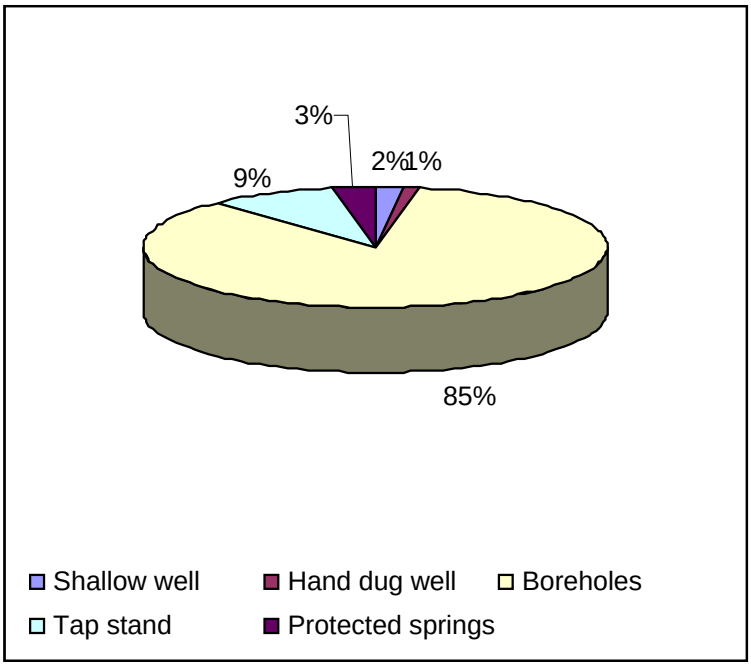

Figure 14: Drinking water sources within the town council areas

The tap stands are found scattered in most of the town, Guu and Westland parishes while the protected springs are mainly found in Ginnery. Only 2% of the households in all the parishes collect water from the shallow wells, majority of which are located in Cam cam.

In view of the water utilization by source, it is noted that the majority of the households are not connected to tap stands. The survey revealed that over 80% of the households are not connected to tap stands because it is expensive, while 17% said that they had no access to pipelines and 2% think that because tap water passes through a network of pipelines it is contaminated. Of the population connected to tap water, 56% don't share the water with their neighbouring households while 43 % share at a fee (20shs per 20 litre jerrican).

The reasons articulated by the respondents regarding the choice of their water source were: only available water source by 68%, easy accessibility by 16 %, a cheap source and safe water source each by 8% of the respondents.

9.7.2 Operation and maintenance of water sources

The majority of the water sources (60%) are attended to by the WUC (Figure 15), which receives a monthly contribution fee from 38% of the households, of between two hundred and five hundred shillings (200-500Ug.Shs), while 47% of the households make daily contributions depending on the number of twenty (20) litre jerry cans collected on a daily basis. The mode of fetching water in KTC is by 20 litre jerry can. On average each twenty litre jerry can is charged between twenty to fifty shillings (20- 50/=).

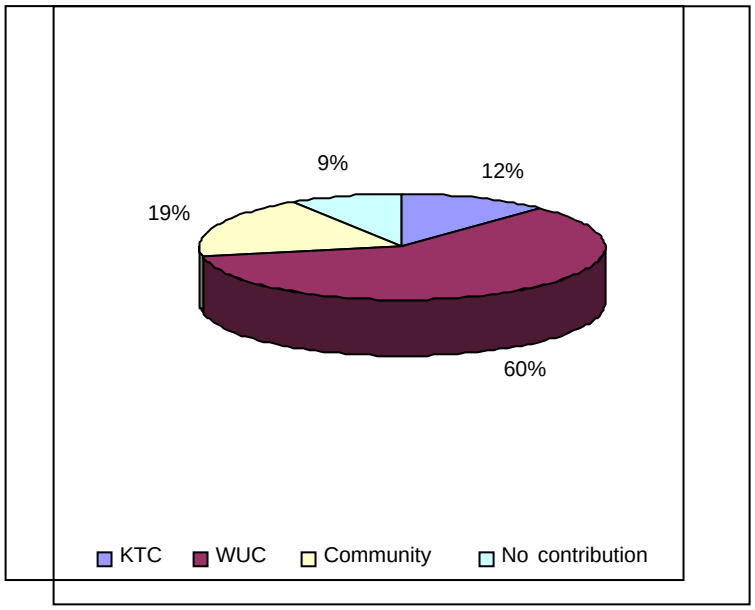

Figure 15: Responsibility of operations and maintenance of water sources

The communities are responsible for 19% of the water sources. In this case the households contribute by kind (physically digging, constructing fences, drainages etc) while about 9% don't make any contributions.

9.7.3 General Cleanliness

On average both the water collection and drinking containers were generally clean with 76% and 79% respectively. Most of the households had the same containers for water collection and drinking water storage. The cleanliness of the containers is primarily a result of the efforts of the WUC, which prevents people with dirty containers from accessing the water source. The denied access encourages the people to return to the water source with clean containers.

9.7.4 Boiling drinking water

The habit and practice of boiling drinking water is not very much upheld amongst the communities. The survey results indicated that only 45% of the households boil drinking water. Of the 55% of the households who don't boil their drinking water, 56% have the perception that borehole water is clean and not contaminated, where as 27% disinfect their drinking water using chlorine tablets. The latter were distributed to the households by the town council and NGOs in attempts to eradicate cholera from the community. At the time of the baseline study, most of the households had run or were in the process of running short of the chlorine tablets. It is not certain

as to whether they will resort to boiling their drinking water or not. 14% of the households don't boil their drinking water simply because they were either lazy or considered the process cumbersome and tedious, while 10 % said they did not have the resources to do so.

9.7.5 Fetching water and accessibility

The burden of fetching water depends a lot on the prevailing division of labour in the households and prevalent social practices. Men for instance are not charged with the responsibility of having to fetch water. Hence the results showed that only 5% of men were doing so, mainly in Lemobongolewi Village, followed by children (5%) partly because they are always away in schools. The survey revealed that the burden of fetching water is mostly on adult females (80%) in all the parishes in the town council.

The accessibility of the water points was very good in the town council as seen in Figure 16 with 50% of the households accessing water points within 200m, 25% walk a distance between 200-500m and 18% walk a distance of 500m. This is in conformity with the water regulations that stipulate that water accessibility should be within distances of 100m and 500m in urban and rural areas respectively.

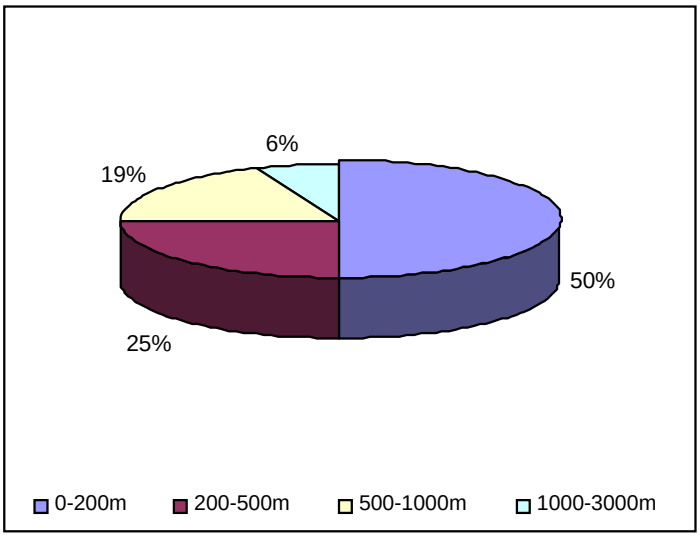

Figure 16: Walking distances to the water points

CHAPTER TEN - SOLID WASTE MANAGEMENT

10.1 Introduction

Solid waste refers to the refuse from households, non-hazardous solid waste from commercial and industrial establishments (not sludge or semi-solid waste) refuse from institutions, and street sweepings. The process of collection, recycling, storage, resource recovery, and disposal of solid wastes is what is referred to as solid waste management (SWM) (NEMA 2004).

10.2 Sources and types of solid waste types

Solid wastes are characterized by their sources, by the types of wastes produced, as well as by generation rates and composition. There are principally three main classifications of peri urban solid wastes: municipal, industrial and hazardous. However, what is defined or designated 'municipal waste' depends upon the individual city's definition of municipal solid waste. Nevertheless, in Kitgum most municipal solid wastes are from households, markets and institutions, street and public open spaces, dead animals, and non-hazardous waste from processing industries. In the Town Council, the waste stream is mostly made up of plastics, Kitchen waste and paper, which constitutes the highest percent (Figure 17) of all the waste produced. The garbage includes household waste, market refuses, and waste from handling, storage and sales of produce and meals, which are largely biodegradable organics consisting of food wastes, matooke, cassava and potato peelings, this organic waste is poorly collected and inadequately stored. As a result it is subject to leaching, emits odours, and is a source of flies. This situation is aggravated during the rainy season when the waste becomes moist, smelly and difficult to collect and transport thus becoming a source of health hazards.

The wastes generated in KTC contain plastics, glass, kitchen wastes, paper, batteries, old clothes, metals and others. Figure 17 depicts the percentage composition by weight of the common waste categories by the households in the town area. The results show that 43.1 % of the households produce more of the plastics, kitchen waste and paper (Figure 17).

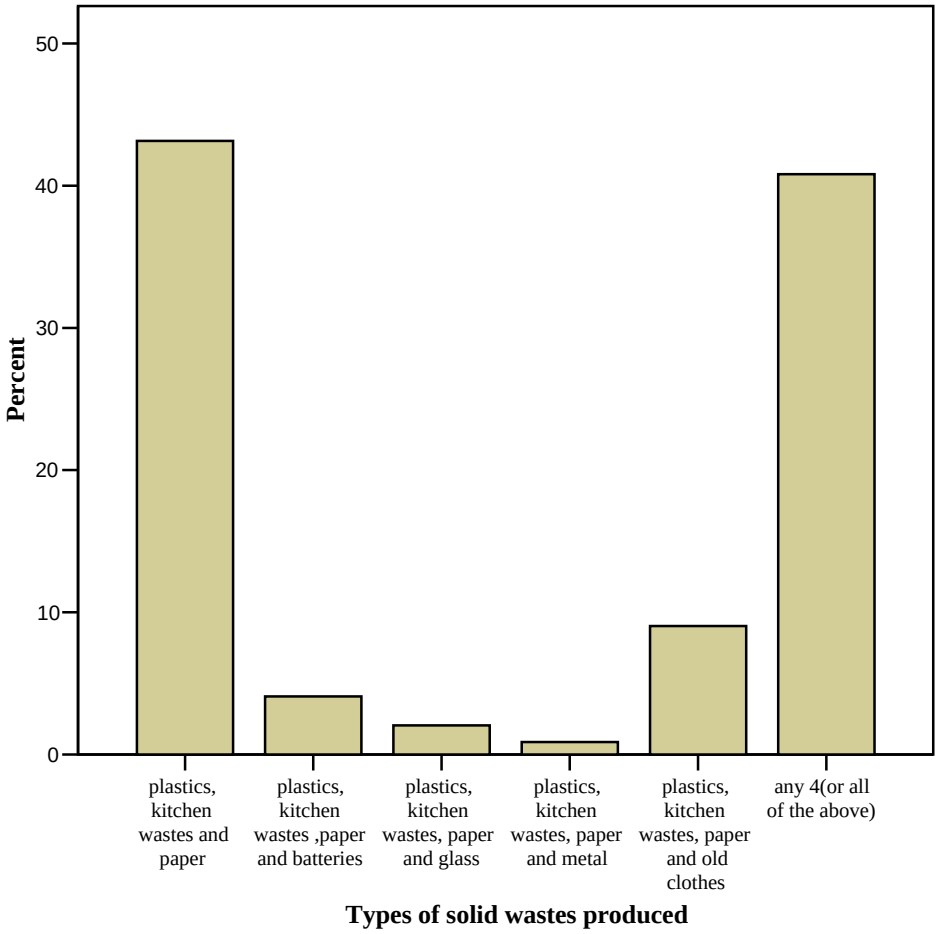

Figure 17: The categories of common solid wastes expressed generated by households

10.2 Temporary storage and collection methods

10.2.1 Household level

In most households in KTC, solid waste storage is poor. Most of the generated waste is not sorted, and is often stored in old leaky buckets, sacks and a huge bulk is disposed of in pits. From the field work study, 96.8% percent of households said that they did not segregate their wastes while 3.2% said they did segregate their wastes. When such waste accumulates it is in most cases burnt.

There is no house-to-house collection of wastes in KTC. One of the main reasons is that the residents are unwilling and/or unable to pay for these services. In addition, large areas of the Town Council are highly congested. Given the highly inadequate number of communal dumping sites, wastes are often deposited in small (illegal) dumps along city streets and market and business districts, making collection inefficient and expensive (Plate 17).

Plate 17: Solid waste dump site behind Kitgum main Road, the inset shows pigs feeding from the dump-a potential hazard to the food chain

It was found out that 65.8 % of households interviewed, stored their solid wastes in compost pits when they accumulated. 34.2% had no compost pits so they collected their garbage in sacks and some just disposed of it into gardens. Bardege village had the highest number of compost pits (19.2% of the households with compost pits) with 1st Jenge having the least (2.6%) (Figure 18).

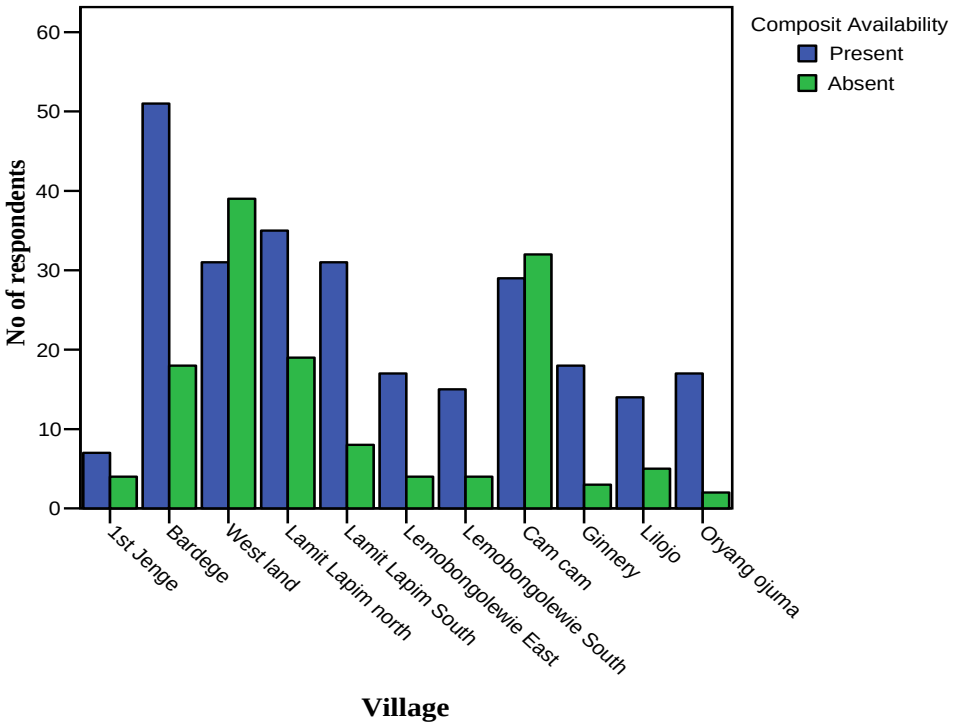

Figure 18: The availability of compost pits in selected villages

10.2.2 Community level

Public or communal skips are placed at strategic locations in the city. Household waste is often stored and when it accumulates, it is dumped either by a family member, usually a child, woman or a family servant in the skips. Given the low collection frequency by KTC, the uncollected waste is illegally dumped in open spaces, water bodies, and storm-drainage channels, buried, burnt or deposited along the streets or roadsides see Plate 18.

The total percentage of people whose wastes are disposed of at the legal dumping site amounts to only 10%. This is attributed to lack of transportation and man power for collection and transportation of the wastes. Due to the increasing population leading to high generation of wastes in the city, solid wastes dumps are often present and normally remain in the area there by attracting scavengers, mostly children and wandering dogs, birds, pigs, and other stray animals and vector causing insects. Some streets may go unattended to for weeks.

Plate 18: Use of sacks for solid waste disposal in the town council area, left - waste accumulation near a water collection point.

Plate 19: Damping sites are potential public health threats, being very near households and inset at work places through food chain

10.3 Transportation and Final disposal

Approximately three tonnes of solid waste is generated in KTC daily. Of these, about 10%is collected and disposed of in at a landfill, about 2.6km from the town centre. The landfill is not sanitary and is operated as an open dump. The Town Council typically gives contracts to competent contractors to collect solid wastes and dispose them of. At the time of this study, no contractor had been procured yet. This is in line with the survey findings in which the great majority (77.9%) of the respondents said that the town council had no solid waste manager and also explains the poor solid waste management observed in the city (Plate 19).

The Town Council is in charge of collecting solid wastes from the scattered communal dumping sites and transporting it for disposal to the open dumping site, the only legal site for such an

activity in the city. The wastes are collected from the city and transported to the dumping site using one old Jieffang lorry. The collection is undertaken on a daily basis.

During the base line study, it was observed that there were inadequate equipment, inefficient collection practices, no environmental control systems; poor, unhygienic operating practices, open burning of garbage, extensive illegal dumping and littering see Plate 20, although some appear to be sorted but cant be recycled probably because there is no demand for the kind of waste. The current open dumping site as mentioned earlier is not sanitary. This implies that it has a high potential of polluting the groundwater following seepage of the leachate. In addition, it is an eyesore and a source of odours in the area, the non-biodegradable wastes (mostly polyethene bags) is dispersed all over the area degrading the environment including the soils. Further more, a high mortality rate of livestock has been attributed to effect of consumption of these polyethene bags (*kaveras*) and other hard metallic and plastic materials.

Plate 20: Dump of non biodegradable solid waste-metallic scrap (left) and glass bottles (right)

The ubiquitous dumping of solid wastes, can be seen everywhere in the town and more still, this situation is a major contributor to the city's significant rise of the incidence of vector-propagated diseases especially with the biodegradable solid wastes.

10.4 Public awareness on Solid Waste Management

Kitgum town council has the mandate to provide solid waste management awareness campaigns through radio talk shows and community meetings. But this is under taken by stakeholders who are monitored and supervised from KTC. The population is absolutely ignorant on segregation, (93% reported that they don't segregate their solid wastes), management and reuse of those solid wastes.

10.5 Private sector participation in solid waste management

Private sector participation in the solid waste management in KTC is currently nonexistent. However, micro-or small enterprises such as for recycling are set up. These normally collect food wastes for example banana (*matooke*) peels that are later sold to animal owners such as cows as animal feed.

10.5.1 Challenges facing solid waste management in KTC

- Inadequate resources to ensure regular collection and disposal of solid waste. Garbage is collected only when funds are available.
- There is only one official landfill for waste disposal and is not a sanitary landfill, it is operated as an open dump. The rest of the landfills are illegal. The major problem is lack of funds to acquire land.
- There is lack of equipment (vehicles, safety precaution equipment for the workers including gumboots, hand forks, hoes and spades), and human resource to facilitate management of solid waste in the area.
- The Town Council has limited information concerning solid wastes and/or has no information regarding different stakeholders active in the field of solid waste management in the area.
- Lack of awareness on the part of the locals. Waste generation patterns are determined by people's attitudes as well as their socio-economic characteristics. Attitudes towards waste may be positively influenced by awareness-building campaigns and educational measures that is lacking.

CHAPTER ELEVEN - DRAINAGE AND WASTEWATER MANAGEMENT

11.1 Drainage at household level

During the survey, extensive flooding as a result of storm water runoff was observed especially in the low lying areas of KTC along River Pager. The contaminated storm water runoff was also seen to drain not only the river Pager but also directly into sensitive estuaries.

Plate 21: Damp ground following infiltration of stagnant storm water. Typical situation in most low lying areas in KTC, inset is a drain channel that is clogged with solid wastes

Many households and public places like lodges discharge their wastewater into open channels which traverse the area and these are normally not lined (Plate 21:) or they are cracked. The open channels are also recipients of storm water runoff which carries with it solid wastes that have been deposited on ground as seen in Plate 22. This causes stagnation which is not only an eye sore but also a source of stench in the town area.

Plate 22: solid wastes disposed off along an open drain channel

Rainwater harvesting by households in KTC is not practiced. A relatively high percentage of households (42.3%) in KTC leave in grass thatched houses and most lack containers where to store the water. As a result a lot of rainwater is wasted as run off causing soil erosion and hence gully formation (Plate 23), over loading of the storm drains and subsequent flooding. From the households visited 40.9% had poor drainage 40% fair and 19.1 % had good drainage.

Plate 23: Poor condition of storm drains, Left- Unlined, Right- drain with eminate gulley formation. Note the dark brown coloured wastewaters (leachate) carried by the drain.

During the survey, it was observed that a large proportion of the people had poor drainage at home. Few households had good drainage as depicted from Figure 19 below**.**

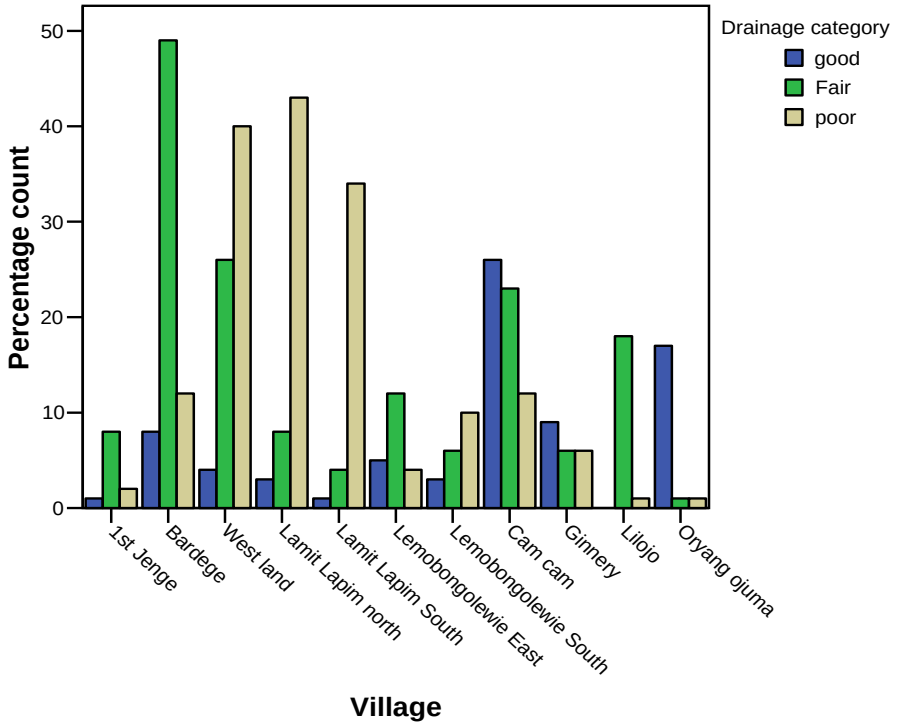

Figure 19: The drainage situation as depicted by the respondents in the different villages

11.2 Town-wide drainage

In the Kitgum town council, there are storm water drains that are lined with hard core stones that finally discharge into River Pager. The operation and maintenance of the drain channels is responsibility of the town council. The drain channels are not efficient and effective because most of them are cracked, look rather narrow as such the volumes of storm water makes them inadequate and usually during heavy down pour, soil and other materials are washed into the drains by the storm water run off hence clogging (Plate 23) and the eventual flooding of the city see Plate 25

Plate 24: Stone pitched storm water drain in the TC. Note the brown waters in the drain following soil erosion; accumulation of deposited silt resulting in accumulation of storm water and poor drainage.

There is no treatment of the storm water prior to discharge in the river. Besides, most city drains are clogged with garbage and silt leading to stagnant water. The latter becomes a breeding place of vector causing insects like mosquitoes that cause malaria. During the survey, it was also noted that the community dumps rubbish deliberately along the road side especially when it is about to rain in the hope that the storm water run off would wash it away to the river valley.

Land shortage (that is small plot sizes) due to land fragmentation in the council area, has hindered most households from digging soak pits in their compounds. This has lead to the communities using open channels for disposal of their liquid wastes direct on to the ground Plate 25. This practice poses a challenge on how to handle the liquid wastes which end up as stagnant waters around homes or lodges.

Plate 25: Left- Disposal of grey water directly on ground, Right-Storm water flowing towards R. Pager

11.3 Wastewater collection

Kitgum town council has no central sewage treatment plant. At the household level, 71.6% of the city's total population uses pit latrines, 5.1% have septic tanks while 23.3% use other options such as ecosan, VIP latrines etc. Given improper maintenance and servicing, each of these systems represents serious health and environmental hazards to the public. The town council and private cesspool emptor are responsible for emptying septic tanks at household levels.

In KTC, there is only one company that is in operation and this is the Lee Wright Company. It dumps wastes directly in open pits which is located in Alango Parish. When a pit gets full, it is abandoned and a new one dug adjacent to it (Plate 12). On visiting the site, it was noted that

there was healthy grass growing around one of the filled up/abandoned pits meaning the waste improves the condition of the soil which when applied in the garden, can nature plants.

11.4 Grey water drainage

The generation of grey water by households is directly related to the consumption of water, which is dependent on a number of factors including the level of service provision, tolerance of residents to pollution and the level of awareness of health and environmental risks. Grey water accounts for virtually all water consumption in non-sewered areas, which is used consumptively in cooking, washing utensils and clothes and finally finds its way to the neighbourhoods (Plate 26)

In the very high-density urban settlements that were visited, such as Alongo west, Ayul A, Ayul B and Central villages, there is little or no space available for gardening. Hence grey water was perceived to be a problem rather than a potential resource for recycling. In these settlements grey water is poured on ground resulting in formation of streams, which subsequently flow into the storm water drain, adjacent to the main road.

A high percentage (68.9%) of the households visited indicated that grey water from the bathing places was directed into soak pits while the rest (31.1%) pour it on the ground, use septic tank, drainage channel or gardens(Figure 20). Smaller amounts of grey water from the kitchens were usually just poured onto the ground surface near the houses.

In areas where drainage was particularly poor, a number of health problems were identified by residents, including mosquito infestation, smelly stagnant water and children falling ill after playing in the greywater.

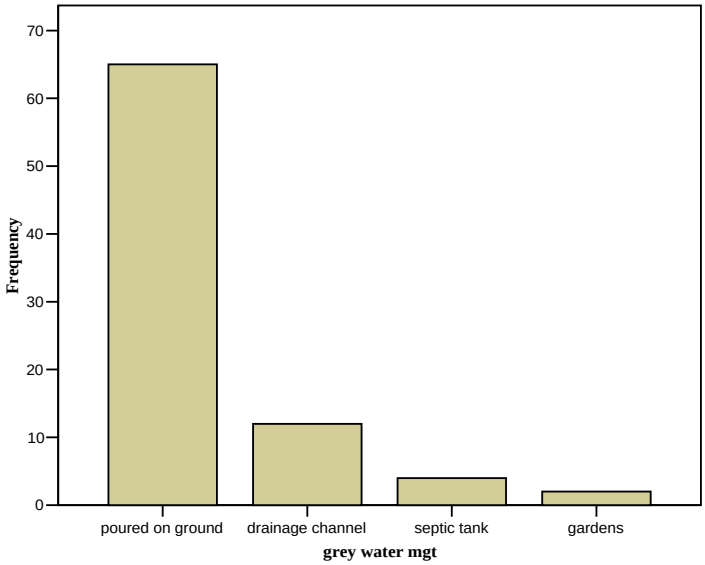

Figure 20: Frequencies of the options used for grey water management

Plate 26:.Non sewered grey water in high density areas, Right - bath place with a pipe that leads to the neighbourhoods.

CHAPTER TWELVE - AGRICULTURE

12. 1 Introduction

Kitgum is mainly an agricultural district. The land available for subsistence farming in Kitgum is estimated to be 3,200km^2(http://www.kitgum.go.ug/). There is limited information regarding agriculture and farming in Kitgum. From the survey it was revealed by the locals that most of their land is in the village (Fig. 18). 33.6% revealed that they owned land away from the TC and 66.4% said that their land was with in the TC.

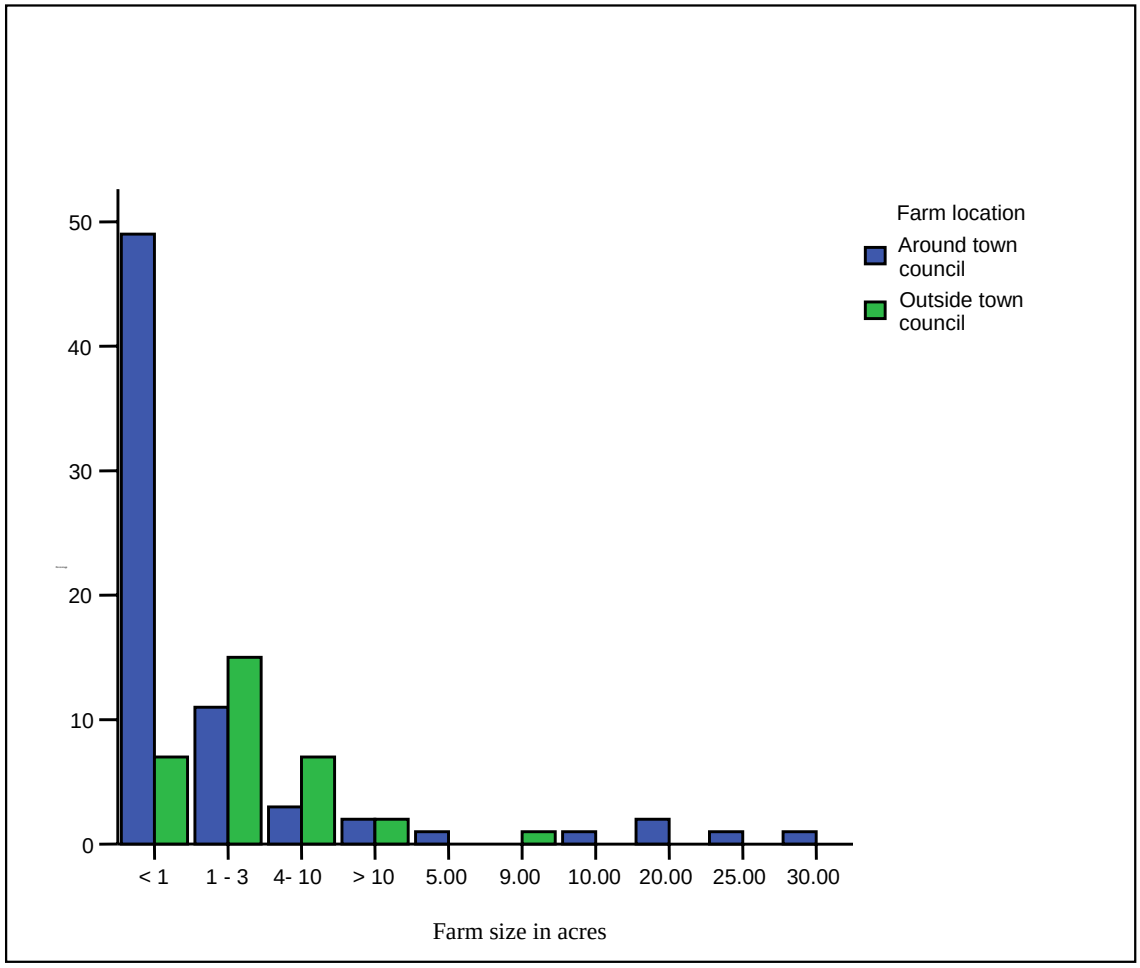

Figure 21: Variation of farm size with location (1 acre=4046m2)

12.2 Agricultural practices

Most of the residents in the TC have their farms located away from the city centre. The major type of farming practiced is subsistence farming. A few farmers apply natural fertilizers, which mainly include distillery wastes, organic manure from composted solid wastes and animal dung from cows and goats, to the gardens. The locals who have farms do assert that they abandoned them due to political instabilities. The communities have now resorted to digging small plots of gardens from which they grow vegetables and legumes. Due to the dense nature of the settlements, most of the small gardens are located adjacent to toilets (Plate 27).

Plate 27: A vegetable garden on a small plot adjacent to a toilet

Knowledge of Sanitized faeces

These are mainly faeces from ecological toilet systems. Of the people in the TC who had farms, when asked if they were aware that sanitized faeces exist and that if they knew that they can be used as fertilizers, 74 % said yes while 26% said they had never heard of them. Further more, from the survey, respondents were asked if they can apply them as fertilizers in their gardens and eat the crops, 76.8% said they could eat the crops grown while 23.2% said they could not. For those who could eat the crops had the following reasons: the faeces do not get into contact with the leaves, they decompose and become harmless, and if the sanitized faeces are not applied to vegetables.

12.3 Crops grown

The main crops grown in Kitgum Town Council are:-

Cereals: Sorghum (local varieties), sekedo, Maize (longe Series), Millet (local though Serena and other improved varieties are also being planted, rice (up land), and bulrush millet to a limited extent

Legumes: Groundnuts (serenut series, red beauty, Egola and several other varieties)**,** beans (K131, K132, Lango beans), pigeon peas (mainly local tall and long term varieties)**,** Soya bean (mainly Nam I and II), cow peas (mainly local varieties though improved varieties are also grown to small extent e.g. large white, green grams (commonly in second rains)

Root crops: Cassava (Variety 2961,TME 14) though now susceptible to cassava brown streak in most districts but not yet identified in Kitgum district, NASE 4, NASE 8, 10 NASE 12 are commonly grown. Other local varieties e.g. the bitter varieties are also common, sweet potatoes (local varieties)

Oil crops: Simsim (local varieties mainly though sesame 11 is gaining popularity rapidly due to its high yield), sunflower mainly sunfola though white and stripe varieties are also grown to some extent, shea nut (indigenous) self propagating but of high cultural value.

Horticulture crops: Cabbage, tomatoes, onions, *amaranthus hibiscus*, egg plants, plus man other local vegetables.

Fruits: Mangoes (local varieties), oranges (Washington navel, sweet oranges, mandarin, grape, lemons are grown), avocado to some extent, pawpaw (local varieties) and passion fruit (yellow variety).

12.3 Challenges experienced by farmers

Insecurity: As more and more people abandon the rural areas because of the Lord Resistance Army (LRA) rebel activities, in search of safety and work, the capacity of rural areas for agricultural production decreases. This has been the trend affecting Kitgum populations, a vicious circle that continues to diminish agricultural productivity and deepen the decline in agricultural production.

Forest degradation: Kitgum suffers from forest degradation, which in turn leads to soil erosion and degradation. The district intends to promote agro-forestry technology among the people to

enhance sustainable agriculture, protect and manage environment; and minimize quantity of fuel used per household.

Market for products: Kitgum is in a remote part of Uganda such that so accessing lucrative markets in the big commercial centres is rather costly. In addition, the insurgency, which has lasted for over a decade and a half, has displaced nearly half the district's population from its' farms. As a result many farms are untended so productivity is low.

Modern farming: There is also lack of hybrid seeds, fertilizers and mechanization; the extension services are at minimal level owing to the insecurity and the low revenue base of the district. Unskilled labour is generally the principal asset. Kitgum farmers have limited ability and resources to invest in improved land management or adopt new farming systems. The majority of households depend on agricultural production as their main source of food and income.

Declining soil fertility: Increasingly, the declining performance of the agricultural sector has created the need for farmers to engage in practices that degrade land and deplete vegetation cover and other natural resources especially watershed reserves. This is true with KTC in that a large number of the community is encroaching on the catchment area of river Pager.

Infrastructure: Good infrastructure is essential for food security to ensure low food prices and efficient markets that can respond to changes in demand. Infrastructure reduces the costs of transporting produce and inputs (such as fertiliser), and food storage. It allows information transfer between producers and markets, and gives farmers access to new technologies. Kitgum lacks this type of infrastructure and coupled with insecurity, the problem of agriculture development is aggravated.

HIV and AIDS: while a range of diseases (such as malaria) affect food security, HIV has had the biggest impact in recent years. HIV/AIDS mainly affects economically active adults, and so contributes to worsening and widespread food insecurity. HIV/AIDS undermines the capacity of households' to work and so produce or buy food, increases the number of orphans and children with little or no care, and reduces social support mechanisms.

Weeds and Pests and diseases: A weed is a plant growing where it is not wanted and with a harmful impact. It can be harmful to human activities, such as farming. Weeds compete with the crops for sunshine, nutrients and moisture. Striga termed "*Luduwa*" in the local language is the weed of concern in KTC at the moment (Plate 28). It chokes crops and out competes them. It

also causes inflammation of human muscles when one gets in contact with it. Pests and insects eat crops especially the leaves of plants while aphids suck sap from plants.

Plate 28: Striga "luduwa", a major weed of concern in KTC

CHAPTER TWELVE - RECOMMENDATIONS

DRAINAGE AND WASTEWATER

- A system that can transport liquid wastes from homes to specific points demarcated for their disposal be established,
- Community should be sensitized on the problems of relating to unsanitary disposal of liquid waste into the storm water drains; that it could cause water pollution, silting of the streams and rivers, clogging of the drainage channels etc,
- Research on the possibility of re use of grey water, should be done,
- Rainwater harvesting should be encouraged in the town council area. The benefits of this are two fold; the communities would be able to obtain free and relatively clean water and there would be improvement of the drainage considering that the volumes of runoff would be significantly reduced.

SOLID WASTE

- Massive sensitisation of the community is required since most of them do not know that solid wastes, when properly sorted out, can still be reused for other purposes like fertiliser in the garden,
- Garbage skips be provided in each parish, major markets and other public places for collection and also an appropriate means of transport that regularly empties the containers be availed. Public and household bins should be provided to the people for litter,
- Demonstration on segregation, proper storage, collection and disposal, recycle, reuse and others means should take precedence in the campaign on solid waste management,
- It is unanimously agreed that the Government of Uganda should restrict production of polyethene bags in the country and substitute it with paper bags which are easily bio-degradable,
- Town Council Authority to purchase and allocate a piece of land that should be designed in a sanitary manner for disposing the solid wastes,

- Coming up with an integrated solid wastes management strategy which incorporate; sensitization of the masses on segregation, reuse of the wastes, efficient collection, transportation and proper disposal of the wastes by KTC,
- KTC should come up with a body to regulate, collect and manage wastes. A penalty/ fine should be established for those who dump rubbish anyhow in order to control illegal dumping of rubbish in river pager and others. An Arrangement for daily collection of garbage regardless of existence of external funding should be made.

SANITATION

- People of KTC should be sensitized on the ground water and the environmental pollution caused by pit latrines,
- The households that already own Ecosan toilets should be sensitized on the importance o the faecal manure and on the operation and maintenance of the toilets so that they can get to appreciate the advantages of ecosan,
- The entire population should be sensitized about the resource oriented sanitation options,
- The rules and regulations regarding sanitation should be enforced, especially concerning disposal of faecal sludge.
- Operation and maintenance of existing public sanitation facilities should be optimised.
- Laws against open defecation should be enforced to ensure that it is no longer considered a proper sanitation option.

WATER COVERAGE

1. Since water coverage in the KTC ranges from poor, moderate to good especially in home that are connected to the central supply systems. DWD, which is the lead agency in water (should) and NGOs working on water be encouraged to drill more boreholes within the town council areas. The areas with few water sources (boreholes), but with boreholes with very good yields should be motorized and more tap stands installed so as to serve more people and meet the water demand. In addition to this, secondary distribution pipes should be installed to enable those households that can afford, connect water closer to their house and also encourage such

households to share water with their neighbors at the normal water fees rate (20 Ug. Shs per 20 liter jerrican).

2. Given that the quality of river water has/is deteriorating mostly due to anthropogenic activities, Kitgum town council authority according to the National Environmental (Wetlands, River Banks and Lake Shores Management) Regulations, 2000, should introduce byelaws with the aim of stopping any further degradation of the river. It should also gazette off a protected zone of thirty meters from the highest water mark of river Pager, after which no activities be permitted within these protected zones without the written authority of NEMA.

3. The town council should encourage analysis of water quality of all drinking water points in the town council area, other than just the central water supply points. As already seen the common diseases in the town council area are water and sanitation related, implying that improvement of water, hygiene and sanitation in the town council would greatly help in eradication such diseases. With ROSA project in place, it is hoped that improvement of sanitation will positively impact on the quality of water within the town council. It is therefore, of interest to the project that the trend of improved water quality is monitored by the respective agencies (DWD, NGOs, district etc).

4. Other alternative ways in which the WUC can be financially motivated into ensuring that the water points are properly managed should be sought. Instead of having to have the water sources very clean in the absence of cholera out-break but pathetic hygienic conditions in the event of the cholera out-break attributed to lack of funds.

5. Given that groundwater is the major water supply sources for the town council area, DWD should carry out mapping of the groundwater aquifer of Kitgum town council areas to ascertain: a) the groundwater potential, and if necessary, water regulation through issuance of water permits be implemented for sustainable management of the resource. b) the vulnerability of contamination of the water sources so that the best sanitation options that will not impact adversely on groundwater be adapted in the SSWP for the town council area.

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APPENDIX 1: BASELINE TOOLS

Assessment of the Water and Sanitation situation in Kitgum TC

HOUSEHOLDS QUESTIONAIRE

County	*Division/ Sub county*	*Parish*	*Village / LC1*

Date :…….

Questionnaire No. :……..……..……

Name of Interviewer :……..……

Name of Supervisor (Checker) :……..……

1.0 Background Characteristics

1.1 Respondent sex and age bracket Sex ☐ 10<20 20-30 30-40 45+

1.2 Name of the respondent and position in the family……..……/……..……

1.2. No. of people in household (including children) ……..…….

1.3 No. of people employed in household ……

1.4 Type employment …….

1.5 Any other sources of income ……..……

1.6 Household income

a) 0 – 5,000 b) 5,000 – 10,000 c) 10,000 – 50,000 d) 50,000 – 100,000

e) 100,000 – 200,000 f) 200,000 – 300,000 g) 300,000 – 500,000 j) More than 1,000,000.

1.7 Highest level of education of members in the household in question?

Primary ☐ O' level ☐ A' Level ☐ University ☐ Other tertially ☐

1.8 Are you the landlord or tenant?……

1.9 For how many years have you stayed/lived in this place? ……...

2.0 General Information

2.1 Location: Urban ☐ Rural Area ☐ Peri-urban ☐

2.2 Type of housing Grass thatched (Mud and wattle) ☐ Iron Sheets (Plastered) ☐
Stored building ☐ Bungalow ☐

2.3 Density of housing Low ☐ Medium ☐ High ☐

2.4 Settlement patterns Low ☐ Medium ☐ High ☐

2.5 Environmental conditions,
Clay type of soil ☐ Hilly and rocky area ☐ Sandy type of soil ☐
Low-lying marshy area hence high water table ☐ Presence of Vegetation ☐

3.0 SANITATION (IN REGARD TO FAECAL DISPOSAL)

3.1 What sanitation facilities do you know of? 1) Traditional pit-latrines
2) VIPs 3) Dry toilets 4) Flush Toilet 6) Cat method/make shift

3.2 Of the sanitation facilities above, what do you use?.....

3.3 What anal cleansing material do you use and why?.....

HOUSEHOLDS WITH PIT LATRINES

3.4 What is the dug depth and width?…….....

3.5 Who decides which sanitation facility you should use in your family?.....

3.6 How many stances does it have?.....

3.7 Do you share the pit latrine with any other households? Yes ☐ No ☐

3.8 If Yes, How many people including children use the facility?.....

3.9 Who is responsible for the O&M of the facility? .....

3.10 How often is it cleaned and what is used for cleaning? .....
……...

3.11 Do children use the pit latrine? Yes ☐ No ☐

3.12 If No, what do they use? .....

3.13 During your stay in this place, is this the first pit latrine? Yes ☐ No ☐

3.14 If No, where was the 1st one located and what happened to it?.....

3.15 What is normally done when the pit latrine fills up?
Emptied ☐ Covered and new pit dug ☐ Abandoned ☐

3.16 Who is responsible for the empting of the pit latrine and how much is paid?
…….....

HOUSEHOLDS WITH SEPTIC TANKS

3.17 What is the size of the septic tank? ……...

3.18 How many times have you emptied your septic tank in the last 5 years?.....

3.19 Who emptied it, how was it done and how much did it cost you?.....

HOUSEHOLDS WITH ECOSAN

3.20 When and how did you first hear about ECOSAN toilets?.....

3.21 How much did it cost you to build the ECOSAN toilet, what materials were used and who built it?

.....

3.22 For how long (years) have you been using this toilet?.....

3.23 What sanitation facility did you use before the ECOSAN toilets?.....

3.24 What prompted you to opt for the ECOSAN toilet?

High water table ☐ Rocky formation Affordability ☐

Nutrient recycle ☐ New technology ☐ Other (specify)……..

3.25 What are your feelings about the ECOSAN toilets?

……

……..

……..

……..

……..

3.26 What do you plan to do with the generated compost and urine?.....

……..

3.27 Are there any cultural taboos associated with using sanitised feaces and urine? Explain them.

……...

HOUSEHOLDS WITHOUT ECOSAN BUT HAVE HEARD OF IT

3.28 How did you get to know about the ECOSAN toilets and what do you know about it?

…….....

……..

3.29 Having heard about it what is preventing you from having one?.....

…….....

3.30 Given the opportunity to have an ECOSAN toilet would you go for it? Give reasons.

……..

……..

4.0 WATER COVERAGE

4.1 What water source do you use and why?.....

4.2 Who maintains the above water source and what is your contribution?.....

……...

4.3 Are you connected to the central water system?

……...

If No, why?

……

If yes, do you share the tap stand with other households? How many households and total number of people use it?.....

4.4 Has anyone in this home suffered water borne diseases before? Which disease was it and what do you think caused it?

……...

4.5 Do you boil your drinking water? If not, why? ……

5.0 SOLID WASTE MANAGEMENT

5.1 What kind of solid wastes do you generate?

Plastics Glass Kitchen waste Paper Batteries Old clothes

Metals Others (Specify)

5.2 How is the solid waste stored, and what is done to it on accumulation?

.....

5.3 Is there a waste manager in the TC? Who is it, how often do they pick rubbish from your home and how much do you pay for their services? Are they sufficient in their work?

……..……

……..……

……..……..

5.4 Do you segregate solid waste? .....Give reasons for your answer……..…….……

……..…….....

5.5 Do you know that solid waste can be a resource? If yes, how? .....

……...

6.0 GREY WATER AND STORM WATER

6.1 Is your bathroom and kitchen connected to a soak pit? ..... If Not where does the wastewater from the bathroom and kitchen go? .....

6.2 Is there a drainage /storm diverting channel?.....If yes, is it lined?.....
If not, how is the storm run off managed?.....

7.0 FARMERS

7.1 Location and size of farm?.....

7.2 Do you find the soils suitable for your agricultural activities? Give reasons for your answer
…….....

7.3 Do you apply fertilisers in your farm? If so which type and how much do you spend on it annually?.....

7.4 Have you heard of sanitised faeces and urine being used as fertilisers? Comment (how you got to know, whether you would or would not encourage it) ……...
……..

7.5 Would you eat crops fertilised using sanitised faeces and urine? Why? ……..
……...

7.6 Are there any challenges that you face in farming?
…….

7.7 How do you think these challenges can be over come?.....
…….

"Thank You very much for Y our Cooperation"

HOUSEHOLD CHECKLIST

DISTRICT COUNTY S/COUNTY VILLAGE

COMMUNITY INVOLVEMENT

NO	NAME	GENDER	TITLE
1			CHAIRPERSON WSC
2			TOWN COUNCIL OFFICIAL (Specify)
3			HEALTH INSPECTOR
4			L C CHAIRMAN (Specify Level)
5			OTHER

NO		**TOTALS**		
	Name of household			
1	**Head of family (Male , Female)**	**M**	**F**	
2	**Number of adults** Males (M) Females (F)	**M**	**F**	
3	**Number of children** Males (M) Females (F)	**M**	**F**	
4	**School going children** Males (M) Females (F)	**M**	**F**	
5	**Number of people employed** Males Females			
6	**Type of house** Permanent, Semi permanent, Temporary (P,S,T)	**P**	**S**	**T**
7	**Kitchen** Present, Absent, (P,A)	**P**	**A**	
8	**Drying rack** Present, Absent, (P,A)	**P**	**A**	
9	**Animal house** Present, Absent, Not applicable (P,A,N)	**P**	**A**	**N**

10(a)	**Latrine** VIP, Ecosan, Traditional with sanplat, Traditional without sanplat (V, E, Ts, Tw, F, A)	**V** **Tw**	**E** **F**	**Ts** **A**
(b)	Dirty/Clean (D,C)	**D**	**C**	
11(a)	**Compost pit** Present, Absent (P,A)	**P**	**A**	
(b)	**Separation of garbage** Present, Absent (P,A)	**P**	**A**	
12(a)	**Household cleanliness** Swept, Not swept (S, N)	**S**	**N**	
(b)	Ventilated, Not ventilated (V,N)	**V**	**N**	
(c)	Faeces around, Absent (F,A)	**F**	**A**	
(d)	Rubbish around, Absent (R,A)	**R**	**A**	
13(a)	**Drinking water** Yes, No (Y,N)	**Y**	**N**	
(b)	Drinking water containers Dirty, Clean, Absent (D,C,A)			
(c)	Water collection containers Dirty, Clean, Absent (D,C,A)	**D**	**C**	**A**
14	**No. of times of fetching water (weekly)** Women (W) Men (M) Children (C)	**W**	**M**	**C**
15	**Water source** (name)			
16	**Distance of water source** (km)			
17	**Household drainage** Good, Fair, Poor (G, F, P)	**G**	**F**	**P**
18	**Construction at home** Pit latrine (M,F) Bath shelter (M,F)	**M**	**F**	
19	**Household monthly income** (‘000)			
20	**Source of income** Shop, kiosk, workshop, agriculture, livestock. (S, K, W,A, L)	**S** **A**	**K** **L**	**W**
21	**Graduated tax payers** Males Amount (‘000)			

	Females Amount ('000)		
22(a)	**Communication facilities** Radio (P, A)	**P**	**A**
(b)	Radio station listened to more frequently		
(c)	Television (P,A)	**P**	**A**
23	**Participation in water (WSC)** Males (M) Females (F)	**M**	**F**
24	**Participation in L C leadership** Males (M) Females (F)	**M**	**F**

Compiled by:

Name……. Title……

Signature……... Date……

FOCUS GROUP DISCUSSION GUIDE

Purposes and Issues covering the FGDs

(Note that this is just a guide and NOT all questions are inclusive. Direct the discussion and keep it precise to relevant information and capture as much as possible)

1. Assess the gravity of need for better sanitation coverage and hygienic environment with a focus on Kitgum residents.
2. Capture user input in the final WSSP

3. Explore and understand village cohesiveness and past experiences and records of group/cooperative efforts.
4. Assess the awareness and extent of participation of the proposed beneficiaries in making tangible contributions to the ROSA project.
5. Carry out rapid appraisal of health conditions of the villagers, in particular children, in terms of common diseases and appearance.
6. Analyse the community understanding of resource utilization and their attitude towards resource oriented sanitation options.
7. Assess user willingness to contribute and shoulder operation and maintenance costs
8. Capture user feelings on the operation and maintenance of current facilities and determine their participation / role in the process of O&M.
9. Capture the thoughts of participants on areas for change and involve them in mapping out the changes and change process. Capture their needs, problems, and ideas for betterment.

GUIDELINES FOR CARRYING OUT A FOCUS GROUP DISCUSSION

1. **Define the purpose, i.e. objectives of the focus group (refer to purpose and Issues above)**
   The first step is to identify the issues you need to understand better, and then formulate some objectives relating to the issues. Your objectives should be as clear and specific as possible. For example, we want to determine if there is enough local community interest in supporting a resource oriented sanitation program to be able to fully participate and contribute to its implementation. Therefore it is better to define objectives that also lead to analyzing the willingness and ability to pay.
   The more defined the objectives, the easier the rest of the process.

2. **Establish a timeline**
   A focus group cannot be developed overnight. Make sure you have enough take time to identify the participants, develop and test the questions, locate a site, invite and follow up with participants, and gather the materials for the sessions.

3. **Identify the participants**

   - Determine how many participants you need and how many to invite.
   - Develop a list of key attributes to seek in participants based on the purpose of the focus group, that is, identify the types of people able to provide you with the answers you need. Think about the key population groups that may have an interest in the issues being researched. You want to form several different, separate groups that represent different viewpoints. The groups can be formed based on several different characteristics: age,

income, gender, race, place of work, place of residency, unemployed, single mothers, students, retired, education, etc.

- Although the groups should have a common background, you should avoid getting people who know each other in the same group. You also want people who will participate in the discussion and freely share their opinions.

- Secure names and contact information, finalize the list, and send invitations.
  Participants are generally sent a letter inviting them to participate in the focus group. The letter should state the purpose of the focus group session, who is sponsoring and conducting the session, compensation provided for participation and what the results will be used for. It should be made clear that individual comments made during the focus group are strictly confidential.

- Focus groups should consist of six to twelve participants. Fewer than six participants tend to limit the conversation, because there is not enough diversity to spark energy and creativity. A group larger than twelve gets to be unwieldy and voices get lost. The number to invite may also depend on the issues to discuss and the size of the community of your project target.

4. Generate the questions

The purpose of the questions is to stimulate discussion. The questions are merely a guide for the discussion. Undoubtedly the discussions will illicit more questions.

- Because a focus group will last for little more than one or two hours, you will need to include one or two introductory or warm-up questions and then get to the more serious questions that get at the heart of the purpose.

- To be effective, focus group questions should be open-ended, simple, unbiased, and focused on the specific issue, e.g, "What do you like about the Ecological Sanitation facilities/dry toilets?" or "Do you have any suggestions about making Ecological Sanitation facilities more usable to the elderly and children? Once you have a list of questions, look at your purpose statement again.
- Keep questions that are really important and that qualify for your purpose. Eliminate unnecessary questions as possible.
- Order the questions that will be comfortable for the participants, i.e. moving from general to specific.

5. Develop a script

- Generating questions is a prelude to developing a more detailed script for your focus group.

- Plan on a one - to two -hour time frame. A minimum of one hour is recommended because the process requires some time for opening and closing remarks as well as at least one or two questions. Be cautious not to exceed two hours.

There are four parts to a focus group script*:*

Introduction –The opening is the time for the facilitator to welcome the group, introduce the purpose and context of the focus group, explain what a focus group is and how it will flow, and make the introductions.(Approximately 10 minutes.)

Rapport Building Stage – Easily answered questions are asked to encourage participants to begin talking and sharing. (Approximately 10 minutes.)

In-depth Discussion – The moderator focuses on the main questions in the topic guide, encouraging conversation that reveals participants' feelings and thoughts. (Approximately 60 minutes.)

Closure –The closing section wraps up the focus group. This includes thanking the participants, giving them an opportunity and avenue for further input, telling them how the data will be used, and explaining when the larger process will be completed (Approximately 10 minutes.)

6. Select a facilitator

- A focus group facilitator should be able to deal tactfully with outspoken group members, keep the discussion on track, and make sure every participant is heard.
- The facilitator should be knowledgeable about the project. He or she can be a staff member, volunteer, or member of a committee or task force.
- Be ware of anything about the facilitator (or facilitators) that might make participants uncomfortable.

7. Choose the location

You need a setting which can accommodate the participants and where they would feel comfortable expressing their opinions.

When choosing a location, ask these questions:

•*What message does the setting send? (Is it corporate, upscale, cozy, informal, sterile, and inviting?)*

• *Does the setting encourage conversation?*

• *How will the setting affect the information gathered? Will the setting bias the information offered?*

• *Can it comfortably accommodate all participants (plus facilitators), where all can view each other?*

• *Is it easily accessible? (Consider access for people with disabilities, safety, transportation etc.)*

8. **Conducting the Focus Group Interview**

A good facilitator is the key to the focus group discussion. The facilitator must direct the discussion without adding opinions or leading questions. She/he must have excellent communication skills. The facilitator must be able to create a relaxed, informal atmosphere where

people feel free to express their opinions. The facilitator should ask a series of open-ended questions from general to specific. The questions should not get in the way of the participants expressing their opinions, experiences, and suggestions. The facilitator allows the discussion to go in new directions as long as the topics pertain to the specific issue addressed. All members of the group should be encouraged to participate. One person should not be allowed to dominate the discussion. As stated above, the session could be tape recorded and transcribed after the meeting. Some focus group interviews are conducted with someone taking notes during the meeting. This can inhibit the discussion and lead to missed notes.

9. **Organize your notes for the focus group report.**

After conducting the focus group(s), the moderator and note-taker should review notes to fill in gaps and ensure accurate and complete information has been gathered. Keep a list of participants who were at the focus group sessions (i.e., have a sign-in sheet) so that you can keep them informed about next steps and gather additional feedback.

10. Analyzing the Data

The focus group will generate a lot of information. The researcher's job is to summarize the data for analysis and discovery. The tape recording should be transcribed, omitting the names of the speakers. Type the discussion and then read the transcript for key words and concepts that reoccur.

Group the key words and phrases into several categories. Each category generally has three to ten key words or phrases. All comments should fit into at least one category. Key words and phrases should then be coded for (1) central theme and (2) general sentiment (positive, negative, neutral, suggestion).

After the category groupings, the findings can be interpreted. Central themes and issues emerge.

11. Reporting Findings

Background information should be included in a written report of the findings and include the date of the focus groups, number of participants and any statistical findings. The researcher can also use the central themes and issues that emerged to determine key directions, opinions or ideas that the business needs to act on

Both quantitative and qualitative results are reported. Quantitative results are statistical or numerical in nature the number of people who mentioned X and the percent of people who think Y. Qualitative results are representative comments from focus group participants

Focus group discussions by gender and class (and also with school children and out-of-school children):

To assess differences in current health, hygiene and sanitation issues and practices, performance of past project (e.g., participation in decision making, voice and choice in technology design, location, contribution to initial construction costs, financing for O&M etc.), gender division of labour within households, and participation by poorest men and women in community decision-making.

Other considerations

Community meetings: to assess general information about the village, including access to social and economic infrastructure, information on past projects, major caste groups, religions and languages spoken, number of households (by socio-economic group, caste and ethnicity) not

served by, and requiring access to, water supply and sanitation systems, along with reasons for current lack of access.

Well-being ranking and social mapping: to identify households by socio-economic, caste and ethnic groups, and to represent this information on village social maps.

Water system mapping: to mark all existing water points and sources (traditional and improved), and components of water systems (if any).

Water point surveys: to assess status of existing water points, including number of users (by caste and socio-economic group),adequacy, reliability, timeliness of repair, water quality, leakage, environmental sanitation (around the water point), effectiveness of maintenance training, default rates in user monthly charges (and reasons for non-payment), and social barriers to access; along with specific reasons, in each case.

Household survey: to assess issues that are difficult, time consuming or non-verifiable in a focus group discussion, e.g., water collected per household for different uses, hygiene in water and food storage, and individual household latrine surveys.

Case studies: to pick up positive and negative impacts experiences with past projects and other community initiatives.

APPENDIX 2: VILLAGE INFORMATION

Table I: Kitgum town council parishes, villages and population as of May 2006

PARISHES	VILLAGE	HOUSEHOLD	MALE	FEMALE	TOTAL	CHILDREN 0-8 YEARS
ALANGO	CAMCAM	374	796	965	1,751	321
	ALANGO WEST	531	623	642	1,265	333
	ALANGO EAST	597	1,347	2,151	3,498	337
	TANGI AGORO	077	189	211	400	026
SUB TOTAL		**1,579**	**2,955**	**3,979**	**6,914**	**1,017**
WESTLAND	FIRST JENGE	369	1,782	1,883	3,665	653
	WEST VILLAGE	420	2,471	2,233	4,704	974
	POLICE	086	386	455	841	150
	PRISON	065	360	421	781	168
SUB TOTAL		**789**	**4,999**	**4,992**	**9,991**	**1,945**
PANDWONG	GANGDYANG	433	1,048	1,989	3,127	311
	AUCH	485	1,652	2,225	3,877	770
	PANDWONG	277	701	874	1,575	150
	BAR DEGE	264	785	973	1758	264
SUB TOTAL		**1,459**	**4186**	**6061**	**10337**	**1515**
	EAST WARD A	383	1276	1600	2876	380
GUU	EAST WARD B	473	860	103	1863	634
	GINNERY	342	530	600	1130	596
	ORYANG OJUMA	189	200	380	580	212
SUB TOTAL		**1387**	**2866**	**2683**	**6449**	**1822**
	NYIKI-NYIKI	326	975	1004	1979	377
PONGDWONGO	PAGER	299	1080	910	1990	4052
	LEMO SOUTH	307	780	881	1661	408
	LEMO EAST	402	740	800	1540	391
SUB TOTAL		**1334**	**3575**	**3595**	**7170**	**1581**
	AYUL “A”	226	810	869	1679	358
PAGER	AYUL “B”	346	1000	1623	2623	655
	LAMIT KAPIM	204	864	848	1712	305
SUB TOTAL		**776**	**2674**	**3340**	**6014**	**1318**
	CENTRAL	325	915	1200	2115	420
TOWN	APOLLO	284	880	900	1780	325
	LANGALANGA	306	705	905	1610	288
SUB TOTAL		**915**	**2500**	**3005**	**5505**	**1031**
GRAND TOTAL		**8239**	**23755**	**28625**	**52380**	**10229**

Table II: Proportions of people in the different villages, earning a certain specified amounts of money

Village	<5,000	5,000 - <10,000	10,000 - <50,000	50,000 - < 100,000	100,000 - < 200,000	200,000 - < 300,000	300,000 - < 500,000	>500,000
1st Jenge	9.1	0.0	0.0	63.6	9.1	9.1	9.1	0.0
Bardege	4.3	2.9	21.7	13.0	24.6	8.7	17.4	5.8
West land	8.6	20.0	21.4	12.9	22.9	7.1	5.7	0.0
Lamit Lapim north	81.5	3.7	7.4	3.7	3.7	0.0	0.0	0.0
Lamit Lapim South	79.5	0.0	2.6	17.9	0.0	0.0	0.0	0.0
Lemobongolewie East	14.3	0.0	28.6	9.5	23.8	9.5	4.8	9.5
Lemobongolewie South	0.0	15.8	26.3	5.3	21.1	15.8	10.5	5.3
Cam cam	34.4	0.0	0.0	4.9	9.8	4.9	1.6	0.0
Ginnery	9.5	0.0	4.8	0.0	0.0	9.5	0.0	0.0
Lilojo	0.0	0.0	21.1	26.3	42.1	10.5	0.0	0.0
Oryang ojuma	10.5	5.3	5.3	5.3	5.3	0.0	0.0	5.3
Alango East	35.3	5.9	23.5	17.6	5.9	11.8	0.0	0.0
Alango West	43.3	3.3	10.0	10.0	20.0	0.0	13.3	0.0
Apollo Grounds	0.0	0.0	0.0	0.0	5.9	5.9	76.5	11.8
Awuch	4.2	0.0	25.0	0.0	20.8	29.2	8.3	12.5
Ayul A	0.0	9.8	17.1	19.5	22.0	12.2	17.1	2.4
Ayul B	0.0	8.6	14.3	20.0	2.9	22.9	17.1	14.3
Central	4.8	0.0	4.8	14.3	23.8	0.0	33.3	19.0
East Village A	0.0	0.0	28.6	0.0	28.6	28.6	14.3	0.0
East Village B	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0
East Ward A	9.5	9.5	28.6	9.5	4.8	4.8	33.3	0.0
Gand dyang	12.5	25.0	0.0	0.0	12.5	0.0	50.0	0.0
Langa Langa	0.0	0.0	3.8	3.8	23.1	15.4	42.3	11.5
Nyikinyiki	8.3	0.0	25.0	16.7	8.3	16.7	16.7	8.3
Pandwong	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Police	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Prisons	0.0	0.0	11.1	0.0	22.2	55.6	11.1	0.0
Tangi agoro	40.0	10.0	20.0	20.0	10.0	0.0	0.0	0.0
Pager	8.7	8.7	34.8	21.7	17.4	8.7	0.0	0.0
Achute men	0.0	0.0	0.0	20.0	40.0	40.0	0.0	0.0

Table III: Characteristics of interviewed households

Characteristics	Denominations	Percentage
Sex	Male	36.87
	Female	63.13
Age group	10<20	7.34
	20<30	28.25
	30-40	33.33
	45+	31.07
Position in family	Head	36.61
	Wife to head	41.96
	Child	10.12
	Other (relative, housekeeper e.t.c)	11.01
Sex of heads of family	Male	72.70
	Female	27.30
no. of male adults	0	28.00
	between 1 and 5	86.60
	>5	6.45
No. of female adults	0	2.23
	between 1 and 5	91.56
	>5	6.20
No. of male children	0	10.91
	between 1 and 5	78.41
	>5	10.67
No. of female children	0	11.91
	between 1 and 5	80.15
	>5	7.94