Twekembe water project: Understanding motivations to keep water sources clean

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Kim van de Geest
Sylvia Kastein
Herbert Sekimpi
Steve Brown

7 Senses
Today it's an idea. Tomorrow it's reality.

TWEKEMBE SLUM PROJECT
"UPLIFTING PEOPLE"

Inhoud

1. Introduction

Uganda suffers from uneven distribution of water resources. Many communities, especially the rural poor, depend on streams and swamps, which dry up during severe droughts. Floods overwhelm existing systems, contaminating drinking water and creating sewerage overflows (Water Aid& Development Finance International, 2011). The slum settlements are characterized by extreme poverty, lack of property tenure, lack of services and infrastructure and an informal economy. There has been failure by urban local authorities to enforce development control and to provide effective municipal services due to corruption, low revenue collections and poor civic competence among the population. (Kwiringira, J., Atekyereza, P., Niwaga, C., & Gunther, I., 2014)

Urban poor areas of Kampala, see severe outbreaks of cholera, malaria, typhoid, bilharzia and other fatal water-borne diseases on an all too regular basis. Many people in the slums still lack safe drinking water and a sanitary living environment and despite efforts, the conditions have not reached or even come close to reaching international or national goals. The most commonly cited basic needs are food, water, shelter, and clothing. In Uganda, many people still lack one or more of these basic needs. In Kampala specifically, many people still lack safe drinking water and a sanitary living environment (Fogg, 2008).

The Makindye slum area of Kampala has inadequate sanitation, little fresh water, and no rubbish collection. The consequences include high infant mortality, adult sickness, and cross contamination between fresh water and sewerage. Twekembe Slum Project is a non-profit organization (NGO) that aims to improve the living conditions of the residents of the Makindye slum. The slum is home to thousands of Ugandans, who for one reason or another are forced to live close to the capital city, but without the infrastructure and resources needed for healthy and safe lives (Twekembe 2009). This (research) project is about contaminated water and sanitation in the Kampala and Wakiso district, Bukijje and Ndikuttamadda zone.

1.1 Research objective

The objective of this research is to find a solution to the contaminated water caused by excessive waste in Kampala's Makindye slum, Bukijje and Ndikuttamadda zone. More specifically, the intent is to find out what the needs are of the community with regards to water, excessive waste and sanitation, what solutions they suppose for improvement.

1.2 Research question

Our central research question is:
What intervention(s) can, according to local stakeholders (among which community members), reduce water contamination caused by excessive waste in the Makindye slums of Kampala?

Sub questions:

1 *What are the causes and effects of contamination by waste at the well in the Makindye slums?*
2 *What is the desired situation according to the slum community and stakeholders with regards to their water supply?*
3 *What actions, according local stakeholders, need to be taken in order to achieve the desired situation of the slum community and stakeholders?*

In this research report, an answer will be given to the above questions in the results section. First, some background information about the subject of research will be provided. Then, applied research methods will be described. After the results section we will provide our concluding remarks. Recommendations are provided in a separate document. In the back of the document you will find the appendices.

2. Conceptual framework

This chapter describes water related problems, poor sanitation and interventions to address water-related problems, poor sanitation and health according to the literature.

2.1 Water related problems, sanitation and health

Uganda has, in general, not sufficient functioning water and sanitation system. The supply of hygienically safe drinking water and the disposal of wastewater are mostly poor/lacking in urban areas. The rural areas have, considering to urban areas, more problems with distribution of fresh water, the water pipelines are limited and are consequently more expensive. Even if Uganda has rich water resources, water is still expensive, and the poor suffers mostly from the high prices. The wastewater problem is even more problematic compared to the water problem. In Kampala wastewater treatment is implemented. For other urban and rural areas the situation is much worse, since there is no wastewater managing at all. Currently only 70 % of the urban population in large towns and 65 % in small towns has access to a safe water supply, and only 8 % are connected to a wastewater system (GTZ, 2007c).

Given the rapidly increasing wastewater generation in urban settlements, most households poorly dispose of their untreated solid and liquid waste on-site generating high rates of infiltration to aquifers and pollution loads into streams and fresh water bodies. This has led to serious health risks characterized by prevalence of diseases in form of epidemics like cholera and diarrea especially among children (Nsubuga et al., 2004; Zingoni et al., 2005). It is not only housing that the urban population requires: clean drinking water and hygienic sanitary conditions are also essential. Providing water and sanitation in these peri-urban areas is however very difficult, for technical, financial, institutional and spatial reasons.

Every human being has a right to basic water and sanitation access, but despite of that, there are many people in the world especially in Africa who are without access to either clean water or simple sanitation system.

This thesis is based on a field study on the situation in Luwafu Zone located in Makindye Division Kampala Uganda. Lack or absence on fundamental and simple sanitation in Luwafu Zone has led to several problems as for example direct discharge of wastewater to the surrounding environment. Even access to good water quality is missing and many people use water sources as springs, which usually have inferior water quality.

Also Lack of a continuous waste solution and collection is a problem which leads to problems for people living in Luwafu Zone located in Makindye Division Kampala Uganda. These problems contribute to environmental contamination as well as to health problems. Malaria and intestinal diseases are the major diseases in Luwafu Zone, where the most fragile and sensitive people are most affected.

The water problem is a major problem since access to safe and clean drinking water is not sufficient in many African countries. People (mostly children and women but also vendors) walk shorter or longer distances to collect water, regardless of the water quality. This time-consuming task puts children and women to spend most of their time to bring water to the household and affects their ability to do other more important work.

Also an increasing disastrous phenomenon that is occurring in slums is urban flooding (Douglas I. et al., 2008). As all flooding, small-scale urban flooding can lead to a number of losses for the individual such as loss of possessions, damage to houses, disturbances to transport, power and communication systems and financial stress for the affected persons (Parkinson, 2003) and an increased risk to suffer from infectious waterborne diseases (Olurunfemi, 2011).

In slum areas, a considerable amount of infectious diseases are attributed to the lack of proper water and sanitation systems. Without sanitation in place, people turn to open defecation which is a behavioral determinant that can contaminate drinking water that in turn can cause waterborne diseases in the population (Ramin, 2009).

Urban flooding disproportionally affects women economically through the disruption of their livelihoods and also emotionally because they are often the ones left to deal with death, disease and food shortages that can occur during and after flooding. (Parkinson, 2003)
Lack of proper sanitation not only leads to undignified and unhealthy conditions; stagnant water causes breeding pools for malaria, plus the streams entering and leaving the slum catchment, either as surface water or groundwater, form a significant pollutant load that pollutes drinking water and, due to extremely high phosphorus fluxes from the slum catchments, atrophying surface water.

Besides the spreading of diseases, one of the major problems associated with sanitation in slum areas is related to the transport of contaminants in and out of the slum catchment either as surface water or groundwater. This water pollutes drinking water, obtained from groundwater aquifers with further increased incidence of cholera and diarrhea (Howard et al., 2003; Nsubuga et al., 2004), or eutrophies surface water, due to extremely high nutrient fluxes discharging from those slum catchments (Kulabako et al., 2007).

Interventions to address water-related problems, poor sanitation and hygiene

According to literature, people need to be sensitized about basic sanitation and ecological sanitation use, to accept the use of sanitation facilities, instead of bushes etc. Use of water is also not recommendable- as it is urine diverting toilet and faeces is dehydrated for pathogen destruction etc. and is not acceptable among Muslim who use water for anal cleansing. The operation and maintenance of the toilets may still be a problem, a suitable amount of fee and improved supervision of the toilets needs for a better maintenance (Watsanuganda, 2003).
Interventions to improve health by increasing water quality, sanitation, and hygiene can be implemented at many points throughout the water distribution system, from source to household to consumer. As discussed by Clasen and Cairncross (2004), these interventions include the following:

- source water protection;
- removal of pathogens by physical methods (e.g., filtration, adsorption, and sedimentation), chemical treatment (e.g., assisted sedimentation, chemical disinfection, and ion exchange), or heat and UV radiation;
- maintaining the microbiological quality of safe drinking water through piped distribution, residual disinfection, and improved storage;
- steps to encourage proper disposal of human feces;
- increased access to and availability of safe water; and
- hygienic practices within domestic and community settings, such as hand washing.

(Hopkins et al., 2008). Interventions included preventive health education and instruction in the use of cloth filters to remove copepods from drinking water; preventing contamination of surface water by infected persons discharging larvae from skin lesions; treating water reservoirs with a mild insecticide that kills copepods but does not harm humans, fish, or vegetation; and, most effective of all, providing clean water from underground borehole wells.

In areas where the water supply is adequate, the adoption of simple and inexpensive methods to improve the microbiological quality of existing water supplies can significantly mitigate the disease burden due to diarrheal diseases. Many point-of-use interventions, such as

filtration, disinfection with radiation, boiling or chlorine, or simply the provision of enclosed, protected containers have been shown to be effective (interestingly, the use of a combination of methods simultaneously was not shown to have any added benefit; Clasen et al., 2006; Fewtrell et al., 2005). However, any intervention or provision of clean water and sanitation will only be successful if it is used. Education of the population, as well as considerations of cost, accessibility, and acceptability of interventions, will be key issues in the design and implementation of these interventions.

Upgraded hand dug wells can be constructed using traditional and local skills and materials, cement being the main imported and most expensive material. Sealing the well and installing a pump is the best and most expensive way to prevent contamination and ensure a clean water supply, but upgraded hand dug wells used properly can yield water of good quality without the need of a hand pump (Morgan 1990).

Health officials in towns have from time to time inspected the sanitation situation in their district, especially in cholera epidemic situations have some citizens been arrested. Due to law break, not protecting the environment etc., where some citizens who lack basic/ proper sanitation facilities, have been arrested for failing to build toilets and contributing to contamination to the environment and endangering human health (Reuters, 2007).

Every citizen has the right to a healthy environment in Uganda where they (citizens) have a duty to maintain and enhance the environment and if there is any negative impact and effects on the environment due to citizen's activities or omissions they are obligated to correct the faulty. A public official have right to take measurements to prevent or stop the persons who with their activities affects the environment (National Environment Act, section three).

One major prevention from wastewater pathogens is to have a secure sanitation system where no leakage and contamination to the soil or water occurs. The wastewater should not be discharged directly to the surroundings, since the pathogens contaminates and generates a health risk that is dangerous both for adult humans and children, but also for animals, since they can be carriers of some pathogens and the recycling of them in the environment (Ecosanres, 2007 a).

Despite significant progress over the past three decades in extending coverage in low-income countries, approximately one billion people lack access to improved water supplies, and many more rely on sources that are microbiologically contaminated (Clasen, 2008). While the provision of safe, piped water to every home is a distant goal, household-based water treatment and storage interventions represent important interim solutions for the prevention of water-related disease.

Conclusion

In conclusion, water related problems, poor hygiene and poor sanitation have created major health challenges especially in slum areas while global and regional effective solutions demand attention to local needs and opportunities. However, most of the water-related problems, poor sanitation and hygiene issues can be addressed through a secure sanitation system, provision of safe and piped water, carrying out arrests, upgrading hand dug wells and education of the population such as preventive health education.

3. Research Methods

3.1 Desk work

Prior to the field work in the Makindja slum, Wakiso district, desk work had to be conducted in order to design the research into detail.

3.1.1.Literature study

First, a literature search was conducted in order to compare several techniques that can be applied in this study to find an answer to the central research question and its study- and sub questions as stated above. You can find the literature study about water and sanitation in chapter 2. Besides the literature chapter 2.other literature is important to understand water contamination and sanitation problems.

3.1.2. Determining the research field

Trustful sources emphasized the importance of conducting a research in the city Kampala, Makindye slum, Bukijje and Ndikuttamaddazone there was a serious lack of hygiene due to poor sanitation and water supply. The zones of the slum estimated 10.000 residents, using one waterwell.These are governed by two land owners and two council men.

3.1.3. Determining the target group

Based on literature and community expert Mr. Brown, several stakeholder groups were considered important in this research: landowner, council/chairmen, traditional doctor, employee health clinic and the head of security of Wakiso district.

3.1.4. Preparation of research

During the course of the period the research has been supported by 7senses through workshop containing relevant information about methodology.
To make a connection with the community intheBukijje and Ndikuttamadda zone, a one week course was completed in a school in to learn Luganda language skills for the Dutch researchers.

3.2 Field work

3.2.1. Participatory Rural Appraisal

Participatory rural appraisal (PRA) is built on the techniques used in rapid rural appraisal (RRA). RRA was developed in the 1970s as a simple and fast way of carrying out cost-effective qualitative research. Based on insights of social anthropology, it relied on listening research, combinations of iterative (visual) methods, and verification including triangulation of data from different sources (WaterAid, 2012).

As soon as the research field was entered, the first technique could be applied: Participatory Rural Appraisal. The Participatory Rural Appraisal (PRA) method emphasizes the importance of community involvement (e.g. Gerster, 2006, Campbell, 2001). In PRA, a bottom up approach can be realized in which the rural people play the role of the main actors (Gerster, 2006). In a study assessing the utility of participatory rural appraisal for health needs assessment and planning, PRA helped to identify health problems considered prevalent and important by the community (Mahmood, 2002). Also, PRA is considered as a good framework to assess, analyse and develop programs with communities and is an effective tool to promote community involvement (Mahmood, 2002). The participants, in this PRA method, have the

knowledge and skills and can be seen as partners throughout the whole research process (Maalim, 2006).

Gerster (2006) et al describe eight phases in problem solving with PRA, of which the first five will be executed during this study:

- 1) *Rapport formation*. In this phase, a relationship with the villagers will be formed in which they feel more and more comfortable with the facilitator.
- 2) *Understanding*. A two sided understanding is very important to be able to go on with the PRA method. The problem from the perspective of the villagers needs to be understood and the villagers need to understand the researchers' purpose.
- 3) *Reframing*. In this phase, the researcher is a critical partner in reflecting the situation and problem, with the purpose to encourage the participants to see the problem from a perspective that makes its management possible.
- 4) *Solution*. The objective of this phase is to identify a type of solution. The participants need to be committed to this particular type of solution in order to be able to go to the next phase.
- 5) *Solution planning*. The identified solution will be planned and seen through to a successful conclusion. The actors' developments have to express their commitment to the solution.

The other stages of PRA, not used in this study, are: 6. Implementation 7. evaluation and adjustment and 8. ending and consolidation.

PRA phase 1: Rapport information. During this phase we did church visits and a transect walk (a guided tour through the slum) organised by Charles Chandia, director of Twekembe Slum project.
PRA phase 2: Understanding. To understand the community members in the slum informal conversations took place in the whole area. You can find the information about informal conversations in appendix 7.1.
PRA phase 3: reframing. This phase was conducted through a stake holder analysis, questionnaire and a quick mini survey (appendix 7.2 untill 7.4)
PRA phase 4: Solution. In this phase, a joint construct of plans is intended to be developed, ready to be executed by local stakeholders. First, the research team analysed all the results. After analysing, a general meeting which involved eight stakeholders and four (prospective) leaders, was aimed to talk about the best solution about the contaminated water, excessive waste and health in the community.
PRA phase 5: Solution planning. In this phase we organised a second meeting -as well as the last meeting in this kind a setting- with stakeholders, the research team and project leaders, the founders of 7Senses and Twekembe, the leaders and guest invited by the leaders. This last meeting was to first of all say thanks to everyone who collaborate with us, to celebrate and give a moment of thoughts what we already achieved with each other and what will come. The leaders got a certificate what shows their commitment to the community and their effort. They signed to be a leader for this community and will do everything they can to improve the water and so the health of the community. In this last meeting we ended our research that we did for the last two and a half months. In this last meeting was told that the leaders will have a workshop from Madelon about leadership skills. They will get tools to make this challenge a success.

4. Results

This section describes the answers to our research questions. The main research question, as mentioned in the introduction, is:

What intervention(s) can, according to local stakeholders (among which community members), reduce water contamination caused by excessive waste in the Makindye slums of Kampala?

In order to answer this main research question, we will first focus on each research sub question.

4.1 research sub question 1

What are the causes and effects of contamination by waste at the well in the Makindye slums?

First of all it's very important to define waste. After observation and interviewing some members of the community we can define waste as everything that makes the water dirty. That includes: bacteria, urine/pup of humans and animals, mosquitos, dead animals, soil, fish and garbage.

There are several different causes of the contamination in Makindye. The biggest causes with the highest priority of solutions are:

- There is no permanent place for waste, the effect of this is that you will see the waste everywhere nearby where people are living and also nearby the well(s);
- The water at the well, doesn't flow. It starts with the swamp. There is a lot of waste in the swamp. So there's no movement of the water and the waste is still in the water with the sun shining on it. Bacteria will spread out and mosquitoes lay their eggs on it.
- During rainfall people open up their pit latrines to let go of their excrements as it goes with the rain. That means the faeces are ending up in the swamp, the water doesn't flow well in the swamp. Water rises, reaches the water well and the pipes of that water well. That water contains waste and excrements. Not all the people are aware of this contamination. For example, children stand in that contaminated water with their bare feet.
- A habit of the people is when it rains they will throw their waste in the swamp; the heavy stream of water caused by the rain will remove the waste away. However, the rain will stop and so does the streaming of the water. The effect of this behaviour is that the waste of all the people will be laying on different places in the environment where the people live and also in the water well. This is an effect of the lack of a permanent place for the waste.

Other relevant information we received from the community members and from the observations are:

- People clean their shoes at the water well and they also clean sometimes their boda-boda. Most likely they clean everything over their they need to clean. This contaminates the water that others take for drinking.
- Children are playing around the well in the dirt. There is no playground for the children. Around the well there is space to play.
- Not all the children are going to school. A lot of children get water from the well.
- Leaders are trying to improve the well but also face some problems. For example: one of the leaders planted some seeds of palm grass around the well, that will stop getting soil in the water well. The night after, people stole the seeds of it because it's valuable.

- The well is overcrowded. Thousands of people are using the well. When the tap water is closed, more people come over to the well to get water.

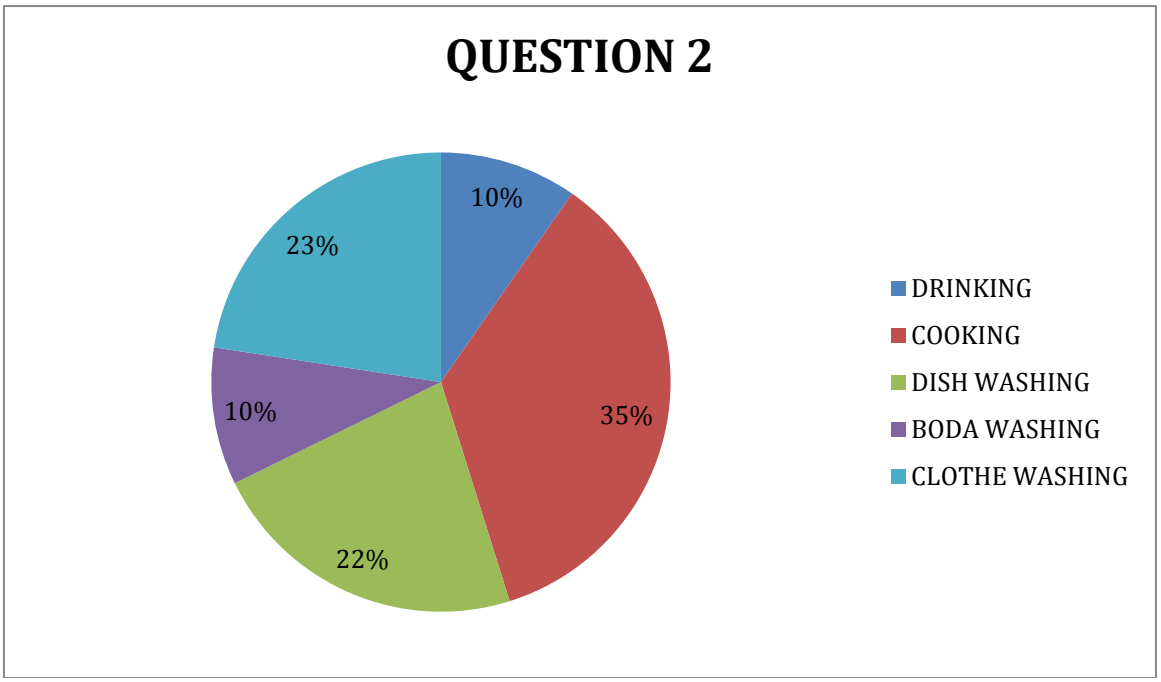
The effects of the contaminated water are:

- The effect is that people will get sick of the contaminated water. Diseases caused by this problem, the contaminated water and that the water doesn't flow, are pneumonia, diarrhoea, malaria, cholera, typhoid, bilharzia. Not all the people have excess to the hospital or medication, this causes for some people to die due to the consequence(s) of the disease.
- When people get sick, they need someone who will take care of them. They can't work. Children can't go to school. Or needs to take care about a family member. So sickness will, in case of schooling, delay learning. In case of work, people will not earn an income, which increases poverty.

Outcomes of our questionnaire

You can find our findings and conclusions in the several pie charts below. A pie chart represents the opinions from the community members about the contaminated water.

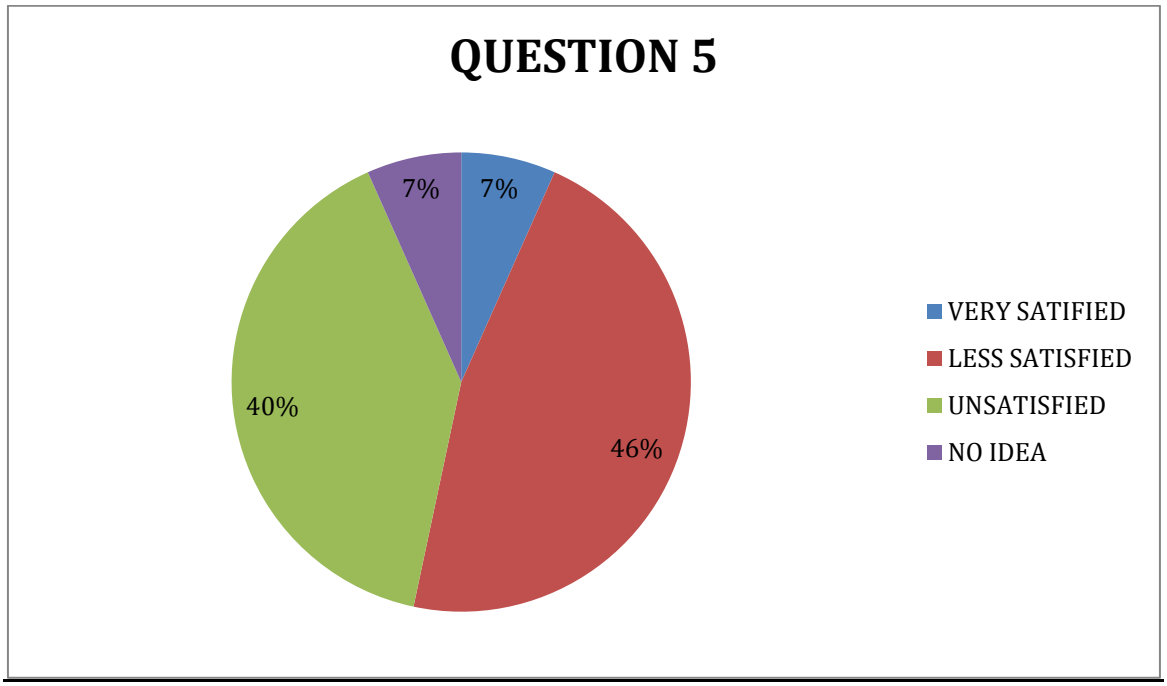
2. Where do you use the water for?



A pie chart represents people's opinions on the uses of water.

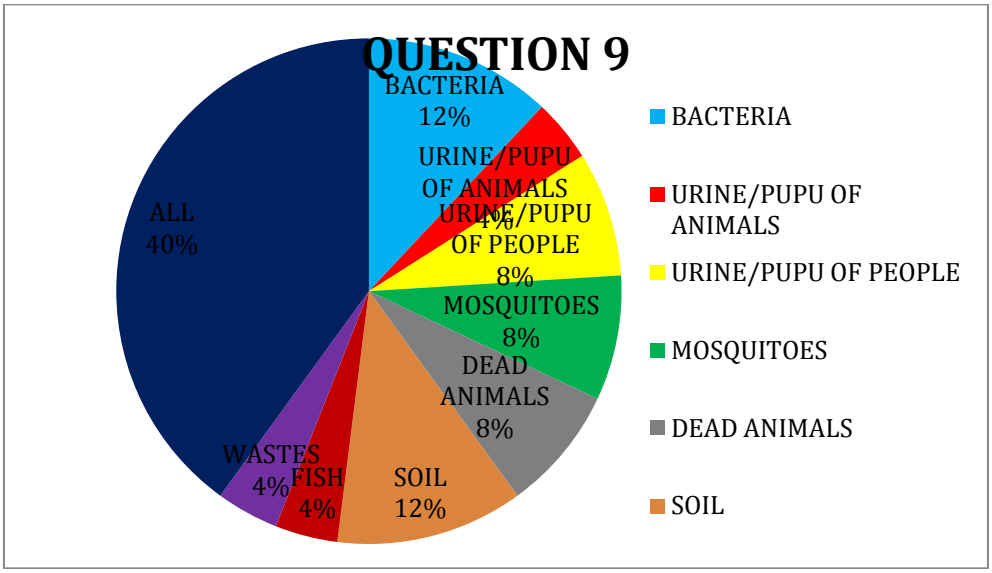
23% use the water for washing clothes, 22% use water for washing dishes, 10% use water for both drinking and washing motor cycles. However, a bigger percentage (35%) of the population uses water especially for cooking.

QUESTON 5. How satisfied are you with the water that comes from the water well <u>next to the church?</u>



A pie chart represents peoples attitude towards the quality of water supplied in the slum area and are shown in percentages.
46% are less satisfied with the water supplied in the area and this simply because of excessive wastes and as well as soil erosion which contaminate water hence limiting them from getting clean water. An additional 40% are unsatisfied with the water. Only very few people (7%) are satisfied with the water supplied in the area.

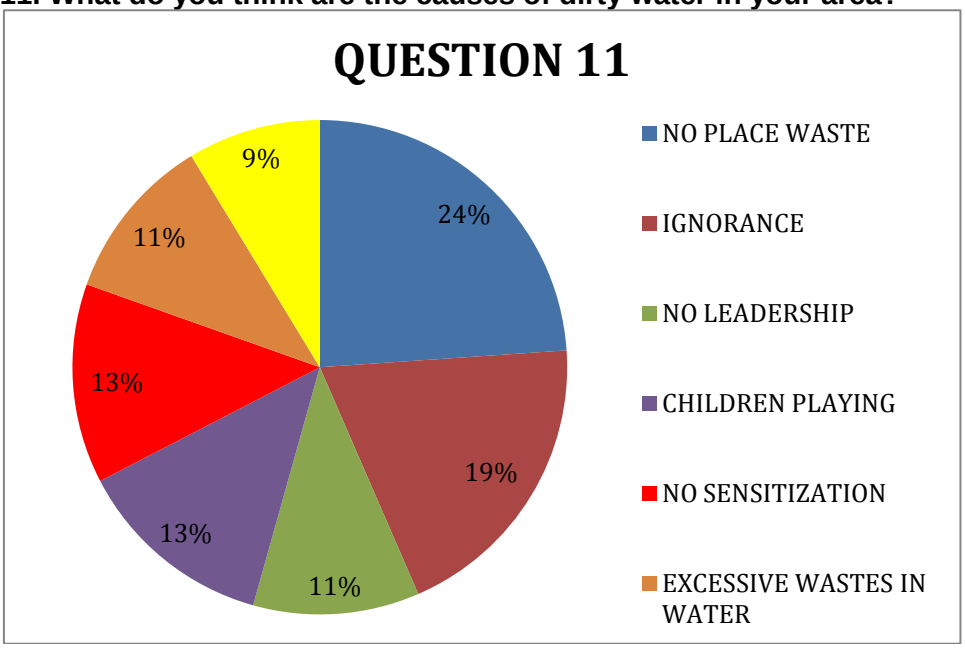
9. What kind of dirt does the water well next to the church contain?



A pie chart represents different local people's suggestions with regards to the contamination of the water well next to the church in percentages as shown.
12% suggested bacteria (Tiny germs which can't be easily seen unless a micro scope is used). 4% suggested urine/pup of animals and this is mainly caused due to rearing of animals near the wells thus dropping their excretes into water. 8% of the participants reported urine and pupu of the people to contaminate the water. 8% suggested dead animals whereby people end up dumping dead animals like dogs into water channels thus this contaminates water. 12% suggested soils and this is mainly caused due to excessive soil erosion from the hilly areas which bring soil into the well. 8% suggested mosquitoes which lay their eggs on water surface since the area is water logged. However, a bigger percentage of the population (40%) suggested that all (bacteria, urine, mosquitoes, dead animals, soil, fish and wastes) are the kinds of dirt that the water well contains. This would mean that when cleaning the well, all these types of contamination should be taken into consideration.

Interviews and observations, also revealed that after rains, the water well is filled with excrements of the people, something that happens each time it rains. This chart shows that only 8% of the people are aware of that. However, it could be that the 40% that reported 'all', could have mostly the excrements in mind.

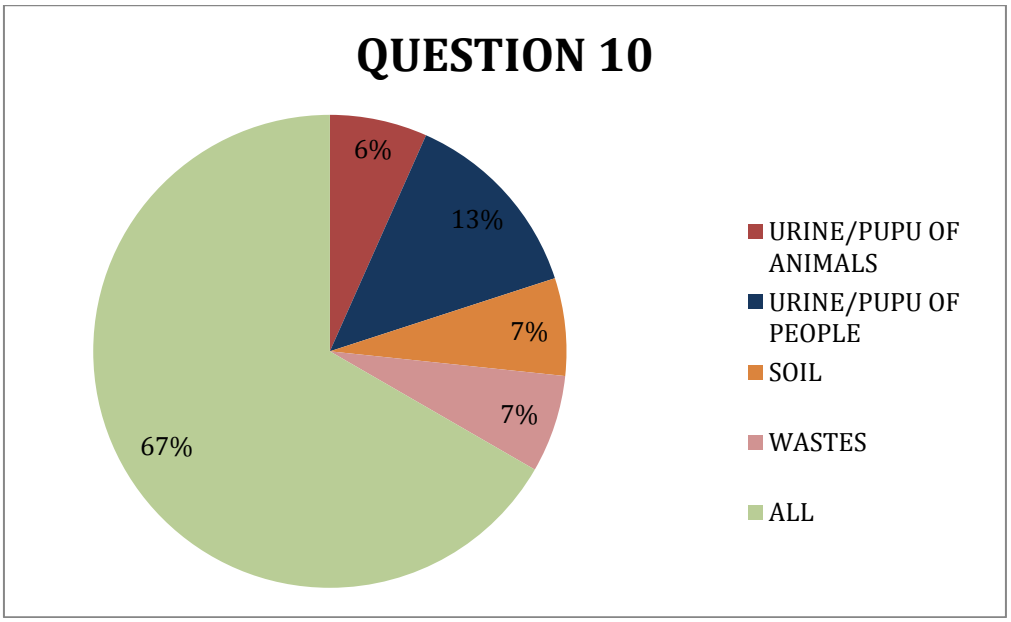
11. What do you think are the causes of dirty water in your area?



The piechart represents the different respondent's opinions towards the causes of dirty water and are shown in percentages. 11% suggested excessive wastes and this is mainly caused due to lack of a permanent place where to dump wastes (reported by 24% of the participants) thus leading to disease outbreak like cholera. We could thus conclude that 35% of the causes of water contamination have to do with waste. This is as a result of lack of enough capital for purchasing land. 11% suggested that there is no leadership meaning that they lack someone who has the necessary skills to monitor the activities at the wells and motivates people to keep it clean. 13% argued that people lack sensitization on the effects of dirty water like disease outbreak such as typhoid and cholera. Also 13% argued that children play around the well thus

making water dirty and this is as result of lack of a fence to protect the water. In turn, kids playing around the contaminated well causes a serious health hazard for them. 19% suggested ignorance of the problem and this is caused by high levels of illiteracy in the area and lack of education, whereby people do not know the methods of how to make water clean water. This graph could show that opinions are strongly divided among people. However, people could have given only one option thinking that they could not give more options.

10. What kind of dirt does your well contain (the water well next to the shoe factory)?



This bar graph represents different local people's suggestions with regards to the contamination of the water well next to the shoe factory in percentages as shown. 6% suggested urine/pup of animals and this is mainly caused due to rearing of animals near the wells thus dropping their excretes into water. 7% suggested soils and this is mainly caused due to excessive soil erosion from the hilly areas which bring soil into the well. 7% suggested wastes where by people do not have a permanent place where to damp wastes thus ending up dumping them into water. Also 7% suggested that the well contains urine/pupu of people and this is caused due to a number of people who release sewage from their toilets especially during rainy seasons. However, a bigger percentage of the population (67%) suggested that all (bacteria, urine, mosquitoes, soil, fish and wastes) are the kinds of dirt that the water well near the shoe factory contains. This would mean that when cleaning the well, all these types of contamination should be taken into consideration.

4.2 Research sub question 2

What is the desired situation according to the slum community and stakeholders with regards to their water supply?

Clean water. According to our research findings, the highest priority of the slum community is clean water:

Safety community members especially children. They want their children to be safe and also to be able to collect water safely in the morning when it's still dark. There is a bridge these children have to cross which is quite dangerous because there is a risk of falling into the water due to instable structure. Especially when the tide is high it can be quite dangerous. So the road towards the water source should be safe. These children also run the risk of being kidnapped or harassed on their way to the well. Some of the parents would like to install rules (and people who check upon the reinforcement of those rules) that children are only allowed to get water (for example) between 9 in the morning and four in the afternoon. The suggestion was to install guards that walk around the city to protect the children/people on the street.

Permanent place of waste. Another wish of the people is that the rubbish in and around the water well would disappear.

Reconstructing water well. The access to the water should be without obstacles in the practical sense that there should be enough space for a jerry can to fit underneath the pipe. If there is not enough space, dirt and rubbish might get into the jerry can which contaminates the water.

Fence around the water well. The water well has become sort of a playground for children. This causes a problem as it contaminates the water. The desire would be to avoid children playing on that location.

Water will flow away. The water should have a drain or a way to escape from the place where it's currently collecting in a puddle. The current pool of water, mud and dirt causes the rise of bacteria and the prevalence of mosquitos.

Increased number of water wells. Another desire is the increase the number of water wells. Currently there are four water sources, three of which are broken. They would like a larger number of wells across the slums, and they think that there is plenty of space available to install them.

See also the objective tree in chapter 4.2.

4.3 Research sub question 3

What actions need to be taken in order to achieve the desired situation of the slum community and stakeholders?

Community stakeholders mentioned the following desired situation:

- The existing, working water well should be restored.
- There should be a fence around the source to prevent children from playing there.
- Rules and behavioural guidelines should be installed and reinforced by the community.
- A canal should be dug to lead the water away from the well.
- New water wells should be installed across the slum.
- They want a permanent location for rubbich collection.

Leadership. One of the most important results gained from the first questionnaire is that there is a desire for leadership. A second set of interviews (quick mini survey) was conducted in order to find out more about the population's opinions and thoughts about leadership. This was done in cooperation with the Ugandan researchers. Four questions have been formulated to ask community members:

1. What kind of characters does a leader need to have?
2. When will you do the things where the leaders asks for?
3. How can a leader(s) make sure the community will keep the water clean?
4. Would you like to be a leader? Or do you know someone who would be a good leader?

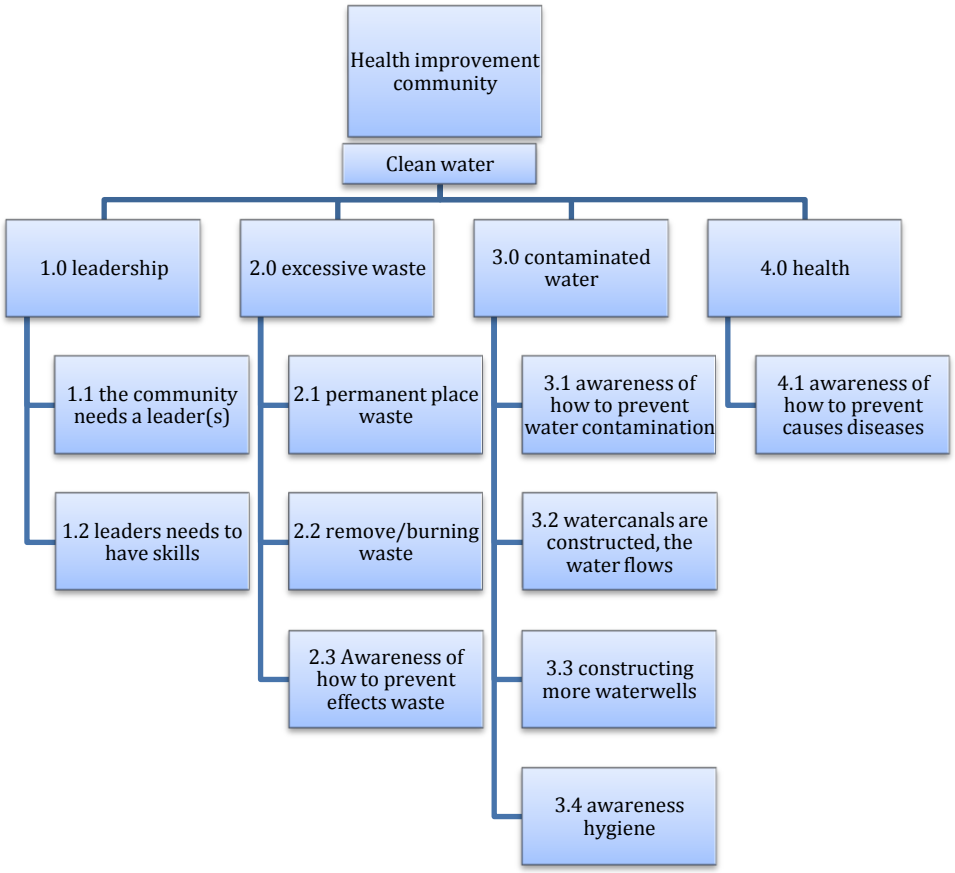
As a result we have found four leaders. In a meeting we have connected those four leaders to the other stakeholders to whom we have presented our research results. In this meeting we have divided those present in groups of two in which they were presented with a couple of questions to be discussed amongst themselves. After two rounds of these discussions there was a general brainstorm in which the results of the small conversations were discussed. You can find the results of this meeting at appendix 5.

4.4 Overall Objective Tree

4.4.1 Description Overall Objective Tree

An objective tree is a visual representation of objectives. It is the positive opposite of the problem tree, and helps to give us a clear idea of all objectives, which are more important, which need to be achieved first and the relationship between them all. The problem and objectives trees provide a simplified, but comprehensive, view of cause and effect relationships.
The activities that project teams carry out must produce outputs that will empower project beneficiaries to better interact with their communities and utilise project deliverables to achieve the project outcomes These outcomes will enable the communities to tackle the problems identified and produce changes in the factors generating these problems, thereby contributing to the achievement of the project objectives. The objective tree moves bottom upwards, first identifying the outputs that would directly address the causes of the factors and then identifying the specific objectives that directly address the causes of these factors.

4.4.2 Results Overall Objective Tree



	Overall Objective Tree
Overall Objective	Health improvement community through clean water
Purpose	1.0 Leadership
Result	1.1 The community needs leaders 1.2 Leaders needs to have leadership skills
Activities	**1.1 The community needs leaders** 1.1.1 Short interviews (completed) To find out what kind of characters the leader(s) must have a quick mini survey method was applied. Fifteen community members answered three open questions: • What kind of characteristics does a leader needs to have? • When will you do the things where the leader asks for? • Are you interested to be a leader or do you know somebody who is interested? Results mini quick survey: The community needs a leader with the following characteristics: Knowledge, public speaker, disciplined, he/she must be clean, faithful/trustful and a good listener. Must of the people do have the time in the weekend to do the things the leader asks for, especially on Sunday. Furthermore to stay the community motivated and involve they need public meetings. To make sure the water well will be clean, they have to clean twice a week. The leaders has to make strict rules for the community, to make sure the excessive waste will be on a permanent place and the water well will be clean. 1.1.1. intervention: meeting stakeholders and (prospective) leaders At the seminar (prospective) leaders and stakeholders come together. Research results will be presented. Through an intervision stakeholders and prospective leaders share ideas about the three topics: excessive waste, contaminated water and health. <u>Results intervention meeting stakeholders and (prospective) leaders</u> *Excessive waste* First of all the waste has to be burnt or collect. The leaders have to contact/work together with KCCA,. The KCCA will pick the excessive waste up. After removing the excessive waste, a new and permanent place established for the excessive waste. It's very important the Leaders should collaborate together with each other and the community. They have to put community team(s) together to clean the area. *Water well* The leaders should make the community aware about the importance of to keep the water well clean. They also have to monitor the well and the garbage as well. They also have to upgrade the well. *Education community about sanitation* The community will be educated through organizing public meetings based on a general cleanliness of the water well and organizing an awareness program.

	Public meetings To keep the community motivated and involved, three times a year a public meeting has to be organized. One meeting should be organized during holiday, especially on Sunday. Implementation rules Stakeholders and prospective leaders suggest the next rules Putting a notice board/sign posts notifying some rules for example if you dump garbage near the water well, you will be prosecuted, punished or even imprisoned. • Payment for a person to monitor the water well of around 40,000shs. • People should have a time limit • Constructing a fence around the well Payment/awareness s system An payment system is only possible if the whites are to collect money from the people, it will be possible. An awareness system is more efficient through distributing flyers and putting sign posts on the well. **1.2 Leaders need to have leadership skills** 1.2.1 Leadership intervention action meeting Prospective leaders have had a leadership action meeting in September 2014 organized by Herbert Sekimphi (researcher) and MadelonEelderink (supervisor Twekembe research). Within this meeting roles and responsibilities have been discussed as well as appointed. The leaders have received a training concerning their leadership skills, consisting of how to involve and communicate effectively with their community and with each other. The result of this meeting is that leaders know what to think of when putting activities into practice, how to fill in an activity form (see appendix 8) and how to include and motivate volunteers.

	Overall Objective Tree
Overall Objective	Health improvement community through clean water
Purpose	2.0 Excessive waste
Result	2.1 Permanent place of the waste 2.2 Remove/burn the waste 2.3 Awareness of how to prevent the effects of waste
Activities	**2.1 Permanent place of the waste** 2.1.1. research (completed) Results Research has shown that one of the solutions is to find a permanent place for excessive waste. According to the KCCA, the community needs to have a piece of land. Three pieces of land are found for sale, the following points explain our findings: - Place 1:Costs are around 4 Million Shs. The people around the well don't allow the permanent place, they live too close to the place and it will bring diseases. - Place 2: Costs are around 9 Million Shs. It's a popular place for sale. More people would like to buy it. People's opinions are different however if this place could serve as a permanent place for waste. - Place 3: Mr. Brown is still in negotiation about this piece of land. It's large. And the question of our side is, if we can buy a part of it. The land is property of a family. Right now they are discussing about the price. There is a change, it's probably around 18/20 million Shs. The KCCA is able to bring some containers and to pick up the waste every week. If the place(s) are determined, the leaders create a (punish) system to be sure that everybody will follow the rules. 2.1.2. Activities that has to be done to find a place for the excessive waste Things to do for the permanent place: - Find a piece of land - Negotiating about the price of the land. - Inform at the KCCA if it is possible for them t come over to pick the waste every week and if they are able to reach the place. - Inform the Local Council about buying of the permanent place. Who do you need to inform? Mr. Cheyswa, Mrs. Nakacwa or Mr. LC…. - After confirming with the organizations and people who are involved, develop the contracts. **2..2. Remove/burn the waste** To remove the waste, the community has to work together. Through organising a voluntary day the community will be connected with each other through working together on a shared goal namely to create a clean living area for the whole community.

	2.3 Awareness of how to prevent the effects of waste 2.1.3 Education about the effects of waste Research has shown that most of the people know about the effects of the excessive waste but don't know how to protect themselves and their children. Leaders can organise an awareness raising activity to educate people about this.

	Overall Objective Tree
Overall Objective	Health improvement community through clean water
Purpose	3.0 Contaminated water
Result	3.1 Awareness of how to prevent water contamination 3.2 Water canals have to be constructed, the water flows 3.3 Constructing more water wells 3.4 Awareness of how to prevent good hygiene
Activities	**3.1 Awareness of how to prevent water contamination** 3.1.1. Education about the effects of contaminated water Leaders will organise door to door and/or meetings to make the community aware of the causes and effects of the contaminated water. They also will be educated on how to keep the water well clean. **3.2 Water canals has to be constructed, the water flows** 3.2.1. Voluntary days to clean the water canals Results A good leader is an example for the community. Prospective leaders forces hands with other community members and cleaned the water canals and water well. The community will be motivated and feel responsible to work on a shared goal namely clean water canals and a clean water well. In the future leaders will make a plan to involve the community and make rules how to prevent the water well and the canals. They will organize voluntary days to clean the water canals. 3.2.2. Water canals needs to be reconstructed through cement and stones The water in all the water canals doesn't flow.One of the reasons is that the trenches are not made of stones and cement. The trench is very muddy and isn't deep enough. Two engineers Mr Kato and Mr . Ismaknow the water wells and are able to construct the canals/water wells.Leaders have to do research about the prices to determine which engineer is going to be responsible for the reconstruction of the water wells/canals. For more details about the engineers, see appendix 7. **3.3 Constructing more water wells** 3.3.1 Finding organisations to construct a new waterwell With the construction of a new water well, a follow up research needs to determine in what way the water well will fit the needs and challenges of the community and it's environment best. It needs to focus on elements like: safety, maintenance, efficiency and effective construction. **3.4 Awareness of how to prevent good hygiene** 3.4.1.Education about hygiene Research has shown that most of the people know about the effects of the contaminated water but don't know how to protect themselves or are ignorance. The right education, in the form of a seminar or training should address this problem.

	Overall Objective Tree
Overall Objective	Health improvement community through clean water
Purpose	4.0 Health
Result	4.1 Awareness of how to prevent diseases
Activities	**4.1 Awareness of how to prevent diseases** 4.1.1. Results Several stakeholders have stated the following: The people in the slum are ignorant people but very good and social people. There's a lot of poverty. Diseases in the slums are: <u>Pneumonia</u> Diseases number one is Pneumonia , especially f or the children. Some people do have the knowledge about Pneumonia, some not. Mainreason is the cold. Especially in the rain season children gets Pneumonia. <u>Diarrhoea</u> Reasons of diarrhoea are: • children don't feed very well • toilets are dirty. They are using the water where the poop is in it. <u>Malaria</u> People think everything is malaria. Sometimes herbs will help you (traditional healer). When people needs professional help in the hospital the government will pay it for the people. But some people hate the government and refuse to go to the hospital. <u>Water well</u> It's overcrowded. Some people forget to boil the water. <u>Leadership</u> Many people wants to have a leader. There are many people who wants to be a leader, it's only hard to find a capable leader(s). 4.1.2. Activities leaders • health education for the parents; • organise a seminar. The bottleneck is that many people don't see the importance. They don't see why it is important, so you have to convince them. Leaders will discuss incentives for people to come to the seminar.

5.Conclusion and intervention

From above results, it became evident that clean water is priority number one for the community members. Having clean water comes with some sub-objectives, determined into four categories: improving **leadership**, finding a system for the **excessive waste**, raising awareness with regards to **contamination** and raising awareness regarding **health**. Also it was mentioned, that collecting water should be safe at all times when it comes to (children) walking for water in the dark. All sub-objectives are described in the objective tree above, with their respective required activities for achieving those objectives. The appointed local leaders received activities forms; through these forms, they determine how and when each activity will be executed.

Through this research, we believe to have delivered evidence of the following:

1. That there is an urgent need for clean water in the community of Makindye, where Twekembe Slum Project operates;
2. That the community is willing to contribute wherever they can to improve the situation when it comes to improving the excessive waste problem and eliminating water contamination;
3. That there are 4 new voluntary leaders who are dedicated, and capable of leading the community in their path to development.
4. That the community –in cooperation with the local leaders, together comprise of a well organised entity that is capable of making this project a success.
5. That there is additional funding required to supplement the community efforts and –contributions. With the proper funding, the project can be completed successfully and sustainably.

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Appendices

1. Informal conversations and observations
2. Questionnaire
3. Stakeholder analysis
4. Quick mini survey
5. Conference about leadership
6. Meeting stakeholders and leaders
7. List stakeholders, leaders and organisations
8. Prices for constructing the water well
9. Twekembe activity form

Appendix 1 Informal conversations and observations

Conversation 1: Brick makers

Information

1. Factor of the excessive waste is that there's no permanent place for it. What they need is a special place for the garbage.
2. There's ignorance in the community about the excessive waste. One of the reasons is limited time. They have a lot of things to do, like looking after their family's.

Idea's

1. The excessive waste has to be removed or burnt.
2. The community needs someone who can monitor the excessive waste, like a leader. A person who came up in their minds is **Mr.Mukiga**.
3. Formation of meetings. If the community works together, they can work together and maintain the sanitation. They also need to be educated to be aware of the effects of the water contamination and the excessive waste.
4. Collaborate with the company Kampala Capital City Authority (KCCA). They can assist with the excessive waste.

Conversation 2: Women and children who live next waterwell A.

Information

1. The children play in the rubbish.
2. The pipe channels are petrified. It makes the people sick. The water in the cannel 1 is not flowing/moving.

Idea's

1. After the rain it's a mess. The water in the water wells are overflowing but there's much ignorance. After the raining the community should work together and clean the waterwell together. They also have to clean the neighbourhood.
2. The water in the swamp and canal 1 isn't flowing because of the mud and trash. An suggestion is to use cement and stones to make the swamps/canal 1better.
3. The pipe channels are petrified. The pipe channels has to be exchanged/fixed. Maybe an expert can give an advice?

Conversation 3: The slum next the swamp and canal.

Information

1. Sometimes they forget to clean the water and to remove the waste from the canal.
2. There are many mosquitoes and other animals in canal 2. Because the water isn't flowing mosquitoes/other water animals lay their eggs in the water.
3. Children are playing around canal 2 what makes them sick.
4. The leather in the area is useful because it protect the ground of the water.

Ideas

1. They need a leader to communicate
2. The canal has to be cemented so that the water in the canal can flow easily.

Conversation 4: Waterwell B

Information

1. Waterwell B is useless and totally broke. They need another waterwell.
2. The water in the canal isn't flowing. The canal must be cemented.
3. There's no information how to keep the waterwell clean. They had information years ago, nut nobody has ever practice it.
4. The inhabitants have no idea where they can dump the garbage. Around the waterwell is a lot of garbage.

Ideas

1. There is a waterwell specialist/experts in the area. The landowner knows his name!

Coversation 5: Land owner

Information

1. The problem of the water contamination is the excessive waste.
2. There's a overpopulation in comparison with the waterwells.
3. Waterwell B is broke since five years. The community tried to clean the waterwell and moved the garbage but it didn't work. At that moment they didn't had an expert/specialist.
4. There's a lack of information about the excessive waste.
5. They wash the Boda-boda in front of the waterwells. Make a permanent place to clean the Bodaboda's (washing bay).
6. Some people don't boil the water and getting sick. They think that there immune system is strong enough.

Ideas

1. Waterwell B has to be exchanged.
2. Contact the waterwell specialist. We can ask the land owner for more details.
3. It's not aloud to clean the Boda-boda in front of the waterwells. Maybe we can work with a "punish system" for people who have lack about the rules.
4. Make permanent places to wash the Boda-boda's.
5. The waterwell needs a fence. There have to come rules and regulations to keep the waterwell clean.

Appendix 2 QUESTIONNAIRE FOR THE LOCAL PEOPLE

Dear respondent:
We are a team from Twekembe slum project Currently undertaking a study on the interventions on how to reduce water contamination caused by excessive wastes. You have been selected to participate in the study and you are kindly requested to answer honestly as this will enable the researcher to produce an effective data collection. The responses given will be confidential.

SECTION A

BIO DATA
Tick the answer you fill is appropriate for you and fill in the blank spaces provided. Section B are more options possible.

Respondent acceptance tick ☐

Background information
Sex of the respondent
Male ☐ Female ☐

Marital status of the respondent
Single ☐ Married ☐ Divorced ☐ Single with children ☐
Married with children ☐

Age
15-18 ☐ 20-30 ☐ 30-40 ☐ 50 ☐ Other age ☐

Education
……

Occupation of the respondent
……

SECTION B

More options are possible in section B!

1. Do you make use of the water from the water well next to the church?
Yes, everyday ☐ Yes, a few times per week ☐ No, never ☐

Are you satisfied with the distance from your house to the well?

2. What do you use the water for next to the church?
Drinking ☐ Dish washing ☐ Cloth washing ☐
Cooking ☐ Washing Boda-boda ☐ Other…….. ☐

3. How many minutes does it take for you to get to the <u>waterwell next to the church</u>?
……..minutes

4. How many minutes does it take for you to get to the <u>waterwell next to the shoe factory?</u>
……..minutes

5. How satisfied are you with the water that comes from the waterwell<u>next to the church?</u>
Very satisfied ☐ Satisfied ☐ <u>Un</u>satisfied ☐
I don't have an opinion ☐

6. Do you think the water of the well is clean <u>next to the church?</u>
Very clean (if you choose this option, you don't have to fill in the rest of the questionnaire. Thank you for your cooperation!)
Little clean ☐ Very unclean ☐

7. Do you think the water of the well is clean <u>next to the shoe factory?</u>
Very clean (if you choose this option, you don't have to fill in the rest of the questionnaire. Thank you for your cooperation!)
Little clean ☐ Very unclean ☐

8. What, in your opinion, is dirty water in general?
Water that looks blurry ☐
Water that looks clean, but contains bacteria ☐
Water with mosquitos and other animals ☐
Water with waste ☐
Water with urine/poop ☐
All of the above ☐
I do not know ☐
Other, namely…….. …… ☐
……..
……..

9. What kind of dirt does your well contain the waterwell<u>next to the church?</u>
Bacteria ☐
Urine/poop of animals ☐
Urine/poop of people ☐
Mosquitos ☐
Dead animals ☐
Soil ☐
Fish ☐
Waste ☐
Mosquitos ☐

All of the above
Others, namely

10. What kind of dirt does your well contain the waterwell<u>next to the shoe factory?</u>

Bacteria
Urine/poop of animals
Urine/poop of people
Mosquitos
Dead animals
Soil
Fish
Waste
Mosquitos
All of the above
Others, namely

11. What do you think are the causes of dirty water in your area?

Lack of a permanent place for the waste
Ignorance of the people about sanitation
There is no leadership
Children playing around the wells
Some people are not sensitized on how to make water clean
Excessive dumping of wastes in water
Others, namely
……

……
……
……

12. What do you think are the effects of dirty water in your area? (Think about health effects)

……
……
……
……

13. As to your opinion, what do you think could be a good solution to the problem of the dirty water? Please give a reason as to why.

……
……
……
……

Thanks for your cooperation!

RESULTS QUESTIONNAIRE

Total participants: 15
SECTION A

Question 1: What is your seks?
Female: 9
Male: 5
No answer: 1

Question 2: What is your marital status?
Single: 7
Married: 5
Married with children: 3

Question 3: What is your age?
15-18: 3
20-30: 8
30-40: 1
40-50: 2
No answer: 1

Question 4: What is your highest level education?
S-2 3
S-4 4
S-6 2
P-3 1
P-7 2
Engineering degree 1
No answer 2

Question 5: What is your occupation?
Trainer 1
Student 3
Shop attendent 1
Hair dresser 1
Farmer 1
Tailer 1
Teacher 1
Football reference 1
H/W (???) 1
No answer 3

SECTION B

Question 3: How many minutes does it take for you to get from your house to the <u>waterwell next to the church</u>?

Minutes	N
3	1
5	1
10	2
20	3
30	2
40	1
50	1
55	1

Question 4: How many minutes does it take for you to get from your house to the <u>waterwell next to the shoe factory?</u>

Minutes	N
5	2
7	2
8	4
15	1
30	1
35	1
50	1
60	1

Question 8: What, in your opinion, is dirty water in general?
Other, namely…
8) Good water is water that has no jumps?? Good water is pure and safe to drink.
8) Dumping excessive waste. They wash/bathering and children playing in the well.
8) This is the water that contains waste and polythen bags.
8) Water that looks yellowish

Question 9: What kind of dirt does the waterwell<u>next to the church</u> contain?
Other, namely…
9) The waterwell is full of waste. The pipe is very low according to the water table.
9) Excessive waste/old clothes. Dumping polythen bags and sugar cane husks.
9) Always contains waste

Question 10: What kind of dirt does your well contain the waterwell <u>next to the shoe factory?</u>
Other, namely…
10) I don't know that well!
10) Banana husks, old shoes, dirt of the children, dirty matrials
10) To much soil erosion
10) Excessive waste

Question 11: What do you think are the causes of dirty water in your area?
Other, namely…
11) When it rains, waste is dumped wherever they want.
11) We should always be clean the water wells.
11) We are not serious about how we can handle the well. We are the one who dump the waste, children playing in the well, throwing things in the well.
11) Lack of leadership and responsibility (N=).

Question 12: What do you think are the effects of dirty water in your area? (Think about health-, environmental or other effects)
12) Causes bacteria infections and other diseases
12) The effects are diseases, death and suffering
12) Leads to malaria (N=6)
12) Leads to diarrhea (N=5)
12) Diseases (N=4).
12) Leads to cholera (N=3)
12) Leads to bilharzias (N=1)
12) Dirty water causes vector in the environment

Question 13: As to your opinion, what do you think could be a good solution to the problem of the dirty water? Please give a reason as to why.
13) Boiling the water from the well
13) Building up to date/ modern wells
13) Education people around the well on how to keep the well clean.
13) Sensitive people about sanitation and encourage villages to ensure
13) Proper disposal of human and animal waste.
13) Because of Hoods we should build water channels which will take dirty water away.
13) Reconstruction of new wells.
13) With enough sensitization. Reason: members will be able to keep the water clean and mobilize each other as well.
13) People should remain sanitation in all the community.
13) Formation of seminars. Reason: Because true seminars community members will be able to learn how to keep the waterwell clean.
13) To get a permanent place for waste and to sensitise.the people to make voluntary actions.
13) To get a permanent place for waste because if we get a permanent place for waste we can be able to get a good sanitation.
13) Getting a permanent a place for waste is the only solution.
13) To get a permanent place for waste.
13) There should be public awareness about the dangers of dirty water.
13) The solution is the formation of seminars so that people will be able to know how to keep the well clean.
13) To get a permanent place for waste because excessive waste leads to many diseases.
13) Formation of seminars to make the people aware of the dangers out of dirty water.

Appendix 3 Stake holder analysis

Chairman/councilman interview
More than 10.000 inhabitants in the slum.

- The well is blocked because of ignorance of the people
- The watertable is low and need to be uploaded.
- Ignorance of the community members
- There is a lack of communication. One of the reason is the different tribes. They don't communicate to eachother.
- Public sensitization is one of the solutions. They have to talk about the miscommunication.
-

Leadership
- The leader has to protect the well.
- The leader has to live next to the well
- The leader has to collaborate with other people
- Many people wants to be the leader, but the most don't have the leadership skills.
- The community has to appoint the leader.
- They need strict rules about the sanitation. They have to work with a punish system. To remind the rules, they use a poster with the rules. An health worker (doctor) is responsible for the rules. People who have lack of the rules, has te be in prison for 30 days.

Health clinic interview
In the slum you have to deal with ignorant people but very good and social people. There's a lot of poverty.

<u>Pneumonia</u>
Diseases number one is Pneumonia , especially for the children. Some people do have the knowledge about Pneumonia, some not. Mainreason is the cold. Especially in the rain season children gets Pneumonia.

<u>Diarrhoea</u>
Reasons of diarrhoea are:
- children aren't feed very well
- toilets are dirty. They are using the water where the poop is in it.

<u>Solutions</u>
- health education for the parents
- organise a seminar. The bottleneck is that many people don't see the importance. They don't see why it is important, so you have to convince them.

<u>Malaria</u>
People think everything is malaria. Sometimes herbs will help you (traditional healer). When people needs professional help in the hospital the government will pay it for the people. But some people hate the government and refuse to go to the hospital.

Waterwell
It's overcrowded. Some people forget to boil the water.

Leadership
Many people wants to have a leader. There are many people who wants to be a leader, it's only hard to find a capable leader(s).

Traditional doctor
The population is overcrowded. Many people fall into the swamp in the night. It's very dangerious for ladies, because they can be raped. Every people fights for his own. Everybody needs a mosquito net.

Problem of the water is that the sanitation is bad and the water is not moving. Many musquito's laying eggs in the water. The slum needs channels.

Mr Musisi Local councilman of Luwafu zone
That water well has been in existence for more than twenty years but before you constructed it, sincerely it was in a pure condition and I thank you for your effort you had applied to make it as better as it now. MrMusisi suggest that t's better to have one leader who's responsible for all of the mentioned ministries instead of having many different ministers. If you get a dedicated person who's full committed to work I can assist that person through combining our effort together because if at all there is any critical condition I can easily respond positively to make sure that the criminal is punished.

Appendix 4. Quick mini survey

Questions leadership

1. What kind of characters does a leader needs to have?

knowledge	**4**
friendly	**3**
Having abality to speak in public	**4**
Mobilising people	**3**
disciplined	**4**
must be clean	**5**
faithful/trustfull	**6**
example	**3**
time manager	**3**
Good behaviour	2
punctual	1
observant	2
takingresponsibility	**4**
effictive	2
loving	2
Understanding people	**3**
he/she has tobegrow	1
notforcingpeople	1
listeningto the people	**5**
encouringthemwith money	1
Provide some security till 8 o clock	1
can look at both sides of opinions	1
don’t be merciefull	1
helpful	1
operative	1
alwaysavailable	1
well equipment with matrial	1
Peace maker to avoid fightenings	1
Concerned about project	1
participating community activities	1

2. When will you do the things where the leader asksfor?

following the rules	1
following the laws	1
anytime	1
Sunday	**6**
saturday	3
weaklydays,	3

2. How can a leader(s) make sure the community will keep the water clean?

public meetings	**5**
cleaning the well twice a week	**3**
making strict rules about sugarcains/washing	**3**
payment system	1
putting forward somefines	1
shouldbeproudtobe a leader	1
permanent place	1
implements the activitiestobedone	1
finaldecision maker	1
continious research about the well	1
public awareness	1
awareness watersystem	1
educate the peoplehowto clean the well	1
security morning/afternoon at the well	1
applyforec	1

3. Are youinterestedtobe a leader or do youknowsomebodywho'sinterested?

Muhkiezi Beatrice	752439514		
Nakandi Rut	??		
MukuutaJoshua	75503927		
Makyeswe Agnes	703879850		
AdamukiraVicent	701802003		
KanyaChristopher	**vote**		
MuiyabaEmmanuel	755464520		
Patrick Ssekyaya	752318250		
Ssemakula Chris	751908760		
The senior pastor	**vote**		785596599
Kattoza Robert	706442995		
Patric	vote		
Nabatanzi Shakira	783927024		
Steve Brown	**vote**		751167453
Steve Brown	**vote**		
BuyungoAbbas	787460245		
Steve Brown	vote		
NamuwongeAyisa	???	filledalso questionnaire in	
Mr. AbuduKabega	**vote**		
Mr. AbuduKabega	785492657		
assistant of Mr. Kabega			
Akim	7544635664		
DerickMuwulya	772421913		
E. ByaruhangaEmmanuel Mr Muliga	!!!!!!!		
Mr Brown	**vote**		

Total Votes

Mr Brown	**3**
Mr. AbuduKabega	1
Senior pastor	1
KanyaChristopher	1

Appendix 5 Conference about leadership

DIFFERENT IDEAS BROUGHT FORWARD BY LOCAL MEMBERS IN THE COMMUNITY

1. **How can excessive wastes be treated**

a. Collaborating with leaders in the community
b. Burning the wastes or collect it so that KCCA vehicles can take it
c. Make up a team that can do community clean up
d. Get a better place where wastes can be dumped and burnt

2. **How can we keep our water well clean**
   - **a.** Through sensitizing community members about the importance of water well.
   - **b.** Upgrading the standard of the water well
   - **c.** Get a person who can monitor the well and as well as the garbage

3. **How can we educate the community about sanitation**
   - **a.** Organizing public meetings based on general cleanliness of the water well
   - **b.** Organizing awareness programs/meetings

4. **How many public meetings do the leaders have to organize**

a. 3 times in a year and one meeting should be organized during holidays especially on Sundays.

5. **Which rules do leaders have to implement**

a. Putting a notice board/sign posts notifying some rules for example if you dump garbage near the water well, you will be prosecuted, punished or even imprisoned.
b. Payment for a person to monitor the water well of around 40,000shs.
c. People should have a time limit.
d. Constructing a fence around the well

6. **How can we make sure that the community follow the rules**

a. Payment system
- That if the whites are to collect money from the people, it will be possible.

b. Awareness system
- Distributing fliers
- Putting sign posts on the well

Appendix 6 Results meeting with stakeholders and leaders.

Wrote down by Mr. teacher Steve Brown
11th-august- 2014

The meeting started at 12.00 pm With an introduction of every teammate. The meeting involved stakeholders together with the leaders.

Stakeholders were as follows:

1. Mr. Musisi Joseph chairman, (L.C. Bukejje zone, luwafu parish)
2. Mrs. Nakacwa Magret
3. Mr. Charles (Twekembe)

Leaders were:

1. Mr. Byaruhanga Emmanuel
2. Mr. Buyungo Abas
3. Mrs. Kabega Abdul

The project team explained the results got from the seven previous weeks by the slum dwellers and the main reason was focused fully on leadership.
After proving this, there was an intervision between the stakeholders and leaders through couples.
Ideas were shared equally about the following topics:

- Excessive waste
- Contaminated water
- Health'

And the results from the couples were as follows;

1. We should get only one person who can monitor and take care of the well together with the excessive dumping of waste around the waterwells. Who ever caught dumping the waste he or she will be punished as far as sanitation is concerned. This will be an example for others and everything will be ok.
2. We should collaborate with the community leaders to make a sure that members who sleep near the well get a permanent place to dump the waste to be burned or be collected in containers and taken by KCCA trucks.
3. We should go door to door sensitizing members about the proper use of the waterwells so that waterwells will be protected in a good condition.
4. We should implement sensitization meetings in the community together with other activities like security, development ideas, women groups and among others.
5. We should be having three meetings within three months and one of them should be done during holidays.
6. Whoever brakes the law of not dumping the waste will be find one hundred thousand shillings as the notice board states.
7. We should be pay some little money to someone who is in charge to got the well from pur conditions like at least forty thousand shilling per month.

8. There should be time to close the well to ensure proper security and these rules will be distributed door to door using stickers.
9. Payment system for example two hundred shillings per month.
    1. Well is put in to consideration people would be able to pay some money.
       (People will pay some money when they see some development. They have to be motivated. So on that matter the money from the people can be invested in new development)
10. Mr. Mukiga knows the landlord for the permanent place for waste.
11. We should use the portable speakers and we inform the community about sanitation and there should be strict rules and regulations governing the community members.
12. We should get some little money to pay Mr. Byaruhanga Emmanuel (Mukiga) for every month.
13. With the general cleaning of the watercanals, the secretary for environment will be moving door to door getting some little money for development.
14. We have more than five waterwells but currently we have only two wells which are working. If at all Twekembe project manage to talk to the people even we as leaders we shall be able to join hand in hand.
15. If we manage to clean our waterwells many diseases will be defeated like cholera, dysentery, diarrhea, bilharzias etc.
16. For the issue of the toilets which are build close to the big swamp we shall sensitize the owners about the dangers of this problem.

Appendix 7. Prices (so far) for constructing Water well

The leader and researcher Mr. Brown asked the prices from two different engineers. So we can compare and choose the best option.

Prices: Water Well B
Requirements: Kato engineer (0775328022/0754896891)

- Dumping the hole: 5fth deep + 10 wide: 400.000 Shs
- Hard cor for filling: 3 strips: 100.000 x 3 300.000 Shs
- Steel net: 4 mtrs: 12.000
- 2 pipes: ……
- Polythehe bag: 10 mtrs: 50.000 Shs
- Soil to cover the hole: 4 strips: 20.000 Shs
- Take sand 2 trucks: 100.000 x2 200.000 Shs
- River sand/swamp for plaster 2 trucks 120.000 x 2 240.000 Shs
- Hard core for building 10 trips 1.000.000 Shs
  (even for building the trench)
- Small hard core (half inch) 1 trip 160.000 Shs
- Cement 60 bags 28.500 x 60 1.710.000 Shs
- Labour 1.500.000 Shs

Total amount 5.592.000 Shs

Euro: 1565,76 Euro

Prices Waterwell B
Requirements:
Mr . Isma

- A hole 6ft deep + 10 wide 500.000 Shs
- Hard core for filling the hole 3trips (3 x 100.000) 300.000 Shs
- Lake sand 2 trips (2 x 100.000) 200.000 Shs
- River sand (1) 100.000 Shs
- Bricks pure clay (500 x 300) 150.000 Shs
- Cement 58 bags x 2.900 168.200 Shs
- Hard core for building 8 trips x 100.000 800.000 Shs
- Steel net 4 mtrs 120.000 Shs
- Big pipes 2 ……
- 1 half inch trip of small stones ……
- The polythene bag 10 mtrs 45.000 Shs
- Fence together with soil for planting the paspalm glass …..
- Labour 1.400.000 Shs

Total amount 3.783.000 Shs
Euro 1.059,24

Appendix 8. Activity Form Waterproject Makindye

1. **Name of the activity:**
2. What is the goal of this activity?
3. When would you like to execute the activity?

Date/period:

4. What steps need to be undertaken to execute the activity? Describe each step in this table.

Step	What	Who	When
1			
2			
3			
4			
5			
6			
7			

5. Is there *any*thing in this activity that could cause harm or disadvantage in *any* way to *any*one?

6. Which stakeholders would you like to involve in this activity?
7. What does each stakeholder need to do?
8. How many people -volunteers- need to help in this activity?

9. What do these people need to do?

10. How are you going to motivate these people to help during the activity?

11. What kind of materials do you need for this activity?

12. How could you purchase these materials?

13. Are there financial requirements for purchasing each material? If yes, how much?

14. Are there other ways of purchasing each material, other than financial resources?

15. Are there any other requirements other than people and materials?

16. How are you going to communicate the activity to the community members?

17. Which leader(s) will manage this activity?

18. Do you foresee any problems during this activity?

19. If yes, how would you prevent these problems from happening?

20. Do you have to take into consideration any other situations that could make your activity difficult? Think of cultural traditions, norms and values, holidays etc.