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Smart technologies for urban and peri-urban communities: Amref Health Africa's experience in promoting water borne/pour flush toilets in northern Uganda

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**WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY**

**Smart technologies for urban and peri-urban communities:
Amref Health Africa's experience in promoting water
borne/pour flush toilets in northern Uganda**

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Safe water supplies, sanitation and hygiene promotion remains vital for good health, environmental protection and poverty alleviation. Although there has been great improvement in achieving the national targets with sanitation coverage standing at 74.8% in Uganda (Uganda Water and Sanitation Sector Performance Report 2014), the quality of the sanitation facilities has always been compromised. Pit latrines are commonly used both in rural and peri urban communities. However, these get filled up and abandoned which calls for digging more latrines. With the challenge of limited land in the urban and peri urban communities, effects from floods and poor drainage and associated pollution, smart technologies like the waterborne/pour flush toilets remains the best option. This paper therefore shares Amref Health Africa in Uganda's experience in promoting waterborne/pour flush toilets in urban and peri-urban communities in Gulu Municipality and Kitgum Town Council of Northern Uganda.

Introduction

From a community perspective; sanitation is a process where people demand, develop and sustain a hygienic and healthy environment for themselves by erecting barriers to prevent the transmission of diseases (UNICEF 1997). Sanitation is more than just building latrines to dispose off human excreta but a process with people at the centre aiming at keeping people and the environment clean. The process includes building, use and maintenance of latrines and other sanitation facilities. It also involves learning, behaviour change, organisation, and collective actions with all community members. It also includes other important components for example knowledge of hygiene practices (hand washing after defecation, before eating and cooking food; and safe drinking water management). On the other hand, smart technologies in WASH refer to sustainable market based appropriate and reliable technologies such as water borne/pour flush toilets and ecosan toilets.

In urban areas of Sub-Saharan Africa, 80% of existing sanitation access is met by onsite technologies, and the sludge that accumulates in these systems is referred to as "faecal sludge" (Koné, 2010). However, despite improvements in worldwide access to sanitation over the last decade, 70% of the population in Sub-Saharan Africa still lacks access to improved sanitation (UNICEF and WHO, 2012). In Uganda, National household latrine coverage has improved from 71% in 2013 to 74.8% (Water and Environment Sector Report 2014). This paper examines existing sanitation systems that are currently in use considering their advantages, disadvantages with greater emphasis on the sustainability of these systems. This paper also examines the adoptability of the pour flush toilet in Urban and peri-urban communities of Northern Uganda as experienced by Amref Health Africa as a paradigm shift from traditional practices of human excreta management to modern methods.

Northern Uganda where Gulu and Kitgum are located is rebounding after 20 years of insurgency and civil war. With the return of peace, communities are rebuilding and embracing opportunities for growth and development. In regard to sanitation the rebuilding commenced with basic sanitation facilities including pit latrines which were observed not to be sustainable. In addition the, an influx of refugees from neighboring

countries, particularly Southern Sudan and the region has put a strain on water & sanitation facilities. The region is also prone to food insecurity, drought and famine leading to seasonal internal migration which creates a transient characteristic of the demand and strain on WASH resources. Because of this, water, sanitation and hygiene are much needed to sustain healthy communities and improve the quality of life for communities in the region. However, faecal sludge (FS) management remains a challenging problem. Majority of the households in Gulu Municipality (the major hub for the Northern region and Southern Sudan) and in Kitgum Town council largely depend on on-site sanitation with 80% and 85% respectively using pit latrines, 7% are using septic tanks, 5% are connected to sewerage system and 3% having no toilets. A small proportion of the households and institutions in Kitgum (9%) are using lined Ventilated Improved Pit Latrines and 2% are using septic tanks while some practice open defecation.

The policy on sanitation

Latrines are required to be located at least 30 metres/100 feet from the residential house to prevent flies from contaminating food, and to protect homesteads from the unpleasant smell. However, with limited land in urban and peri-urban communities this is not possible. Promotion of smart technologies would be the ideal option/alternative choice to improve sanitation better in urban areas. Ideally, flush toilets connected to the sewerage system or drainable toilets are much preferred in all urban areas and “with proper planning, it is easier and cost-effective to determine a uniform and manageable toilet system for a given area. For drainable latrines/septic tanks once full, the collected human excreta is exhausted and the facility continues to be reused till the next emptying. Availability of water is a very important factor for proper use of the water borne/pour flush toilets. Targeted municipal/town councils in the two districts of Gulu and Kitgum have had increasing water coverage of 71% and 74% respectively. Gulu has a population of 374,700 of which 124,959 have access to NWSC supply. The NWSC is currently carrying out a phased rehabilitation and expansion of Gulu water supply and sewerage system to cater for the rapidly increasing population of Gulu Municipality. Sewerage services are offered using a limited pipe network which leads the sewerage water to treatment ponds. A small proportion of about 12% of the population in Kitgum Town Council is connected to pipe water system and only (2%) households and institutions are using septic tanks but there currently no sewerage system and no public sludge drying bed.

Sludge collection and transportation services are already in place. There are three private operators (two in Gulu and one in Kitgum) each owning and managing two cesspool emptier trucks. On average, a household empties a septic tank at an interval of 4 to 5 years where as institutions such as schools normally empties at an interval of 1-3 years depending on the school enrollment. Collected sludge is dumped in dug pits (3) to allow it dry before being re-used as manure. However, Mr. Lee Wright the cesspool private operator in Kitgum noted that their cesspools are not fully utilized as most of the times they are packed due to no work (on average, they make 6 trips a month at a cost of UGX 70,000-80,000) depending on distance. This is equivalent to \$27. There is however lack of proper infrastructure for treatment of faecal sludge. Gulu Municipal and Kitgum TC also own cesspool emptiers that are hired at a reduced price. However, they are inefficient due to their poor mechanical conditions.

Accessibility to septic tanks is also key in the management of faecal sludge. Given the fact that there are few households using the septic tanks, their strategic location guarantees accessibility by cesspool trucks. There is a good learning experience in St. Joseph Hospital in Kitgum Town Council in regard to their sludge management. The hospital has a daily population of 48,234 (OPD attendance = 35,351, In Patients = 9,286, Antenatal = 1,572, mothers who come to immunize their children = 1,785 and 240 staff and their family members). Through a self-initiative, the hospital decided to come up with a working solution towards management of the hospital sewage. The hospital sewage is connected to the lined system which has four chambers (pre-treatment units). The first chamber has a valve inside where liquid passes to go to the 2 chamber, 3 and 4. The liquid content from the fourth chamber is connected to the sludge drying bed and there after connected to a planted wetland (through a pipe with small holes). It is heard that the liquid content percolates through sand (filtered) before it is tapped back for re-use in general cleaning and for irrigation. This has saved the hospital from consistent digging of pit latrines that used to get filled up on a quarterly basis. It is from this experience that Kitgum Town Council requested Amref Health Africa to support in promoting water borne/pour flush toilets and construction of a sludge drying bed.

Description of the initiative

Amref Health Africa has been working in Uganda since 1998 mainly in rural areas with least access to basic health care, safe water and sanitation. Amref works towards supporting the government of Uganda

towards realization of 100% water, hygiene and sanitation coverage. Amref acquired funds from EU to implement a five year “Basic sanitation program in urban and peri-urban communities (Kawempe Division in Kampala, Gulu, Kitgum and Pader districts of Northern Uganda to act as a model for replication across the country. The project is geared at achieving four result areas outlined below.

- Increased access to basic sanitation services through improved sanitation infrastructures and strengthened sanitation chain.
- Improved hygiene practices in the collection, transportation, disposal and re-use of sanitation waste in target areas.
- Established mechanisms for coordination of relevant stakeholders in the sanitation chain (civil society, public sector, private sector).
- Improved policy and practice for urban and peri-urban environmental sanitation systems in Gulu, Kitgum, Pader and Kawempe division of Kampala.

Project beneficiaries

The project is generally targeting the urban and peri-urban poor with a focus on institutional and public toilets. Communities at household level are mobilized and sensitized about the benefits of using improved drainable toilets as compared to traditional pit latrines.

Software activities

Amref believes in spending ample time of 6 initial months and through the project to fully mobilize the communities, create awareness and encourage active community participation to ensure that there is a sense of ownership and active involvement in the project. This is done for purposes of ensuring sustainability of interventions made. Secondly, targeted communities are mobilized to contribute 2% (capital and in-kind contribution) towards any hardware before construction begins. This applies to institutions (schools, health facilities) and public facilities such as public toilets and water points. The project was launched at planning process. This was aimed at bringing together various stakeholders and unite them under a common goal. Gulu Municipality and Kitgum Town Council authorities opened dialogue meetings and persuaded key stakeholders about the need to plan and take action; at the same time involving the end-users as their involvement is key towards the success of the project. Town council/ municipal Engineers and Health inspectors play an important role of guidance and supervision.

Awareness creation, community health and hygiene education campaigns are ongoing. It is in such meetings that targeted communities are sensitized about appropriate sanitation and hygiene best practices, discuss the different technological options (with their associated advantages and disadvantages), and make action plans and implementation of agreed on actions.

Formation and training of community management structures and Village Health Teams (VHTs) has been done and monitoring their performance is ongoing. Similar training of school staff and formation of school health clubs with emphasis on roles and responsibilities of different stakeholders has also been done to ensure proper use and maintenance of sanitation facilities in schools. The project is also bridging the gap between private operators and community. This is done through community and private operators meetings, radio talk shows and trainings.

Hard ware activities

A number of hard ware activities have been done but for the purpose of this paper, the focus is on waterborne/pours flush toilets. Initially, the project had planned to construct Ventilated Improved Pit Latrines (VIP). However, due to community demand, guidance from the municipal/town council authorities and respecting the Municipal and TC sanitation ordinance (Gulu and Kitgum) -, the option for waterborne/pour flush was considered. The Municipal/town Council Engineers in targeted districts of Gulu, Kitgum and Pader supported the project team in development of appropriate designs.

The designed technologies are gender sensitive taking into consideration the special needs of women (especially for privacy), men and all vulnerable groups. For example, separate toilet blocks for girls and boys have been constructed in schools with washrooms and hand washing facilities with a stance for people living with disability.

Achievements to-date

A total of 300 stance water borne/pour flush toilets have been constructed and are in use. These have been constructed in public places such as markets, public institutions like schools and health facilities. This has greatly contributed to increased sanitation coverage in respective targeted municipalities/town councils. For instance, Gulu sanitation coverage has increased from 62% in the past two years from 2011 to 71% to date the Principal Municipal Health Officer mentioned Amref's contribution being key towards this increment.

A total of 52 rain water harvesting systems of 20,000 litres ferro cement tank each have been installed in schools as back up water storage facilities. This is aimed at ensuring that targeted schools have enough water for ensuring good O&M of the pour flush toilets provided.

Installation and use of hand washing facilities

A total of 120 hand washing facilities have been installed with 01 hand washing facilities (HWF) installed close to the toilet block and within school compound. This is aimed at promoting hand washing with soap especially after toilet use and before eating. A total of 30,657 (14286 males and 16371 females are benefiting from this.

Major drivers to success

Strengthening collaboration and coordination with a wide range of stakeholders

Sustainable water and sanitation management can only be achieved when key stakeholders are involved at all stages of project implementation. Therefore, Amref played a pivotal role in strengthening collaboration and coordination with all stakeholders to ensure active participation and ownership of the project for sustainability. At the onset, Amref convened inception meetings, launched the project to create awareness about the programme putting emphasis on improving the health of people. Key project stakeholders include; the private sector, civil society, local government and municipal/town council authorities, NWSC and community, institutions (the primary beneficiaries). Both technical experts and political leaders have been cooperating closely with the project management for successful implementation of the project.

Integration of WASH with other Amref health projects in all targeted communities

Amref promotes integration of WASH into all her programs and within the same targeted communities. This is aimed at creating impact and addressing a number of challenges affecting targeted communities in addition to promoting their sustainability. A clear example is integration of WASH where Amref is implementing menstrual hygiene, , HIV/AIDS and the male circumcision program as well as addressing solid waste disposal, environment and education. All these programs are demand driven.

Installation of 20,000ltr Ferro cement tanks in schools to support sanitation

All the schools and public places that received water borne toilets/pour flush were also supported with a 20,000 litre ferro cement tanks. This was aimed at boosting their sanitation by storing enough water for use during times of shortage.

Water Availability

Availability of water is a very important factor towards proper use and maintenance of water borne/pour flush toilets. All the targeted districts/municipalities/town councils have had a steady increment in their water coverage from 65% in the past 5 years to 71% and 74% in Gulu and Kitgum respectively. This is very key for proper O&M of water borne toilets.

Participation of women and men

In order to improve access to sanitation, it is crucial to enhance women's participation in the management of water and sanitation facilities. In Uganda, water authorities in urban centres are required to constitute Water Supply and Sewerage Boards (WSSB) with 5 members at least one of whom should be a woman. The MWE (2007) defined a water and sanitation gender indicator as the “% of water and sanitation committees/water boards in which at least one woman holds a key position”. Key positions on the WSSB include Chairperson, Vice chairperson, Treasurer, and Secretary. It is believed that this indicator helps to gauge women's participation in-decision-making at the local level. Therefore, Amref considered this when guiding targeted communities on selection criteria for sanitation committees. Women were voted to the positions of

chairperson, treasurers and secretary. They have developed byelaws that guide use and maintenance of the facilities

Sustainability plan

Formation and training of management structures

Sanitation management committees have been formed and trained. The emphasis on 50% female representation on water user committees has strengthened the role of women in O&M as well as in decision making. School management committees and school health clubs in schools where similar facilities have been constructed have been trained in O&M and gender mainstreaming. This is aimed at ensuring good O&M of the facilities.

Construction of sludge drying bed

Amref is working closely with Kitgum TC and NWSC (a Semi Government Parastatal) responsible for provision of piped water supply and sewerage systems in Urban and peri-urban communities. Consultations geared at development of appropriate designs and construction of a sludge drying bed in Kitgum where the sludge will be treated from are on progress. Land has already been acquired through Kitgum Town Council and Environmental Impact Assessment (EIA) is on progress. In Gulu, there is already a lagoon where human wastes is emptied and treated.

Lessons learnt

Software activities should be given priority and ample time for attaining ownership, community participation, contribution and taking full responsibility of ensuring good O&M of the facilities.

Knowledge, experiences and skills sharing among the different stakeholders are a key in the successful promotion of hygiene and sanitation in the communities and replication of best practices.

Provision of water supply should go hand in hand with the promotion of hygiene and sanitation to improve health in urban and peri urban communities.

Promotion of environmental sanitation and hygiene practices requires concerted efforts from all the stakeholders in WASH sector specifically the commitments of local governments and community members

Conclusion

There is urgent need for a proper faecal sludge management system in urban centres in Kitgum. Establishment of faecal sludge drying bed is seen as the foremost and integral component as other essential amenities for faecal sludge management like sludge collection and transportation are already in place. Resource recovery from faecal sludge treatment products could provide a key financial incentive. This is in contrast to the current status where sanitation services in Northern Uganda are not profitable, and hence typically not fulfilled.

There is need for commitment of the Town council authorities towards proper management of the sludge drying bed as poor maintenance may be a menace to the surrounding community.

Coordination with other stakeholders such as NWSC, Town Council is key for sharing responsibility, helps to solve problems in time, easy to reach agreement and creates opportunity for transparency.

Pit latrines are used by majority of the people notwithstanding that the disadvantages of the use of this method far outweighed the advantages in a long run. The adoption of the pour flush toilet that uses less water and can be re-emptied and reused will not necessitate construction of another facility. Where necessary, expansion of sewerage networks to peri-urban areas for the long term benefits of the residents would be the best option.

It is my firm belief that one day one time developing countries will fully be developed countries and the process must start now by promoting sustainable smart technologies.

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