

What Lessons for Sustainability of Maternal Health Interventions Can Be Drawn from Rural Water And Sanitation Projects? Perspectives from Eastern Uganda

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Abstract

Background: Sustainability of health interventions is a global concern, as program benefits are lost as soon as programs lose donor funding. An assessment of the Uganda Rural Water and Sanitation (RUWASA) project revealed that program gains can be sustained decades later. We analysed RUWASA implementation to draw sustainability lessons for maternal and child health interventions in Uganda.

Methods: Administrative data from 1997 was combined with key informant interviews and focus group discussions in Kamuli and Pallisa undertaken in 2012. Data on borehole installation, coverage of safe water and latrine construction before and after the termination of the RUWASA project was obtained.

Results: Latrine coverage increased from 24% (2001 project end) to 68% (2011) in Pallisa and from 60% (2001 project end) to 83% (2011) in Kamuli districts. Access to safe water increased from 7% (2001 project end) to 68% (2011) in Pallisa and from 38% (2005 project end) to 67% (2011) in Kamuli districts during RUWASA and after it was terminated. Factors crucial to the sustainability of the project included; involvement of communities, community contributions towards installation of the boreholes and mandatory prerequisite of installation of pit latrines by all households prior to borehole installation.

Conclusions: Community engagement, contributions, use of structures and ownership of RUWASA was critical for the sustainability of the intervention. These are critical lessons for sustainability of maternal and child health programs.

Keywords: sustainability, maternal health interventions, Rural Water and Sanitation Projects, Uganda

1. Introduction and Background

Sustainability in its simplest terms is defined as the “capability of being maintained at a certain rate or level” (Gruen et al., 2008). For some, it refers to being financially self-sustaining, and financial sustainability is an important concern (Katz, Glandon, Wong, & Kargbo, 2013; Odame, Akweongo, Yankah, Asenso-Boadi, & Agyepong, 2013). With regards to program sustainability, a number of terms have been used interchangeably (e.g., continuation, institutionalization, resilience, integration, capacity building) Gruen et al., 2008; Shediak-Rizkallah, and Bone, 1998), yet they are not synonymous. It is a complex concept marshalling together various elements, for example “the ability of a project to function effectively, for the foreseeable future, with high treatment coverage, integrated into available health care services, with strong community ownership using resources mobilized by the community and government (WHO, 2002).” Going beyond individual projects, sustainability requires attention to broader organizational and systems dynamics and as such is also defined as “the long term ability of an organizational system to mobilize and allocate sufficient and appropriate resources (manpower, technology, information and finance) for activities that meet individual or public health needs and demands (Olsen, 1998).” Accordingly, several reviews stress its dynamic nature fuelled by interactions between stakeholders, institutions and program targets, ensuring continuation through adaptations to broader

environments (Shediac-Rizkallah, 1998; Gruen et al., 2008; Stirman et al., 2012). The most recent systematic review of the field, Stirman et al. (2012) found that one of the most cited frameworks is that of Shediac-Rizkallah and Bone (1998), which proposed a model through which sustainability can be viewed from three different perspectives. These include the health promotion perspective, which emphasizes the maintenance of health benefits over time; the organizational change and innovations perspective, which views the longevity of service delivery programs as being due to a balance of adaptation, institutionalization and integration into by existing systems, and the community development perspective that focuses on the capacity of communities to maintain changes in behaviour. The framework proposes that sustainability is affected by (i) aspects of program design and implementation, (ii) attributes of organizational setting and (iii) factors in the broader environment (Shediac-Rizkallah & Bone, 1998).

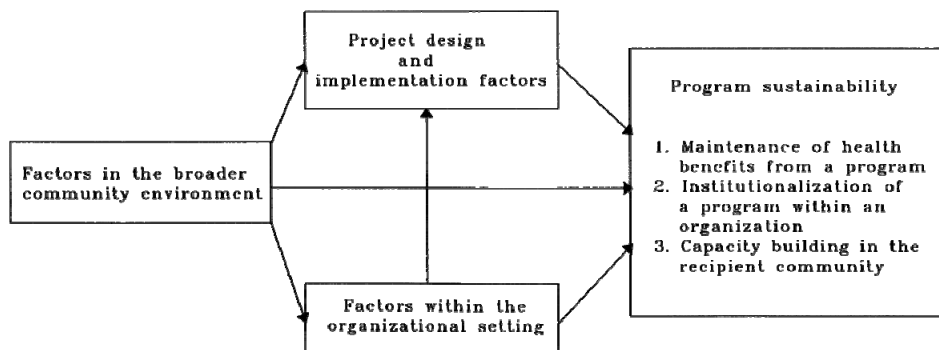


Figure 1. Sustainability framework adopted from Shediac-Rizkallah & Bone (1998)

Our literature search only found two articles that explicitly analyse the sustainability of maternal health programs in low and middle-income contexts. In China, the importance of program champions, local support, staffing levels, institutionalization and adaptation to local contexts were critical in sustaining improvements in maternal and child health (Edwards & Roelofs, 2006). In Tanzania, important determinants included efforts that built community capacity and that mobilized both informal and formal systems in communities (Ahluwalia, Valley, Giesecker, & Kabakama, 2010). Despite the contributions of these two articles, the paucity of evidence regarding the sustainability of maternal health programs limits evidence informed planning for future programs. The Rural Water and Sanitation (RUWASA) project was implemented for 10 years in a population of approximately 4 million in eight districts. The project had a year long planning phase in 1990 with implementation starting in 1991. The main objective of the project was to reduce the prevalence of water related diseases through the provision of clean water and the promotion of hygiene practices and sanitation facilities. The project used several different types of technology to promote access to safe water. They included natural spring protection, borehole rehabilitation, hand-augured wells and hand dug wells, and deep boreholes. The ease of maintenance and community contribution were some of the factors that determined the type of technology that was used. Promotion of hygiene and sanitation involved mainly provision of education and construction of pit latrines. The strategies employed by the project to ensure sustainability included community participation and ownership, involvement of women, use of affordable and maintainable technology, hygiene education and sanitation as well as ensuring on going monitoring and evaluation (Mutono, 1995; Campbell, Benova, Gon, Afsana, & Cumming, 2015). Given the paucity of the literature, in order to seek contextually relevant lessons on sustainability for our own maternal health interventions, we sought to explore the factors that supported the sustainability of other community-based programs in our study sites. These lessons are drawn from the RUWASA program initiated in two districts in Uganda in 1995.

This paper documents evidence of RUWASA's sustained program achievements and identifies factors that explain its sustainability. It uses the frameworks on sustainability discussed earlier (Gruen, 2008; Shediac-Rizkallah & Bone, 1998; Stirman et al., 2012) and categorizes findings according to i) program design related to inputs and start up, such as financial and delivery arrangements, related training and involvement of local stakeholders; ii) visible benefits generated by the program iii) organizational and institutional elements including program champions and iv) broader socio-political and other environmental factors. The discussion on these is embedded with lessons on how RUWASA's experiences can be adapted for community based maternal health interventions. This paper draws sustainability lessons for maternal health projects using a case study on

the implementation of RUWASA programmes in Uganda.

2. Methods

Uganda is found in East Africa and has a population of approximately 37 million people as of 2014, 75% of who live in rural areas. The study was conducted in two rural eastern Uganda districts –Kamuli and Pallisa. Kamuli has a population size of about 640,000 and Pallisa about 530,000, both districts have a fertility rate average of 6 children per woman. The main livelihood in these districts is subsistence farming with slow growing townships, which offer opportunities for small scale trading. These districts were purposively selected because they participated in the RUWASA and were also sites for the transport and maternal health services vouchers study undertaken by Makerere University School of Public Health (MakSPH).

Table 1. Descriptive indicators for Kamuli and Pallisa districts 2013

District	Area meters	Sq	Population	Sub-counties	Main Activity	ANC	Deliveries	PNC
Kamuli	133		639,936	12	Subsistence farming	54% (4 visits)	40%	48%
Pallisa	1,461		530,570	28	Subsistence farming	43% (4visits)	62%	35%

The explanatory study design drew on quantitative and qualitative data collected from existing program documents, key informant interviews and focus group discussions. Data on water and sanitation activities and achievements since 1997 to 2011 was extracted from district annual reports. Three key informant interviews were conducted with participants (program managers and officers) who held key positions in the RUWASA project for a period on over ten years identified through the process of snowballing. These two data sources informed the interview guides used for three focus group discussions, one in Kamuli and two in Pallisa district to elicit community views on what made the RUWASA program sustainable in March 2012. The respondents included men and women with 8 participants in Kamuli, and 10 in Pallisa. Interview and focus group data was collected in the local language by national researchers with experience in qualitative research. Interview guides focused on explanatory factors underlying sustainability of RUWASA interventions at community, organizational and broader socio-political or environmental levels. Data was recorded digitally, transcribed and translated into English by national researchers. Thematic analysis of interviews and focus group data was led by national researchers using a framework that focused on our programmatic concerns: determinants of sustainability.

Although, we used a framework that highlighted the key areas of investigation, we also looked out for new themes emerging outside this framework (Campbell et al., 2006). The themes identified were in line with the key issues that the research sought to address, such as community, organizational and broader socio-political factors underlying the sustainability of interventions. We analysed both facilitating factors, including visible benefits, as well as challenges encountered.

2.1 Limitations

Retrospective interviews on events and processes in the past are necessarily partial and subjective. We have tried to counter this bias by triangulating the perspectives of key informants with community viewpoints, contrasting primary with secondary data in the form of program documents, inclusion of negative evidence and prolonged field site engagement, all of which are markers of trustworthiness in health systems research (Gilson et al., 2011). Although some of the results that we mention could be partially attributed to other programs other than RUWASA, during the interviews the key informants acknowledged that RUWASA was the main player responsible for increasing access to safe water and latrine coverage even after the end of the project. The sample size for our primary data (3 key informant interviews and 3 FGDs) is small, but we complimented this with longitudinal administrative data. Our research aim was to develop an illustrative case study on which to base analytical generalization and hypothesis for future research, an important endeavour in health systems research. The data that we have presented does not look at sustainability of outcomes, such as decrease in water related diseases but rather at outputs such as installation and maintenance of boreholes and increased latrine coverage.

2.2 Ethical Considerations

The study was cleared by the Makerere University School of Public health Ethical Review Committee as well as the Uganda National Council for Science and Technology. Permission to conduct the study was obtained from

the district authorities and informed consent from the study participants.

3. Results

3.1 Sustained Water and Sanitation Achievements in Eastern Uganda

The implementation, duration and achievements of RUWASA during the donor funded phase and thereafter are shown in figures 2 to 4. Findings show a marked improvement in the number of boreholes drilled and the percentage coverage of latrines and access to safe water in the two districts of Pallisa and Kamuli from 1997 to 2011.

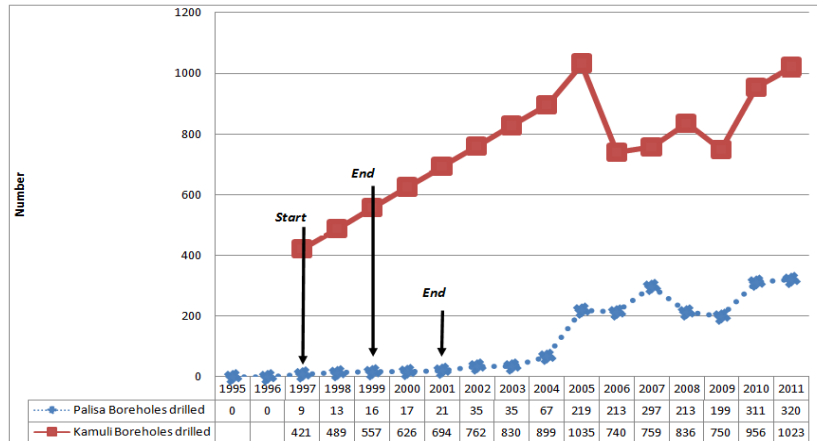


Figure 2. Bore holes drilled between 1997 and 2011 according to district annual reports, Local Government of Pallisa and Kamuli

At the start of the project in 1997, Pallisa had 9 boreholes drilled, by the end of the project in 2001, they reached a total of 21, which kept increasing steadily to a total of 320 in 2011. In Kamuli, they started with 421 boreholes drilled, 557 at the end of the project in 1999 and reached 1023 in 2011.

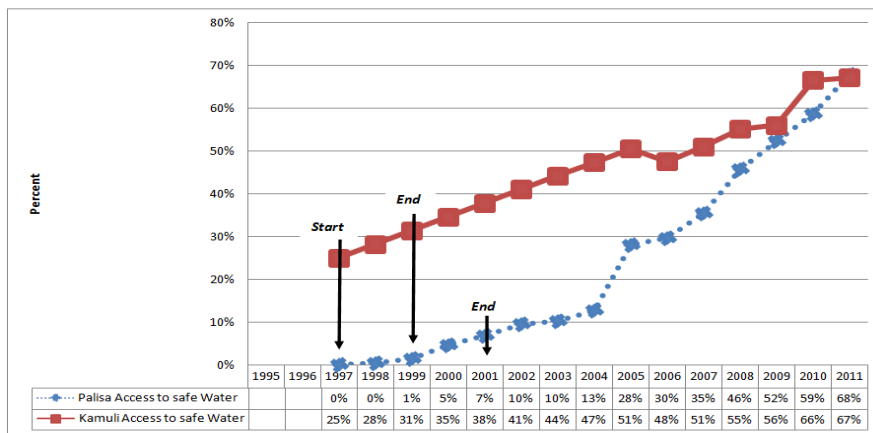


Figure 3. Safe water access coverage between 1997 and 2011 according to Local Government of Pallisa and Kamuli

In 1999 and 2001 when the project ended in both districts, safe water coverage only increased by a very small increment, 7% and 6% in Pallisa and Kamuli respectively. However, this trend continued so that by 2011, they were both above 65% long after the end of the project.

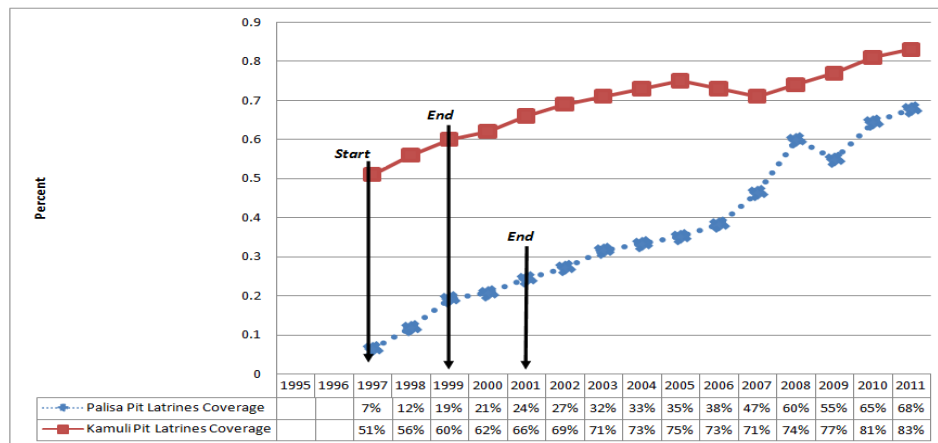


Figure 4. Latrine coverage between 1997 and 2011 according to district annual reports, Local Government of Pallisa and Kamuli

Similarly, latrine coverage improved over the years with Pallisa starting at 7% in 1997, 24% when the project ended in 2001, and over 65% by the end of 2011. The same trend of increasing coverage is noted for Kamuli after the end of the project.

3.1.1 Contributors to the Sustainability of the Water and Sanitation Project in Eastern Uganda

Drawing from the qualitative interviews, we present in this section factors identified by respondents as contributing to sustainability in terms of project design and implementation, visible benefits, organizational and institutional elements; and broader socio-political factors.

3.1.2 Project Design: Inputs and Start-Up

From the beginning, district officials and communities participated in needs assessment and priority setting exercises. Communities continued to participate in developing work plans for operating and maintaining the infrastructure. Such close involvement on the terms of the initiatives built the trust and buy-in that subsequently secured a range of community inputs. While an external funder initially financed most of the program with minor contributions from households, after five years the government took over key funding for the project. Despite government support, co-funding for the project was maintained drawing from community resources and sustaining community ownership. Even if initially difficult, providing land, manpower and contribution towards capital and maintenance costs meant that the boreholes belonged to the communities. This is demonstrated in the quotes below.

Woouooh.... people are used to free things but they do not value what they are given for free. They will always expect more free things and in such a situation even repairs of boreholes have to depend on the donor; but here we did it differently and I think it helped. Having a borehole in one community motivated neighbouring communities to contribute towards their own borehole and people were somehow competing. I think demand increased for boreholes because of this. (KI Kamuli).

People hated me because I was telling them that they needed to pay some money for the water (KI Pallisa)

Haaa...in the beginning it was like a punishment but later collecting money from community became easy because people paid quickly (Female FGD participant Pallisa).

Apart from providing inputs, communities also received inputs that built their capacity to sustain the interventions. The training of handbag mechanics within communities ensured that borehole breakdowns were addressed in a timely manner. These mechanics operated and were paid privately under terms negotiated by water user committees. Trainees were selected by communities at sub-county levels and trained by the district authorities. Women were given preference and were trained for free, since they were seen to be more likely to stay with communities as demonstrated by the quote below.

People want to train someone who will not run away with the skills (KI Pallisa)

Women are committed. We have one here (a handbag mechanic) who has stayed for more than 10 years and she is training others (KI Pallisa).

3.1.3 Visible Benefits

Right from the beginning most of the boreholes were productive. Furthermore, spin-off visible benefits included the ability to grow vegetables within compounds due to improved sanitation and the availability of community savings that could be drawn upon for other uses. Having visible rewards that support community members more broadly are key additional motivation factors sustaining support for the intervention.

3.1.4 Organizational and Institutional Elements

Community structures were established to support the interventions and supporting the active role of program champions. Water Development Committees ensured that contributions were made and use of funds monitored so that communities could repair any boreholes which became incapacitated. The methods of collecting money and its use varied from district to district but most importantly the communities themselves made these decisions. The committees collect money monthly or whenever the borehole broke down.

The people decide how to do it. We advised them to have money always available, but sometimes it is hard, so this varies from community to community.they have lists of all users to enable quick collection if there is a problem with the borehole (KI Pallisa).

Money is collected from users monthly about 500shs to 2000shs and managed by these committees. This helps to quickly repair any borehole which breaks down. In fact some of this money has been used to lend small business owners (KI Kamuli).

The establishment of community by-laws that linked water and sanitation was another driving force for sustainability....because water and sanitation were tied together.... I think this was very wise. The by-law required every household in a community to have a pit latrine and then they could get a borehole of course after contributing the money also (KI Pallisa).

The command was that without latrine, no borehole. After getting latrines women could get vegetables from anywhere in their compounds (because communities no longer defecated indiscriminately) and this helped a lot. (Female FGD participant Kamuli).

Broader socio-political factors

According to respondents, community sensitization and involvement at all levels of decision making regarding installation of boreholes was one of the most important ingredients which contributed to the success and sustainability of RUWASA.

Well-mobilized communities are receptive to things they benefit from. Once you create awareness, you increase ownership and then something can last. (KI Pallisa)

Community sensitization is a must to instil a sense of ownership and to build capacity, sometimes people do not know what is good for them (KI Pallisa)

Table 2. Summary of contributors to the sustainability of RUWASA

Program design: inputs and start up	Visible benefits	Organizational and institutional elements	Broader factors	socio-political
Pallisa				
Broad community participation in development of work plan for operation and maintenance. Training of communities on safe water chain and handbag mechanics within the community to conduct borehole repairs. Co-payments- communities contribution to 2% capital and maintenance costs built pride and ownership.	Savings that led to small business ventures.	Program champions in the form of Water and Development committees spearheaded the initiative, particularly following up on co-payments for borehole maintenance. Communities developed list of eligible community users for quick mobilization of additional resources when needed. Conditional delivery arrangements which stipulated that for a community to get a bore hole each household in its community (80-200 households) had to have a pit latrine. By-laws created by communities to ensure adherence to sanitation requirements and water use. Preference given to female handbag mechanics to ensure retention of skills within community.		

Kamuli			
District officials and communities participated in needs assessment and priority setting exercise. Co-payments-communities contribution to capital and maintenance costs built pride and ownership.	Ability to grow vegetables in the compound due to improved sanitation.	Integration or coupling of water with sanitation Water User committees collected monthly fees 500-2000 Ugandan Shs for borehole maintenance while people outside that community paid more (funds collected could be used to lend community members to start small scale businesses.)	Intense sensitization using community development officers selected by community

3.1.5 Challenges to the Sustainability of the Water and Sanitation Project in Eastern Uganda: Inputs and Benefits

Once government took over the project, they increased the financial charge for communities, making it harder for communities to complete their contributions. There was also some misuse of funds, but that was overcome. Community support also wavered when some of the wells were not productive or yielded salty water.

Misuse of funds (by water user committees) has been reported but it is not common (KI Kamuli)

3.1.5.1 Organisational and Institutional Factors

Additional challenges arose from the separation of the water component from the sanitation component, with the Ministry of Health responsible for sanitation through households and Ministry of Education responsible for sanitation through schools. This reorganisation resulted in less funding for the latter.

3.1.5.2 Broader Socio-Political Factors

While community respondents perceived the political environment to be supportive of community initiatives, for politicians this might have served to foster their political success. However, key informants within RUWASA interpreted political involvement as political interference. In their view politicians frequently disrupted established community efforts, such as mandatory community contributions towards borehole maintenance through payment of levies, by pledging to meet these costs themselves, which was not sustainable.

Politicians are the ones encouraging dependence among the people for example one politician told his people to contact him whenever the borehole breaks down. Now what if he is not in the country, what if his term of office ends? And now people stop contributing because of these self serving promises? (KI Pallisa).

Table 3. Challenges to the sustainability of RUWASA

Program design: inputs and start up	Visible benefits	Organizational and institutional elements	Broader socio-political factors
Pallisa			
Operations and management challenges such as misuse of funds and delays in borehole repair.	Some boreholes have low yield or salty water.	Sanitation was separated from water and administered by separate Ministries	Political interference in the form of politicians disrupting already set priorities to influence areas where boreholes can be planted in their favor. Dependence on politicians ie politicians actions threatened established sustainable community practices of contributing towards borehole maintenance by promising to make the repairs themselves.
Kamuli			
Misuse of funds noted but minimal Capital contribution (2%) charge increased from 180,000 to 200,000 after government took over.	Some boreholes have low yield.	Sanitation was separated from water and funding for sanitation is selective	

Politicians were also noted to be disruptive of decision making processes around the choice of location for new boreholes. In trying to influence voters they pushed for boreholes to be installed in their constituencies instead of honouring the established criteria for placement in terms of contributions and meeting sanitation targets.

During campaign season some politicians come in and want to influence priorities for boreholes because they want votes. They ask “why isn’t this borehole taken to this place (their own area)? And they push to get more boreholes in their areas which causes to lack of trust and morale among the people. (KI Pallisa)

4. Discussion

Improvements in maternal health indicators have been achieved globally (Hogan et al., 2010; Velleman et al., 2014) through diverse strategies. These include increasing the number of deliveries attended by skilled personnel, providing safe delivery kits, providing financial support, and providing transport for expectant mothers among others. Most of these initiatives however, have been project based with a high risk of not being sustainable. The lack of evidence on how to sustain successful program based initiatives poses a threat to the maintenance of achieved health goals. It entails a waste of valuable resources, in terms of financial investments, infrastructure, human resources and not least jeopardizes community support and trust (Gruen et al., 2008)

In this paper, we focus on the sustainability of community based programs with particular reference to RUWASA’s role in increasing access to safe water and promoting sanitation through the construction and maintenance of bore holes and latrines. Key contributors to the sustainability of RUWASA activities years after initial donor funding are linked to the type of relationships developed. Community participation in designing, planning and decision making throughout the project and community monetary and in-kind contributions (land and manpower) towards capital and management costs supported ownership over the activities. Incentives further supported activities since communities not only received skills, but also visible benefits in terms of improved access to water, vegetable gardens and finances for other activities. Such gains were also reaped through community champions and structures that sustained community contributions, by-laws and widespread community sensitization. Synergies between these different factors fostered a sense of ownership for the boreholes and community pride in their achievement. At the same time, key challenges included the lack of productivity of some of the boreholes; some fraud in the management of funds generated under the project; organizational changes that separated management of water from sanitation; and political interference. The program had to change and adapt in aspects related to program design as well as factors in the broader environment in order to be maintained. These factors central to sustainability are discussed below and lessons which can be drawn for maternal health are highlighted.

4.1 Project Design: Institutionalisation, Decision Making and Implementation

According to Bossert (1990) and Shediak-Rizkallah (1998), strong institutions are critical to the sustainability of interventions. By implementing RUWASA through strong institutions such as district leadership structure and community selected committees, RUWASA was built on a more secure foundation. Early and continuous engagement of communities through their leaders ensured that the decisions made such as collecting borehole user fees were ultimately owned by communities. For maternal health interventions there is a need to identify strong community structures that could be harnessed to champion the cause of maternal health particularly in rural communities for better sustainability. Most maternal interventions particularly in Uganda and other low and middle income countries have been vertically designed and implemented resulting in terminated benefits over time.

4.1.1 Community Contributions and Innovations

Although external funding was initially used for the program with minor contributions from households, after five years the government took over key funding for the project. This co-funding for the project was maintained drawing from community resources and sustaining community ownership. In Uganda the onus to improve maternal health outcomes has been solely and perhaps erroneously placed on the shoulders of government and its implementers, the health workers and all responsibility has been removed from the households, women, men and communities. Just as the responsibility of maintaining sanitation and provision of clean water was shared under RUWASA, the responsibility for improving maternal health needs to be shared by both government and communities. Absolving spouses and households from their responsibilities comes at too high a price for governments in developing countries. Many governments often do not have sufficient resources to deliver adequate health services. Although African governments agreed to contribute 15% of their budgets to health, countries like Uganda, have not done this. In fact as demonstrated by RUWASA, communities which are empowered, own and devote themselves to initiatives where they contribute in cash or in kind are more invested in seeing the benefits of these initiatives sustained. The role of government here would be to support communities and households to appreciate and actively contribute to decision making towards improved maternal health by identifying community resources which can be tapped into to support this worthy goal. By supporting innovations such as training of borehole “handbag mechanics” within the community, particularly

women, RUWASA had a good shot at sustainability. In this case the recurrent costs of maintaining boreholes was placed squarely on the shoulders of community which established borehole committees to impose a levy on borehole users which then paid the mechanics. Moreover the choice of favouring the training of females (considered to be more reliable in terms of not migrating from location to location) gave the community investments in RUWASA more stable returns. For maternal health some of the key challenges have been inadequate health worker numbers, long distances to facilities and shortage of supplies at facilities. Community engagement under expert guidance could facilitate the identification of innovative approaches to mitigate these challenges as has been documented in other settings.

4.1.2 Visible Benefits

To ensure sustainability, communities need to appreciate visible benefits of any project and seek to maintain them. Right from the beginning most of the boreholes were productive. Furthermore, spin-off visible benefits included the ability to grow vegetables within compounds due to improved sanitation and the availability of community savings that could be drawn upon for other uses. Having visible rewards that support community members more broadly are key additional motivation factors sustaining support for the intervention. Moreover, having a functional borehole in one community motivated other communities to pursue the goal of having one, thereby perpetuating a cycle of increasing latrine coverage in the region. For maternal health the benefits of saving a mother's life need to be appreciated by the broader community as extending beyond the household. Maternal health projects pursuing sustainability need to educate communities about the benefits of saving a mother's and acquire their support in achieving this goal. Communities also need to be able to appreciate that their efforts can contribute to the saving of mothers and new-borns. For example the community can contribute money that can be used to increase finances that are required for ensuring access to maternal health such as transport fees, maternal health needs, like clothing for the baby as well as supplies required for birth. In the RUWASA project some of the spill over benefits included increased availability of food since more food could be grown within the compound. Maternal health projects could also provide such spill over benefits for instance community savings for meeting transport costs for maternal health services could result in more income for transporters, hence creating incentives for continuity of care.

4.1.3 Community structures: Committees, Champions and By-Laws

The identification of program champions in the form of Water Development Committees, which spearheaded change management for the RUWASA project and ensured that communities remained invested in its success was important. On going challenges such as the separation of the water component from the sanitation component headed by separate ministries (Health and Education respectively) could threaten successful structures previously built. It was observed that this arrangement weakens community buy-in, which was initially drawn from the merging of water and sanitation initiatives. This is in keeping with literature that reports that local contextual factors can influence the success of interventions [Stirman, 2012 #540]. By laws such as the requirement of all households to have a pit latrine propelled communities towards more active involvement. The implication for maternal health is that locally instituted by-laws for instance those which require male involvement or preparing birth items could potentially contribute to better household involvement in this region.

4.1.4 Broader Socio-Political Factors: Community Sensitization and the Role of Politicians

Community involvement and active participation in the setting of program goals and the visibility of the project from inception to date were major contributors to community buy-in. While community respondents perceived the political environment to be supportive of community initiatives and for politicians might have served to foster their political success, key informants within RUWASA, interpreted political involvement as political interference. This was because in an effort geared towards political expediency, politicians frequently obstructed established community efforts such as the need for communities to contribute to borehole maintenance through payment of levies by pledging to meet these costs themselves, which was not sustainable. Moreover the democratic choice of location for new boreholes initially based on communities meeting sanitation targets was also disrupted by this political interference. Politicians wield enormous influence for good or for bad and implementers of maternal health programs should ensure that their influence is always harnessed positively. In settings where politicians carry clout among communities this influence demands further study for its potential to facilitate or hinder successful health initiatives. Health in general and particularly maternal health has long been key campaigning points for many politicians. Politicians have a potentially big role to play as policy champions in these settings and need to be engaged in order to acquire their buy-in and continuous support for programs. In addition to rallying community support, political influence is also valuable in terms of agenda setting, and mobilizing additional resources.

4.1.5 Community Capacity

RUWASA placed the responsibility for sanitation and borehole maintenance on the community. This implied that they ensured that the quality of these services was monitored and maintained. Community capacity to monitor and ensure quality health services has been documented to be effective in rural settings in Uganda. It is certainly a worthy strategy to pursue towards the sustainability of successful maternal health programs in Uganda and elsewhere.

5. Conclusions

In conclusion, the lessons gleaned from RUWASA highlight the importance of community engagement in planning, decision making and implementation of interventions. They also point to the importance of champions, structures and potential support or harm that can emerge from political interference. Most importantly these lessons indicate that although the responsibility for the delivery of maternal health services has long been relegated to the government and health workers, perhaps this responsibility should not be left as fully belonging to the government, particularly in resource constrained countries. Indeed, governments ought to be responsible for providing funding for infrastructure, human resources and medical equipment and supplies costs. Community institutions and structures on the other hand are crucial for the establishment of local leadership for maternal health to carry the mantle for championing key issues. The need to sensitize communities to appreciate their responsibility in averting maternal deaths cannot be over emphasized. In this regard male engagement is crucial in ensuring the availability of household resources for maternal health since men typically control household resources in Africa (Uganda Bureau of Statistics, 2006). Community innovations such as the use of existing local transportation as referral transport for expectant women need to be encouraged. Clearly partnerships between government and local communities would likely deliver better results for sustainability.

List of abbreviations

RUWASA: Rural Water and Sanitation; MakSPH: Makerere University School of Public Health.

Competing interests

The authors declare no competing interests

Authors' contributions

SNK conceived the study, participated in its design and coordinated drafting of the manuscript. MT participated in design of the study. AG participated in design of the study and helped with drafting of the manuscript. ANK and DRW participated in drafting of the manuscript. EKK participated in designing the study and helped in drafting the manuscript.

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References

- Ahluwalia, I. B., Robinson, D., Vallely, L., Giesecker, K. E., & Kabakama, A. (2010). Sustainability of community-capacity to promote safer motherhood in northwestern Tanzania: what remains? *Global Health Promotion, 17*(1), 39-49. <http://dx.doi.org/10.1177/1757975909356627>
- Bossert, T. J. (1990). Can they get along without us? Sustainability of donor-supported health projects in Central America and Africa. *Social Science & Medicine, 30*(9), 1015-1023. [http://dx.doi.org/10.1016/0277-9536\(90\)90148-L](http://dx.doi.org/10.1016/0277-9536(90)90148-L)
- Campbell, O. M., Benova, L., Gon, G., Afsana, K., & Cumming, O. (2014). Getting the basic rights—the role of water, sanitation and hygiene in maternal and reproductive health: a conceptual framework. *Tropical Medicine & International Health.*
- Edwards, N. C., & Roelofs, S. M. (2006). Sustainability: The elusive dimension of international health projects. *Canadian Journal of Public Health/Revue Canadienne de Sante'e Publique, 45-49.*
- Gilson, L., Hanson, K., Sheikh, K., Agyepong, I. A., Ssenogooba, F., & Bennett, S. (2011). Building the field of health policy and systems research: social science matters. *PLoS Medicine, 8*(8), e1001079.

<http://dx.doi.org/10.1371/journal.pmed.1001079>

- Gruen, R. L., Elliott, J. H., Nolan, M. L., Lawton, P. D., Parkhill, A., McLaren, C. J., & Lavis, J. N. (2008). Sustainability science: an integrated approach for health-programme planning. *The Lancet*, 372(9649), 1579-1589. [http://dx.doi.org/10.1016/S0140-6736\(08\)61659-1](http://dx.doi.org/10.1016/S0140-6736(08)61659-1)
- Hogan, M. C., Foreman, K. J., Naghavi, M., Ahn, S. Y., Wang, M., Makela, S. M., ... & Murray, C. J. (2010). Maternal mortality for 181 countries, 1980–2008: a systematic analysis of progress towards Millennium Development Goal 5. *The lancet*, 375(9726), 1609-1623. [http://dx.doi.org/10.1016/S0140-6736\(10\)60518-1](http://dx.doi.org/10.1016/S0140-6736(10)60518-1)
- Mutono, S. D. (1995). Sustainability in WES-RUWASA experiences. In *WEDC CONFERENCE* (Vol. 21, pp. 28-31). WATER, ENGINEERING AND DEVELOPMENT CENTRE.
- Odame, E. A., Akweongo, P., Yankah, B., Asenso-Boadi, F., & Agyepong, I. (2013). Sustainability of recurrent expenditure on public social welfare programmes: expenditure analysis of the free maternal care programme of the Ghana National Health Insurance Scheme. *Health policy and planning*, czt013.
- Olsen, I. T. (1998). Sustainability of health care: a framework for analysis. *Health Policy and Planning*, 13(3), 287-295. <http://dx.doi.org/10.1093/heapol/13.3.287>
- Shediach-Rizkallah, M. C., & Bone, L. R. (1998). Planning for the sustainability of community-based health programs: conceptual frameworks and future directions for research, practice and policy. *Health education research*, 13(1), 87-108. <http://dx.doi.org/10.1093/her/13.1.87>
- Stirman, S. W., Kimberly, J., Cook, N., Calloway, A., Castro, F., & Charns, M. (2012). The sustainability of new programs and innovations: a review of the empirical literature and recommendations for future research. *Implement Sci*, 7(1), 17. <http://dx.doi.org/10.1186/1748-5908-7-17>
- Uganda Bureau of Statistics and ORC Macro, U. D. a. H. S. (2006). *Uganda Demographic and Health Survey 2006*.
- Velleman, Y., Mason, E., Graham, W., Benova, L., Chopra, M., Campbell, O. M., ... & Cumming, O. (2014). From Joint Thinking to Joint Action: A Call to Action on Improving Water, Sanitation, and Hygiene for Maternal and Newborn Health. *PLoS medicine*, 11(12), e1001771. <http://dx.doi.org/10.1371/journal.pmed.1001771>
- World Health Organization. (2002). Guidelines and instruments for conducting an evaluation of the sustainability of CDTI projects. WHO/APOC/MG/02-1. African Programme for Onchocerciasis Control, Ouagadougou.

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