



Community Participation and Sustainability of Rural Water Supply Projects in East Africa

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Abstract: Globally, community participation and sustainability of rural water supply projects has been a major concern. This paper looked at community participation and sustainability of rural water supply projects in East Africa with a focus on Uganda, Kenya and Tanzania. The following three research questions were addressed ;(1) What contribution does community participation have towards sustainability of rural water supply projects in East Africa? (2) What community participation aspects exist on sustainability of rural water supply projects in East Africa? (3) What sustainability components for rural water supply projects exist in East Africa? The paper used mixed methods combining both quantitative and qualitative approaches in data collection. The paper targeted studies undertaken in East Africa. However, literature reviewed showed only 21 articles related to the study were online. Purposive sampling was used in selecting the researchers from East African countries who collected data using Google search engine and documentary review. Data collected was analyzed using SPSS to get the frequencies, percentages and correlations. It was concluded that community participation and sustainability of rural water supply projects exists in East Africa. The study recommended that much effort should be focused on sustainability components since they are key in ensuring sustainability of rural water supply projects.

Keywords: Community participation, Sustainability, Rural Water, Supply Projects, East Africa

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1. Introduction

Globally, it is estimated that a population of about 660 million people have no access to improved drinking water sources as reflected in the United Nations Children Education Fund (UNICEF)/World Health Organization (WHO) progress report (2015) on sanitation and drinking water. Also, over 2.4 billion people on the globe have no access to improved sanitation as well.

The importance of sustainability of water projects is further emphasized in the global Sustainable Development Goals (SDGs) number 6 which is aimed at ensuring clean water and sanitation for all. Bridging the

gap in access to improved water and sanitation is a core concern of the 2030 Agenda for Sustainable Development Goals. The SDGs, as part of the 2030 Agenda for sustainable development, target 6.1 calls for universal and equitable access to safe and affordable drinking-water and Target 6.4 substantially increase water use efficiency across all sectors and ensure sustainable withdrawals and supply of fresh water to address water scarcity and substantially reduce the number of people suffering from water scarcity (WHO Report, 2017). In terms of sustainability, it was established in a study carried out in Africa that most water projects decline in performance after external support is withdrawn. (Habtamu, 2012).

It is noted by the World Bank (2013) that participation is a strategy that involves practical participation including moral precepts which require acceptance and adherence. Importantly, the willingness of the beneficiaries to participate, ignorance and equity were seen as some of the factors that determined community participation in any given water supply project.

Further, the Joint Monitoring Programme, (2012) notes that there are lower levels of access to improved water supplies in rural sub Saharan Africa than any other region worldwide. People rely heavily on unprotected water sources like traditional wells and rivers for their domestic needs and use. One of the reasons for low access to improved water supply in the sub Saharan Africa is partly due to poor sustainability of the water infrastructures. In this aspect, a bigger portion of funds for rural water supply development in Africa is allocated to communal water points like bore wells with hand pumps, yet an estimated 36 percent of these are not functioning at any given time (Rural Water Supply Network 2009) and this is expected to change in future.

1.1. Research Questions

1. What contribution does community participation have towards sustainability of rural water supply projects in East Africa?
2. What community participation aspects exist on sustainability of rural water supply projects in East Africa?
3. What sustainability components for rural water supply projects exist in East Africa?

1.2. Hypothesis

This study tested the following hypothesis;

H₀: There is no relationship between community participation and sustainability of rural water supply projects in East Africa.

2. Literature Review

2.1. Contribution of community participation on sustainability of rural water supply projects in East Africa

Sustainability

Community participation ensures that projects designed borrow from opinions of end users. This factor influences community ownership of water projects. As such, much

attention needs to be given to the community involvement in all the stages of project implementation (Gicheru, 2012).

It has been noted that once people do not embrace community participation in project management then the project is bound to fail. This is in line with Mulwa (2010) who asserted that the participation of people improves understanding of the role of the several stakeholders involved in the project.

According to UNDP (2009), sustainability of water projects has been of great concern since very fewer projects are being sustained which implies that the cost of implementation is not commensurate to the benefits accrued. This therefore means that, community based participation and involvement of project beneficiaries eventually transform the attitude of communities towards the effective management and control of their ownership of water supply (Giddens et al., 2013).

Involvement

One of the key reforms brought by the Kenya water Act 2002 was a requirement of active community involvement in decision making in the implementation and management of community water projects which was geared towards ensuring there is sustainability.

To achieve sustainability of community water projects, there is need to have both community involvement as well as community ownership. These factors have been earmarked in boosting community motivation which is regarded as essential since it encourages the community members to utilize the new water services (Carter, Tyrrel and Howsam, 2009). Therefore, these are project sustainability indicators.

Parker (2015) argues that lack of participation by project beneficiaries in matters of governance system leads to failure of most projects as soon as the external funding is withdrawn. Note that the involvement of people in governance systems increases their sense of control over issues that affect their lives and also promotes self-confidence and self-awareness which in the end bring sustainability (Nampila, 2005).

2.2. Community participation aspects existing on sustainability of rural water supply projects in East Africa

Planning and management

Tafara (2013) conducted a study on factors influencing sustainability of rural community based water projects in Mtito Andei, Kibwezi Sub-county, Kenya. The study

found out that the project management practices affects sustainability of the rural community based water projects and indicated the project management practices to be technical expertise, management of resources, monitoring and evaluation system, knowledge of business, leadership, estimating project schedule and budget, ascertaining and managing risks and experience. Project monitoring as one of management practices is to assure work is carried out as planned and efficiently. Monitoring and evaluation should be carried out with the participation of the beneficiaries, giving them the opportunity to decide on the criteria of success. Evaluations should be used as a management tool to identify any deficiencies and to establish a course of action to remedy problems.

According to Mulwa (2010), community management leads to ownership and project security thus leading to sustainability. This was from a study conducted to investigate the factors which influence sustainability of water supply projects in Machakos District of Machakos County, Kenya.

Decision Making

In a bid to improve sustainability and access to water, the Kenya water Act 372 was reviewed leading to a new water Act 2002 whose implementation is guided by the national water service strategy (NWSS) for the year 2007-2015. This strategy was premised on the tenet of sustainable access to safe water as a human right. The 2002 Act put water provision service in the hands of water service boards who delegate this mandate to water service providers (WSPs) (MWI, 2010). Water service providers for rural areas are community water services registered as water users associations (WUAS) who ensure there is sustainability of water projects for the community.

Further it is worth noting that, once a community is empowered it will be pro-active and develop confidence which enables them to handle more complex issues beyond the projects' set objects (Garande & Dagg, 2005). Thus, a study carried out in Ruiru Municipality in Kenya recommends that various institutions mandated with policy formulation should adopt the bottom-up decision making approach by emphasizing community and or public participation in planning issues since it leads to sustainability. (Njogu, 2009).

2.3. Sustainability components for rural water supply projects in East Africa.

Operation and maintenance

Jansz (2011) carried out a study on rural water supply sustainability in Niassa Province in Mozambique and established that lack of finance was compromising rural water supply sustainability as most communities did not have any savings or collected monthly contributions for operation and maintenance. The study also revealed that there were variations in how different responsibilities were practiced because of the inconsistencies in capacity and capability yet the water committees understood their responsibilities.

Further, it was found out that though some committees raised money for operation and maintenance but because of lacking sufficient technical capacity and expertise, others didn't because those who had been trained with the technical skills had left the community.

After project completion and handover, it is the responsibility of the communities to ensure routine maintenance and minor repair works. This means the operation and maintenance arrangement is considered and hence the water source will remain functional for a long period of time. Zimmerman, (2014) argues that water and sanitation activities may require collection of some fees, hiring of caretakers and overseeing operational activities and repairs as well. Thus these committees should be established following the laws and regulations in place. With this, water user committees are supposed to carry out the operation and maintenance of the water facilities plan hence leading to sustainability.

Empowerment

Sjögren, (2013) observes that, the community based participatory approach empowers management structures and framework to have responsibility over the governance systems of water sources. Thus they became accountable to their own resources as advocated by theory of Paul frère.

Worth noting, Un-Habitat, (2013) contends that, the community members are equipped with the necessary technological knowledge of how to repair and maintain the water sources once the community based empowerment approach is adopted.

Functionality of water user committee

According to Water Aid (2011), there are four pillars required for sustainability of community managed rural water supplies and these include; real need and demand, programme design and implementation, existence of active water user committees and external support to the community management systems (Water Aid, 2011).

Further note that accounting and allocating responsibility for the true cost of sustainability to prevent the collapse of existing systems and reversal of progress made in extending rural water coverage are key in ensuring

project sustainability. (Montgomery, Batram & Elimelech, 2009).

Technology use

In a study conducted by Tifow (2013) on gravity flow scheme investigating factors influencing sustainability of UNICEF supported community based and managed water supplies in Kisumu and Siaya Counties in Kenya, it was established that at least 94% of the respondents agreed that technology influenced the sustainability of UNICEF supported community managed rural water supplies at least to a moderate degree. The findings indicated that where the respondents rated the use of technology highly, the water supply project was equally rated to be more sustainable compared to where use of technology was lowly rated. The findings of Tifow (2013) are in agreement with that of Ababa (2013) who argued that technology use is key to sustainability of community based water projects.

According to Hopkins & Brynjolfsson (2010) performance gap exists between companies that embrace technology and those that resist it. Community projects that embrace technology exhibits better performance and sustainability than those that does not.

3. Methodology

The paper used mixed methods by combining both quantitative and qualitative approaches in data collection. The study targeted studies undertaken in East Africa including Uganda, Kenya and Tanzania. Data sourced from literature search indicated that only 21 studies on water sustainability were found online in the three East African countries. Purposive sampling was used in selecting the researchers from East African countries who collected data through the Google search engine and documentary review regarding community participation and sustainability of rural water supply projects in East Africa.

The researchers that participated in the study identified online articles on community participation and sustainability of rural water supply projects in East Africa. The study also had inclusion and exclusion criteria with a search frame of 2009 – 2019 time span,

and articles outside this time were excluded from the study. The inclusion criteria was based on search boundaries or Google or any other search engine and search terms considered were; community participation, sustainability, rural water, East Africa, Uganda, Kenya and Tanzania. The exclusion criteria focused on articles not available, articles not scientific, articles not referring to community participation and those not referring to sustainability of rural water.

Data record sheets were used by each researcher to analyse the online articles identified. The data record sheets were cleaned to detect any errors. The data record sheets had objectives, method, country, community participation aspects and then sustainability of rural water supply projects. The coded data was analyzed using SPSS to determine the relationships between the variables in the study.

4. Results and Discussion

This section was guided by three research questions which included; what contribution does community participation have towards sustainability of rural water supply projects in East Africa?, what community participation aspects exist on sustainability of rural water supply projects in East Africa? And what sustainability components for rural water supply projects exist in East Africa? Results were discussed in line with these questions. The findings are done in comparison with relevant studies done previously.

4.1. What contribution does community participation have towards sustainability of rural water projects in East Africa?

Regarding this research question, data from different articles was developed into themes which included; sustainability and involvement. Further, the study involved identifying articles on the contribution of community participation towards sustainability of rural water projects in East Africa. Data was entered into SPSS to generate descriptive statistics and the results are in the table below:

Table 1: Contribution of community participation

Rank	Contribution	Freq	Percentage
1	Sustainability	17	81%
2	Involvement	4	19%

Results from the above table indicate that sustainability is a contribution towards community participation with 19 responses and 81%. Involvement was the least with 17% showing that community participation leads to

involvement as well. This in the end leads to sustainability of rural water supply projects. This is in line with Carter, Tyrrel & Howsam (2009) who argue that involvement encourages community members to

utilize the water services. In a related view, the World Bank (2013) noted that participation is a strategy which involves practical participation including moral precepts which require acceptance and adherence.

4.2. What community participation aspects exist on sustainability of

rural water supply projects in East Africa?

To address this question and determine community participation aspects that exist on sustainability of rural water supply projects in East Africa, data was fed into SPSS to generate descriptive statistics and frequencies under each theme. The results from the statistics are shown in the table below:

Table 2: Existing community participation aspects

Rank	Contribution	Freq.	Agree	Disagree
1	Planning and management	21	52.4%	47.6%
2	Decision making	21	66.7%	33.3%

Findings from the above planning and management as community participation aspects had 52.4% for those in agreement and 47.6% for those who disagreed. This implies that planning and management are key tenets of sustainability of rural water supply projects. Further, 66.7% agreed that decision making is an existing community participation aspect for sustainability of rural water supply projects against 33.3% who disagreed. These findings are corroborated with Mulwa, (2010), who argues that community management leads to ownership and project security thus leading to sustainability. Additionally, Tafara (2013) noted that project management practices affect sustainability of rural community-based water projects as well.

More so, (Njogu, 2009) in a study carried out in Ruiru Municipality in Kenya recommends that the bottom-up decision making approach should be adopted where there should be community and or public participation in planning issues since this leads to sustainability.

4.3. What sustainability components exist in East Africa?

In order to determine the sustainability components for rural water supply projects existing in East Africa, data was fed into SPSS to generate descriptive statistics for each variable under this research question. Results are in the table below;

Table 3: Sustainability components

Rank	Contribution	Freq.	Agree	Disagree
1	Operation and maintenance	21	90.5%	9.5%
2	Functionality of water user committee	21	57.1%	42.9%
3	Technology used	21	38.1%	61.9%
4	Empowerment	21	19%	81%

Results from table 3 above show the ranking of sustainability components for rural water supply projects existing in East Africa from operation and maintenance to empowerment as the least sustainability component as per the study. 90.5% agreed that operation and maintenance are key sustainability components, 9.5% disagreed. This finding concurs with Zimmerman, (2014) who argues that water and sanitation activities may require collection of some fees, hiring of caretakers and overseeing operational activities and repairs as well. With this, then water user committees are supposed to carry out the operation and maintenance of the water facilities hence leading to sustainability.

Further, functionality of water user committee carried 57.1% in agreement that it's a key component of sustainability for rural water supply projects in East Africa, followed by technology with 38.1% and then empowerment with 19%. This is in line with Sjögren, (2013) who argued that, the community based participatory approach empowers management structures and framework to have responsibility over the governance systems of water sources, in the end they become accountable to their own resources.

4.4. Online Studies on Community Participation and Sustainability of

Rural Water Supply projects in East Africa

Table 4: Online studies carried out in East African Countries

		Frequency	Percent
Valid	Uganda	4	19.0
	Kenya	6	28.6
	Tanzania	9	42.9
	Others	2	9.5
	Total	21	100.0

From the above, out of 21 studies, 4 were from Uganda represented with 19%, 6 were from Kenya with 28.6%, 9 studies were from Tanzania with 42.9% as the highest and others were 2 with 9.5% which was the lowest. This indicates that Tanzania had the highest number of articles related to the study with 42.9% followed by Kenya with 28.6% and then Uganda with the least 19%.

Further, results show that both Uganda, Kenya and Tanzania had studies related to community participation and sustainability of rural water supply projects in East Africa. However, the majority articles were from

Tanzania followed by Kenya then Uganda. There were also articles from other countries other than the three which were not considered in the study.

Analysis of correlation coefficient

To determine the relationship between community participation and sustainability of rural water supply projects in East Africa, a correlation coefficient was run and the results are reflected below:

Table 5: Analysis of correlation coefficient

		Correlations	
		Community participation	Sustainability
Community participation	Pearson Correlation	1	.706**
	Sig. (2-tailed)		.000
	N	21	21
Sustainability	Pearson Correlation	.706**	1
	Sig. (2-tailed)	.000	
	N	21	21

****.** Correlation is significant at the 0.01 level (2-tailed)

The above table was made to determine the relationship between community participation and sustainability of rural water supply projects in East Africa. It is seen that there is a relationship between community participation and sustainability with .706** sig. level .000 (2-tailed)

5. Conclusion and Recommendations

Conclusion

The paper concludes that community participation and sustainability of rural water supply projects exist in three countries namely; Uganda, Kenya and Tanzania. The paper identified a number of sustainability components including; operation and maintenance, functionality of water user committee, technology used and then empowerment. These aspects were seen as key tenets to

sustainability of rural water supply projects in East Africa.

Worth noting, there was a relationship between community participation and sustainability of rural water supply projects in East Africa. This implied that sustainability components identified in both countries are similar and very important.

Recommendations

The paper recommends that much effort should be focused on sustainability components since they are key in ensuring sustainability of rural water supply projects in East Africa.

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