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Community Participation in Monitoring and Evaluation and Sustainability of Rural Piped Water Supply Projects: A Case of Siaya County, Kenya

Justus O. Oduor[1], Dr. Lily C. Murei[2]
[1](Postgraduate student, Open Distance and e-Learning Campus, University of Nairobi, Kenya)
[2](Part time Lecturer, Open Distance and e-Learning Campus, University of Nairobi, Kenya)

Abstract: Sustainability of piped water supply is a major concern in rural areas. This is due to weak community participation, costly and poor maintenance of existing projects. This study sought to examine the influence of community participation in monitoring and evaluation on sustainability of rural piped water supply projects in Siaya County in Kenya. The study was guided by pragmatism and utilized descriptive survey and inferential research designs. Quantitative and qualitative data collection and analysis were used. The study population was 282 which entailed 270 active water users registered with the County Water Service Provider, and 12 water management committee members. A sample size of 173 was drawn using random and purposive sampling. The main instrument for quantitative data was a close ended, structured Likert scale questionnaire. To triangulate findings key informant interviews were used. Descriptive statistics and regression model was used in data analysis. From descriptive data, arithmetic mean and standard deviation were generated. Pearson Product Moment Correlation Coefficient(r) was computed. Findings revealed that community participation in monitoring and evaluation had significant influence on sustainability of rural piped water supply projects, predicting up to 58.5% variation of sustainability of such projects. It is important for community water users to attend monitoring and evaluation meetings. This gives them the chance to review water projects performance reports, evaluate operation and maintenance processes consequently influencing sustainability. Use of participatory monitoring and evaluation approach is beneficial to all stakeholders and contributes to ownership and holistic sustainability.

Keywords: Participation, Monitoring, Evaluation, Sustainability, Rural, Projects.

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I. INTRODUCTION

Sustainability of water supply is influenced by varied aspects that include participatory approaches, cost and maintenance of existing systems. Due to lack of sustainability mechanisms, governments and development agencies have invested in structures that promote holistic sustainability (Oino, Towett, Kirui, & Luvega, 2015). Globally, access to reliable and quality water is still a problem to numerous rural populations. It is estimated that five out of six people in rural areas are not able to access improved clean water (JMP, 2012). Among water, sanitation and hygiene practitioners, achieving sustainability of water projects is still a challenge since the water decade of the 1990. According to Black (2013) though various participatory approaches have been tried to promote sustainability, more efforts need to be directed to workable mechanisms relating to rural water supplies.

Whilst efforts are put in place to ensure piped rural supply systems are functional, ensuring that a sustainable mechanism is a priority. Reports from Africa show that between the year 2011 and 2013, an average of 44% of the population had no piped water (Bentley, Han and Houessou, 2015). Similarly, Brikke and Bredero (2003) observed that approximately 30 to 60 percent of the water systems in Africa were not working at any given time. Specifically, half of the rural piped water projects in Malawi which was as from 3 years old were poorly performing (Kleemeier, 2000). Poor state of such water schemes is attributed to poor operational, management and regulatory gaps. Moreover, low participation of community in putting up water infrastructure led to lack of sense of ownership by the beneficiaries argues Bentley, Han, and Houessou (2015). This situation is not different in Kenya where many rural households do not access reliable water services. Where piped water is available, they are not sustainable due to poor operation and maintenance arrangements and lack of ownership by water users (KNBS & SID, 2013). Empirical literature reviewed showed that several factors impact on sustainability of water supply projects. Therefore this study sought to examine influence of community

participation in monitoring and evaluation and sustainability of rural piped water supply in Siaya County in Kenya.

II. LITERATURE REVIEW

Globally, governments and development partners have prioritized and invested in sustainability of development interventions including water supply projects. More so some attempts have been made to employ participatory approaches throughout project lifecycle. Despite these efforts, ensuring that sustainability is achieved, there are still concerns among stakeholders especially for rural based water projects (Khwaja, 2001). Often, for rural water supplies to be sustainable, they are largely cost intensive covering the design, construction as well as reliable distribution supply systems. With such efforts put in place there is need to ensure that they are functional and sustainable. According to Bradley and Bartram (2013), one success factor of sustainable rural water supply is the involvement of water users, more specifically on operation and maintenance cost recovery. This ensures that the water tariffs are fair and that consumers are aware and willing to pay for the water services. Despite such arrangements being put in place Kulinkina et al. (2016) observe that most low income countries still face challenges in collecting enough financial resource to carter for operation and maintenance of water supply systems.

Community sense of ownership in relation to water projects has been cited as a key influence in attaining sustainability. The community is expected to participate and contribute inputs either in kind or financial from the design to completion. Equally important, addressing water users' needs should be factored in at the start of project initiation and design. This should include understanding users' financial capacity and readiness to support the project including aspects of operation and maintenance (Bradley & Bartram, 2013). When communities and or water users are involved from the onset of a project, it contributes to social sustainability. Moreover, Kwena and Moronge (2015) assert that providing an environment where communities participate freely, improves their knowledge and perception about the project subsequently contributing to sustainability. Such motivations in most cases are reflected in positive response in payment of user and maintenance fees. Similarly, Whittington et al. (2009) note that in many instances sense of ownership is created when communities feel part of the project especially when they accrue benefits from their tangible or intangible contributions. One important motivation to community project actors is being given space to participate appreciating that different stakeholders have varied interests, perceptions and influence. All these aspects are important in community participation especially for water projects where social benefit is a motivation. To promote accountability, applying a participatory monitoring and evaluation is imperative in attaining sustainability (Whittington et al., 2009; Bradley & Bartram, 2013; Kwena & Moronge, 2015).

Community participation in monitoring and evaluation is beneficial to a project's efficiency and sustainability. To this end, there has been increased attention on participatory monitoring and evaluation in projects including rural water supplies (Sulemana et al., 2018; United Nations, 2017). Participatory monitoring and evaluation in project life cycle management is thus proposed as a pathway to sustainability (Labuschagne & Brent, 2005). Community involvement in monitoring of the water supply system has been seen to positively contribute to reduction in water through leakages and illegal connections. This is as result of communities understanding their role in participating and monitoring as way of taking care of their valued investment. Community participation ensures that the system is functioning and use of metering for tracking water usage similarly ensures efficiency and accountability. Timely reporting of such incidents assures that appropriate action is taken early enough to address such challenges restoring operations improving performance of the project. According to Francisco, Tanya, Francisco and Daniele (2013) as part of participatory monitoring, committee members take part in tracking and reporting including identifying leakages and breakages. In reference to a study in Malawi, on challenges of maintaining rural water systems, Kleemeier (2000) noted that users undermine a system's performance by failing to report faults, even when a credible reporting mechanism is in place. Such inaction could be as damaging as willful vandalism. Similarly, in Kenya, according to Water Services Regulatory Board (WASREB) 2019 report, one of the setbacks for operation and maintenance was the challenge in getting mechanics in the community who could do repairs and maintenance; this was due to inadequate local technical capacity. For continued operation and provision of water services it is necessary that training of water technicians is carried out not only in monitoring but also in repairs. In addition, the training of users would contribute in monitoring and evaluation, also users can interpret meter readings and water tariff setting and review. Such understanding pricing vis-à-vis consumption, will promote ownership and responsibility towards water service provision therefore sustaining water supply system (Brown & Pena, 2016).

Rural water projects require systematic evaluation to establish the extent to which the project is reliable, efficient and helpful to the beneficiaries (Kwena & Moronge, 2015). To achieve the required holistic sustainability it is important to put in place mechanisms to ensure compliance with payment rules. This should include ways on how to handle money collected, as well as the use of metering to monitor usage. Such proactive processes of involving the community in monitoring and reporting create a shared vision of inclusive

accountability and ownership. In addition engagement with project coordinators during stakeholders meeting provides another avenue for participatory consultation and feedback for taking corrective action (George, Mehra, Scott, & Sriram, 2015). The joint inspection and reporting assures that processes are followed and transparency is promoted in managing water supply projects, ultimately, contributing to improved water provision to users (Sulemana, Musah, & Simon, 2018). In reference to a study funded by the Agha Khan Rural Support Programme in Northern Pakistan, Jha et al. (2019) indicate that those projects managed by the community had a better performance compared to those operated by the local government. Likewise, Muniu, Gakuu and Rambo (2017) elaborate that enhanced sustainability in rural areas is attainable by ensuring that projects meant to serve the community are managed by the community members. The empirical contributions from these scholars thus affirm the impact of community participating in project sustainability.

The study was guided by Empowerment Theory by Perkins and Zimmerman (1995) and Social Systems Theory advanced by Niklas Luhmann (Wallis & Valentinov, 2016). The Empowerment theory contributed in understanding how project sustainability can be realized through the aspect of community participation in monitoring and evaluation. Empowerment theory explains the process and efforts made by marginalized individuals or community to exert control and influence their choices, transforming them into desired outcomes touching on both personal and communal life (Rappaport, 1987; Zimmerman, 2000). The Social Systems Theory aided in understanding the concept of sustainability of rural piped water supply projects. On sustainability, Murphy (2012) noted that it is a system issue, where interaction on one part of the system affected the other parts. In the context of this study, the sustainability of rural piped water supply is perceived as a complex system, with several related components within its environment such as participation of community members and involvement of water management committee members. For the whole system to work effectively, the sum of the other sub-system must work, in harmony hence achieving sustainability. System Theory, therefore, appreciated the role of community participation in monitoring and evaluation in achieving sustainable rural piped water projects.

III. METHODOLOGY

This study employed descriptive survey and correlation research designs. Descriptive survey design helped the study obtain information concerning community participation on the sustainability of rural piped water supply projects, thus giving a causal relationship (Best & Kahn, 2009). More so correlation research design was examined to test hypothesis and assess influence of community participation in M&E on sustainability of rural piped water supply projects. The target populations were water management committee members and water users registered by the Siaya Bondo Water and Sanitation Company (SIBO), which is a county licensed local water service provider. The registered water users were drawn from Mbaga zone which occupies largely the rural areas on the outskirts of Siaya town, covering Abura water abstraction site and water treatment plant that supplies water to the town and its environs. The study population was 282 obtained from the registered users served by the water service provider, and the 12 water management committee members. From the sample frame of the 270 registered water users in Mbaga zone, sample size was established by applying Yamane (1967) formula, and estimated 161 water users.

$$n = \frac{N}{1 + N(E)^2}$$

Where: n is the required sample size; N is known population of the study; E is the margin of error tolerated (5%). Sample size was estimated at 95% level of confidence. Therefore:

$$n = \frac{270}{1 + 270(0.05)^2} = 161$$

Mixed methodology was employed in the study where qualitative method triangulated the quantitative findings. The main instrument for data collection was a questionnaire, composing of close ended, Likert-scale questions, used in the collection of primary data from water users. To triangulate findings, key Informant Interview Schedule was equally employed in collection of qualitative data from key informants. The key informants were drawn from the Siaya Bondo Water and Sanitation Company as the service provider, the County Water Resource Authority and Non-Governmental Organization (NGO) working in the water sector. Twelve (12) water committee members were drawn from the organizations and community representatives, to provide insights that gave depth on the study topic. The respondents were purposively sampled due to the small number and interview schedules administered to them. While for water users, the household interview selection was done through simple random sampling technique. Respondent's ethical concerns were achieved by seeking their consent before administering interviews and also by assuring that they remain anonymous for confidentiality purposes.

The research instruments' reliability was tested during pilot testing, through split-half technique and by use of Cronbach's Alpha Coefficient. A value 0.797which indicated reliability since it is above the minimum

value of 0.7 (Creswell, 2012) was generated from the Cronbach's Alpha after calculating the reliability statistics using SPSS.

The analysis of quantitative data was accomplished through descriptive statistics which included frequency, mean, standard deviation and percentages, whereas qualitative data was analyzed thematically. Additionally, regression analysis was done on the quantitative data to test for significance of community participation in M&E on sustainability of rural piped water supply projects.

IV. ANALYSIS AND FINDINGS

Data was collected from 140 respondents out of the targeted 161 through face-to-face interviewing; this represented a questionnaire return rate of 87% of the water users. Respondent consent was sought before participating in the survey; some respondents declined to participate in the survey due to inconveniences, which explain the reason why 100% response rate was not achieved. The study response rate of 87% was found to be adequate (Fosnacht, Sarraf, Howe, & Peck, 2017) to be able to make inference on the population of study. For key informants, all the 12 respondents were interviewed, and their findings triangulated with those of household surveys.

Descriptive Analysis of Study Variables

Sustainability of Rural Piped Water Supply Projects

The indicators for sustainability of rural piped water supply projects that were administered in the study were the respondent's ability to pay for water charges when due, increase in the number of households using piped water supply within the last 5 years, continuous flow of water in taps and cleanliness of water that flows in taps. Respondents expressed their rating of the statements using a 5-point Likert scale.

Table 1: Sustainability of Rural Piped Water Supply Projects

Statements on Sustainability	Mean	Standard Deviation
Ability to pay for water charges when due	4.19	0.804
Increase in the number of households using piped water supply within the last 5 years	4.12	0.852
There is continuous flow of water in household taps	2.47	0.885
The piped water supplied through taps is clean	4.16	0.845
Composite mean	**3.74**	**0.846**

Data Source: Research data (Author)

These statements generated a composite mean of 3.74 which according to the scale signified agreement. This implied that respondents subscribed to the statements as indicators for sustainability of rural piped water supply projects. These findings support observations by Muniu, Gakuu and Rambo (2017) on sustainability of community water projects in Kenya that revealed that those surveyed agreed with sustainability indicators and so were confident that the community projects were sustainable. Despite respondents being generally satisfied with the sustainability aspects of this project, the aspect of water availability was repetitively mentioned as a challenge in the sustainability efforts, since most of the time the water taps were dry and it would take days for consumers to be without water, hence hindering sustainability of the piped water supply.

Community Participation in Monitoring and Evaluation and Sustainability of Rural Piped Water Supply Projects

Respondents rated statements which were the indicators of community participation in M&E to what extent they influenced sustainability of rural piped water supply projects, using a 5 point Likert scale as shown. Table 2 illustrates the study outcomes.

Table 2: Community Participation in Monitoring and Evaluation and Sustainability of Rural Piped Water Supply Projects

Statements		Not at all	Little extent	Moderate extent	Great extent	Very great extent	Total	Mean	Std dev.
Involvement in scrutiny of performance reports	Freq.	1	24	22	70	23	140	3.64	0.975
	Percent	0.7%	17.1%	15.7%	50.0%	16.4%	100.0%		
Participation in monitoring of water supply system	Freq.	0	7	13	78	42	140	4.11	0.765
	Percent	0.0%	5.0%	9.3%	55.7%	30.0%	100.0%		
Involvement in reporting leakages and vandalism	Freq.	0	5	19	75	41	140	4.09	0.754
	Percent	0.0%	3.6%	13.6%	53.6%	29.3%	100.0%		
Attendance of M&E meetings	Freq.	4	22	33	62	19	140	3.5	1.007
	Percent	2.9%	15.7%	23.6%	44.3%	13.6%	100.0%		
Participation in evaluating the O&M process	Freq.	4	31	32	55	18	140	3.37	1.055
	Percent	2.9%	22.1%	22.9%	39.3%	12.9%	100.0%		
Use of M&E information for corrective action and improvement	Freq.	0	9	15	73	43	140	4.07	0.819
	Percent	0.0%	6.4%	10.7%	52.1%	30.7%	100.0%		
Composite mean								**3.8**	**0.896**

Data Source: Research data (Author)

The first item under community participation in monitoring and evaluation (M&E) was being involved in the scrutiny of performance reports. The mean was 3.64 and a standard deviation (SD) of 0.975, the mean when compared to the combined mean of 3.80, was found to be below the composite mean, implying that the item had no significant influence on the sustainability of rural piped water supply projects. Results from the respondents interviewed on item 2 showed that a big number of users supported this statement to a great extent on a mean of 4.11 with a SD of 0.765; the mean was greater than the average mean of 3.80 signifying that the item had significant influence on sustainability of rural piped water supply projects. This demonstrated that the community studied participated in monitoring the piped water supply system. Correspondingly, key informant interviewed from the NGO noted that:

"The community would participate in the monitoring of water supply for example in case there is a breakdown; the community members would alert the water enterprise."

The third item in the category had an arithmetic mean of 4.09, and a SD of 0.754. The mean was greater than the combined mean of 3.80 implying there was influence, hence suggesting that water users were being involved in reporting leakages and vandalism to project coordinators consequently influencing sustainability of rural piped water projects. In contrast, one respondent interviewed from the NGO again indicated that:

"Breakages and leaks from water pipes took longer time to be repaired, thus contributing to wastage and consequently affecting water supply sustainability."

Item four, was the attendance of M&E meetings organized by water management committee members. The mean rating for this item was 3.50; a score which was less than the average means of 3.80 inferring that there was no influence on the sustainability of rural piped water supply projects. Explaining this phenomenon was a sizable number of respondents (23.6%) who were neutral in their rating of the statement, in addition to the high standard deviation of 1.007 which indicated high disparity of responses meaning respondents were indifferent to attendance of meetings as an influencing factor to sustainability. The interpretation was similarly applied to the fifth item in the scale which had a mean of 3.37 and a SD of 1.055, indicating no statistical influence of community participation in evaluating the operation and maintenance (O&M) process on sustainability of rural piped water supply projects. Again, denoting that the community less likely attended M&E meetings where they could scrutinize and evaluate the O&M processes in place; thus the low participation contributed to low sustainability of water supply projects. The last item was the use of M&E information for corrective action and improvement. Outcomes show that the item influenced piped water sustainability with results indicating mean of 4.07 and a SD of 0.819, since the mean was greater than the mean of means, hence showing influence.

All statements combined produced a mean value of 3.80 which as per the scale showed that respondents concurred that community participation in M&E influenced sustainability of rural piped water supply projects. Key informants interviewed likewise reflected on the statements and their feedback summed up as follows:

"The community always met twice or three times a month to evaluate the O&M process. The evaluation was done in terms of finances such as the collected revenue. Also, the community reported illegal connections and thefts, in addition to reporting water pipes that had bursts and leaks. This prevented water wastages and contamination when reported on time, resultantly contributing to sustainability of the water projects."

Regression Analysis

The regression tested the hypothesis that H_0: Community participation in M&E has no significant influence on sustainability of rural piped water supply projects. Regression results were generated from SPSS as shown in tables 3, 4 and 5.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.765[a]	0.585	0.566	0.451

a. Predictors: (Constant), Use of M&E information for corrective action and improvement, Involvement in scrutiny of performance reports, Attendance of M&E meetings, Participation in monitoring of water supply system, Participation in evaluating the O&M process, Involvement in reporting leakages and vandalism

In the model summary, the value of R is 0.765 indicating a strong positive correlation between sustainability of rural piped water supply projects and the independent variables which are the indicators for community participation in M&E. These were: involvement in scrutiny of performance reports, participation in monitoring of water supply system, involvement in reporting leakages and vandalism, attendance of M&E meetings, participation in evaluating the O&M process, and use of M&E information for corrective action and improvement. The R Square value was 0.585 which implied that that 58.5% of the variation of sustainability of rural piped water supply projects was influenced by community participation in M&E. This model further showed that 41.5% of the variation of sustainability of rural piped water supply project was explained by other factors not exhibited in the model.

Table 4: Anova (Analysis of variance)

Model		**Sum of Squares**	**df.**	**Mean Square**	**F**	**Sig.**
1	Regression	38.117	6	6.353	31.263	.000[b]
	Residual	27.026	133	0.203		
	Total	65.143	139			

a. Dependent Variable: Sustainability of rural piped water supply projects

b. Predictors: (Constant), Use of M&E information for corrective action and improvement, Involvement in scrutiny of performance reports, Attendance of M&E meetings, Participation in monitoring of water supply system, Participation in evaluating the O&M process, Involvement in reporting leakages and vandalism

The analysis of variance (Anova) table 4 indicated that the p-value was less than 0.05 ($p=0.000$, $p<0.05$) at 5% level of significance. This was statistically significant, insinuating rejection of the hypothesis that community participation in M&E has no significant influence on sustainability of rural piped water supply projects. The model thus exhibited that community participation in M&E was statistically significant in influencing the sustainability of rural piped water supply projects, at 95% level of confidence.

Table 5: Regression Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	0.761	0.236		3.22	0.002
	Involvement in scrutiny of performance reports	0.084	0.051	0.119	1.648	0.102
	Participation in monitoring of water supply system	0.198	0.083	0.221	2.392	0.018
	Involvement in reporting leakages and vandalism	0.199	0.085	0.219	2.35	0.020
	Attendance of M&E meetings	0.096	0.061	0.141	1.573	0.118
	Participation in evaluating the O&M process	0.007	0.059	0.01	0.113	0.910
	Use of M&E information for corrective action and improvement	0.198	0.063	0.237	3.147	0.002

a. Dependent Variable: Sustainability of rural piped water supply projects

Multiple regressions were done at 5% level of significance and results displayed in table 5 above. The regression results revealed that community involvement in scrutiny of performance reports (p=0.102, p>0.05), attendance of M&E meetings (p=0.118, p>0.05), and participation in evaluating the O&M process (p=0.910, p > 0.05) were not statistically significant in influencing sustainability of rural piped water supply projects, since their p-values were larger than 0.05. Whereas the variables of community participation in monitoring of water supply system (p= 0.018, p < 0.05), involvement in reporting leakages and vandalism (p=0.020, p<0.05), and use of M&E information for corrective action and improvement (p=0.002, p<0.05) were statistically significant in influencing sustainability of rural piped water supply projects, supporting the descriptive statistical findings.

Overall, the predictors which form community participation in M&E were statistically significant in influencing the sustainability of rural piped water supply projects. This is interpreted from the constant (p=0.002, p<0.05) at 5% level of significance. The regression analysis therefore revealed that change in sustainability of rural piped water supply projects was induced by community participation in M&E predicting up to 58.5% variation in sustainability of rural piped water supply. The model was thus adopted as good fit in establishing the influence of community participation in M&E on sustainability of rural piped water supply projects. The regression equation was thus established as: $y = 0.761+0.084\,x_1+0.198\,x_2+0.199\,x_3+0.096\,x_4+0.007\,x_5+0.198\,x_6+\varepsilon$

V. DISCUSSION

The study found that community participation in the scrutiny of performance reports for the water projects did not have significant influence on sustainability of rural piped water supply projects, contradicting Wanyera (2016) who found that community participation in assessing project performance influenced to a great extent the sustainability of community projects. However, from the study the low participation in scrutiny of project reports can be ascribed to the community's low attendance and participation in M&E meetings, as revealed in the study, where they could raise queries and or complaints regarding how the project was being managed in line with sustainability goals. The study finding reflects observations made by Sulemana, Musah, and Simon (2018) that attributed low scrutiny of project reports to the low level of education, which is typical to many rural setting such as the study area. Additionally, the study findings further revealed that there was low participation of the community in evaluating the O&M process, thus causing low sustainability of the water supply projects. The study thus discloses that it is imperative for water users to attend monitoring and evaluation meetings to have chance to review and evaluate project performance reports.

Community participation in monitoring water supply systems was established to influence sustainability of rural piped water supply. This was consistent with study findings by Wanyera (2016) that revealed that project users involved in monitoring how project funds were used, influenced moderately the sustainability of community development projects in Kiambiu slum project in Nairobi, Kenya. To ensure continuous flow of water supply, the community in the study area participated in the monitoring of water supply

systems which included ensuring that distribution pipes were in good condition, this positively influenced their sustainability. They were also involved in reporting leakages and vandalism to project coordinators so that quick action could be taken to rectify such inadequacies. The study finding supports those by Francisco et al. (2013) who opined that for any development to be sustained, users were required to report any problem or anomaly on the water supply system to the concerned project coordinators. However, despite water users confirming that being involved in reporting leakages and vandalism to project coordinators influenced the sustainability of rural piped water supply projects, the key informants disclosed that there were delays in repairing the broken systems. This response from the key informants could explain the contributing factors to one of the challenges highlighted by WASREB (2019); that non-revenue water in Siaya County was 70%, hence the huge water loss. The study also found that the community made good use of M&E information they received for correction and improvement to the water supply system, assuring sustainability endeavors. These results echoed findings in a study done in Kisumu by Miseda and Nyonje (2014) which indicated that community participation in M&E through getting involved in information sharing, utilization of the shared information and carrying out project evaluation activities influenced to a great extent sustainability of the Njaa Marufuku Project. Therefore it is important for projects to put in place monitoring and evaluation information system, and that such information is easily accessible to all stakeholders (Oino et al., 2015) that could be used as a reference to ensure that project's continuity is assured. Overall the study established that community participation in M&E influenced, predicting up to 58.5% variation in sustainability of rural piped water supply projects. As such it is imperative that communities be enlightened on the importance of their involvement, contribution and participation in project life cycle management more so monitoring and evaluation, as it is positively linked to sustainability of the water supply projects.

VI. CONCLUSION

The study concluded that community participation in M&E influenced sustainability of rural piped water supply projects. Community participation in M&E explained 58.5% variation in sustainability of rural piped water supply projects. The study thus established that improvement in community participation in M&E contributes to increase in sustainability. Therefore, to achieve sustainable water supply in rural areas there is need for inclusivity of communities and participation of the local stakeholders in the monitoring and evaluation of the projects. Particularly rural communities need to improve on attendance of M&E meetings, scrutiny of project performance reports and evaluation of the O&M processes in place considering that the study revealed weak community participation in these aspects.

Recommendations of the Study

Taking into consideration the study findings and conclusion drawn, in view of rural piped water supply projects, the study recommended need for encouragement of water users and communities to attend M&E meetings organized by the project. The recommendation is based on the study findings which indicated high disparity of responses on attendance of M&E meetings and evaluation of operation and maintenance processes, suggesting no consensus on these indicators. Attendance of meetings would be helpful to communities in having knowledge of the operations of the utility as well as having their concerns and queries addressed by the management through such interactions. On the same, the community would have the chance to scrutinize performance reports of the water projects, again enhancing their participatory evaluation of the concerned project, leading to sustainability.

Implications of the Study

Findings from the study would be beneficial to governments and nongovernmental organizations in understanding the impacts of community participation or lack of it, in the monitoring and evaluation of rural piped water supply projects. Taking into account this understanding would help the governments and development partners have confidence in the participatory approach, and how to integrate such an approach in the project life cycle management, more so monitoring and evaluation. In addition, findings from this study would be helpful to communities so as to understand the association between their participation in monitoring and evaluation and sustainable piped water supply. Considering such knowledge may enhance community participation and in return increase communal ownership which then results in social sustainability.

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