

## **Community Participation in Resource Mobilization and Sustainability of Community Water Projects In Kenya**

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**Abstract:** Global sustainability of water projects has been of great concern as fewer projects are being sustained. Among the strategies to address the challenge is water delivery system based on participatory approach and recognition of water as an economic good. Policy makers and development actors adopted a water supply policy based on community-managed model of service delivery which vests resource mobilization functions on project beneficiaries. This study sought to establish the influence of community participation on sustainability of community water projects in Nyeri, Kenya. The study adopted a mixed method research approach to carry out cross sectional, correlation and descriptive survey. The choice of mixed approach allowed for both descriptive and inferential methods in data collection, analysis and interpretation. The target population for this study was beneficiaries of water projects in three Sub Counties of Nyeri County. The Sub Counties had a total of 10 water projects with 1052 beneficiaries. The study picked respondents from three strata that included water project beneficiaries, focus group discussion groups and water project officers. Respondents in the first stratum were picked using systematic random sampling in which 290 were picked and of 290 contacted respondents 207 positively responded to a survey questionnaire representing 71.38 percent successful return rate. Three committee members who were purposely sampled and five ordinary members who were randomly selected were combined and formed the stratum of focus groups discussion (FGD). The third stratum was purposefully sampled and comprised of water officers who participated in semi structured interviews. Descriptive as well as inferential techniques were employed in the processing and data analysis. The study established a moderate correlation between participation in resource mobilization and sustainability of community water projects. The study also established a significant independent influence at ( $p < 0.000$ ) of participation in resource mobilization on sustainability of community water projects at 5% level of significance. The study recommends that community should be involved in mobilization of project resources in order to enhance sustainability of community water projects.

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### **I. INTRODUCTION**

The global quest for answers to the 'growing water, and earlier debates and arguments about the 'increasingly inefficient' public sector, continue to shape the trajectory of policies and programmes around water sector (UNDP, 2009). In 2006, The UNDP indicated that the global water problem was growing into a crisis, which if left unchecked would derail progress towards attainment of the Millennium Development Goals (MDGs) by holding back advances in other areas of human development (UNDP 2006). While the MDG report of 2009 indicated that the world was on track to achieve the safe water target, it also cautioned that 884 million people worldwide still used unimproved water sources mainly in Sub-Saharan Africa. Development planners attempted to address the challenges posed by lack of project sustainability through a policy shift from a centralized, supply-driven paradigm toward a more flexible, demand-oriented strategy based on Community-based management (CBM) (Briscoe and Ferranti, 1988). While community water projects may be working well in some developing country contexts such as in Latin America and Asia, the results in sub-Saharan Africa are still not promising (Lockwood and Smits, 2011).

Community-based model of project management requires that water users participate in project planning, implementation, monitoring and evaluation and vests in them key resource mobilization functions (Sara and Katz, 1997).

The factor that best differentiates a demand-responsive project from a project in which people simply participate is the requirement of a community resource mobilization (Sara and Katz, 1997). Community resource

mobilization is the amount people give in cash, in kind, and labor in exchange for services and is linked to demand responsive project. In an analysis of the relationship between mobilization and sustainability it was found that in a demand-responsive approach, community resource mobilization serves as an indicator of project demand (Khan, 2000). The level of community resource mobilization both in initial project investment costs and recurrent costs provides a strong indication that it is willing and able to bear the expected costs of the system (Harvey and Reed, 2007). Willingness and ability to pay the expected costs of the water systems is a good indicator that the project is most likely to be sustainable (Evans and Collins, 2005).

In Kenya Water supply to households has evolved through a long process of policy reforms. Immediately the country gained independence, it adopted a policy of water supply that perceived “water as a social good to be provided free of charge”, with heavy subsidizes without cost recovery” (Mulwa, F.W, 2010). However owing to economic constraints coupled with failure of centralized approach of supply the government changed the water policy detailed in 2002 Water Act that was mainly based on Community management approach of water supply (Republic of Kenya, 2007). Implementation of the policy reform is carried out at the back drop of continued low accessibility to water in Kenya. Annual performance report by WASREB (2013) indicated that access to water in Kenya stood at 54% with large disparities between geographic areas. This report indicated that Northern Counties of Kenya had less than 30% of accessibility to safe water as opposed to 60% in Central Kenya with the highest level of 72% registered in Nyeri County. However even within Nyeri County large disparities still existed with some sub counties registering a performance index of 74 % while others have a low of 30%. The low performance apparently exist even where there is community participation in resource mobilization and management. These observations begged for answers as to why the continued “death” of water projects despite the policy reforms. This study sought to establish the influence of community resource mobilization on sustainability of community water projects in Kenya.

## **II. LITERATURE REVIEW**

Research has shown that rural water supplies in sub-Saharan Africa, often demonstrate low levels of sustainability and the problem will only be solved by adopting a holistic approach to planning and implementation Prokopy, L. S. (2005). One of the factors that could enhance sustainability of water supply is the use resource mobilization of the beneficiaries. This assertion is supported by in (Mulwa,2010) who avers that one of the determinant factors for the sustainability of rural water supply systems is the willingness of the community to sustain the water project. The willingness is indicated in the form of community to provide valued resources in the exchange for services. One of the pre implementation factors for rural water supply systems is demand responsive approach .Water projects are more or less demand responsive to the degree that beneficiaries make choices and carry out resources in support of their choices (Mulwa, 2010).

Involving the users in the planning, implementation, operation, protection and maintenance of water supply system enhances sustainability. This observation is in line with that of (Davis and Liyer, (2002) who asserted that sustainability of rural water supply structures has become positively associated with small-scale initiatives, which maintain public participation.

Community participation in resource mobilization is closely linked to the question of project ownership and sustainability (Isham and Kahkonen, 2009). Community projects require resources that are needed to meet the recurrent costs of running and maintaining the system .Resource mobilization could take many forms depending on the different shades and capacity in different project stakeholders, this assertion is in line with the arguments of White, (2011) who asserts that depending on individual circumstances; resource mobilization need not always be financial in nature, but could either be in-kind, labour and local materials. Literature in the water supply sector has shown that Community members’ contributions might take the form of money, labor, material, equipment, or participation in project-related decision-making and meetings (Davis and Liyer, 2002). In the same vein Ostrom (2000) observed that as a condition breaking the patterns of dependency and passivity it was necessary for project beneficiaries to provide labor, time, money and materials. Water is a shared resource and as such individual should cooperate in its exploitation, this view is also shared by Reed-Erichem, (2003) who emphasized that since water is a shared common property resource and water services have basic investment costs it is imperative that local communities work together to manage the resources and the services accruing. That notwithstanding they could engage civic organizations and donors to encourage existing incentives for shared action or co-production the services.

Continued involvement of members of community projects in the aspects of maintenance and management of the water system and is an important indicator of project resource mobilization. This view is also held by Harvey Reed and Skinner, (2002) who argues that projects require collecting tariffs and costing recovery to cover routine operation from beneficiaries.

Demand by household to be connected to water can be used to signal their willingness to support the project, this assertion is supported by Reed-Erichem (2003) who observed that the demand to be connected to access safe water determines how willing individuals are to pay for the services. In the same note Evans and

Colin (2005) observed that the level of willingness of users to provide the necessary resources to keep the system functioning which include time, money and labor may affect the level of sustainability of rural water system.

The willingness may be affected by socio-economic factors such as income level, ethnic homogeneity, and the social capital of the villagers (Evans and Colin, 2005). That notwithstanding willingness also depends on the satisfaction consumer derives from the water service, this view is held by (Evans and Colin, 2005) who argues that water beneficiaries would be more willing to pay for operation and maintenance if they perceived significant improvements in services of the water system. Water service beneficiaries would be motivated to pay if they felt ownership of the project, this view is in line with that of Brikké and Rojas, (2001) who asserts willingness of the community to pay for water is also affected either by perceptions of ownership or sense of entitlement to free services from the government.

Willingness of the beneficiaries to pay for services provided by the water projects is crucial in sustainability of projects. This claim is supported by a study Ohiani and Oni (2010) who observed that many of the efforts to strengthen sustainability of community water projects are mainly directed towards the willingness to pay. This variable is influenced by project approaches and plays a key-role in sustainability of rural water projects and can be described as the decision taken under a situation of free choice to spend some of the available resources on a service or good. Whereas some project beneficiaries may be willing to pay they find themselves handicapped by lack of cash however it is they could also contribute in other forms which could benefit their projects. This observation is supported Cornwall, (2009) who avers that willingness to pay is an expression of the willingness to contribute not only in cash, but also in kind.

The level of household participation in resource mobilization can be used to measure demand for water. This assertion is supported by Katz and Sara (1997) who avers that community resource mobilization is an indicator of a demand-responsive project and can be used to differentiate from a project in which people simply participate. Community contribution is the amount people give in cash, in kind, and labor in exchange for services, and should, be linked to the relative costs of providing different levels of service (Katz and Sara, 1997).

The degree of the community to contribute project resources has bearing on its performance. This observation is supported by a study by (Haysom (2006) who examined the sustainability of rural water supplies in 38 villages in Tanzania on local financing and cost recovery. The study established a direct correlation between local contributions and project functionality. Whereas some communities had established water saving accounts in which communities deposited local contributions for operation and maintenance others didn't. The study found that over 85% of projects in which communities deposited local contributions into a water account were regularly operating and repairing their water systems. However none of the communities with a failed system had a water account. This is indicated that of lack of local contribution of funds led to system failure. This underscores the importance of the role played by funds contributed by the community in the sustenance of community projects.

Community project control and ownership may motivate the project members to take project responsibilities that may enhance sustainability. However literature review conducted by Harvey and Reed (2007) on studies of community water projects in Ghana, Kenya, Uganda and Zambia found that contrary to the popularly held view that community principle encouraged project beneficiaries to own and take responsibility for ongoing project operation and maintenance (O&M) which leads to project sustainability. Contrary the study found that community management didn't automatically lead to willingness to manage or finance water supply over a prolonged period of time as facilities fell into disrepair soon after installation.

An empirical relating community resource mobilization and sustainability of community water was carried out by Okungu (2008) in Kisii County in Kenya. The study examined the influence of community driven projects, participatory appraisal and resource mobilization on sustainability of donor funded projects. The study established that community participation in donor funded projects was high during implementation but waned in the post project period. That notwithstanding the study failed to find the effect of failure of community resource contribution to project sustainability. Both Isham, and Kahkonen (2009) and Khwaja (2004) studies confirmed that when community mobilized resources projects performed well but Khwaja found that community mobilization is only valuable for nontechnical aspects of the projects. However none of these studies addressed the influence of participation in resource mobilization on sustainability of community water projects.

## **2.1 Theoretical Framework**

The theory guiding the study is the System theory which was developed by Ludwig von Bertalanffy (1968), and was propounded by the work of Daniel Katz and Robert Kahn of general systems and social ecological systems (Katz and Kahn, 1966). Systems thinking imply that the world can be understood in terms of complex interacting wholes that have inherent characteristics attributable to wholeness rather than properties of component parts. The wholeness in community water projects can bring about sustainability of the projects. This

can be brought about during participation activities such as the interactions of project beneficiaries' in resource mobilization

### III. METHODOLOGY

The study adopted a mixed method research approach to carry out cross sectional, correlation and descriptive survey. The choice of mixed approach allowed for both descriptive and inferential methods in data collection, analysis and interpretation. The target population for this study was beneficiaries of water projects in three Sub Counties of Nyeri County. The Sub Counties had a total of 10 water projects with 1052 beneficiaries. The study picked respondents from three strata that included water project beneficiaries, focus group discussion groups and water project officers. Respondents in the first stratum were picked using systematic random sampling in which 290 were picked and of 290 contacted respondents 207 positively responded to a survey questionnaire representing 71.38 percent successful return rate. Three committee members who were purposely sampled and five ordinary members who were randomly selected were combined and formed the stratum of focus groups discussion (FGD). The third stratum was purposefully sampled and comprised of water officers who participated in semi structured interviews. Descriptive as well as inferential techniques were employed in the processing and data analysis.

### IV. FINDINGS

This section covers both descriptive and inferential findings deduced from data analysis.

#### 4.1 Descriptive Analysis

The study administered 290 questionnaires in the 10 water projects from the three sub-counties (Tetu, Nyeri Central and Mathira) for data collection, out of which 207 questionnaires were properly filled and returned. This represented 71.38 percent successful return rate.

Babbie (2003) suggested that a return rate of 50% is adequate, 60% good and 70% very good for analysis. Chen (1996) argued that the larger the return rate, the smaller the non-response error. This implies that 71.38% return rate was appropriate for data analysis. The 71.38 percent return rate was attributed to the use of self-administered questionnaire in which the researcher was in position to clearly explain items the respondents found difficulties responding to.

#### 4.2 Community Participation in Resource Mobilization and Sustainability Community of Water Projects

Community participation in resource mobilization in the literature is closely linked to the question of project ownership and sustainability. Project resource mobilization as a variable consists of items like labour, money, materials and time. This variable consisted of six items reflecting the respondent's level of participation in mobilization of; labour, initial capital, operation & maintenance fund, external fund, materials from self and external sources. Respondents were asked to provide answers on each item that was measured by a five point Likert scale. Where 5= strongly agree, 4= Agree, 3=Neutral, 2=Disagree and 1=strongly disagree. The results are presented in Table 4.1

**Table 4.1: Community Participation in Resource Mobilization**

	<b>Statements</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>MN</b>	<b>STDV</b>
1	I have done work for my community water project	32 (15.5%)	3 (1.4%)	3 (1.4)	36 (17.4%)	133 (64.3%)	4.14	1.448
2	I contributed money towards initial development of the community water project	9 (4.3%)	2 (1%)	1 (0.5%)	19 (9.2%)	176 (85%)	4.70	0.897
3	I contribute money towards the operations and maintenance of the water project	36 (17.4%)	5 (2.4%)	2 (1%)	26 (12.6%)	138 (66.6%)	4.09	1.530
4	I contributed materials to the community water project	170 (82.2%)	10 (4.8%)	4 (1.9%)	13 (6.3%)	10 (4.8%)	1.47	1.118
5	I assisted to source project finances from other stakeholders towards the community water project	172 (83.2%)	14 (6.8%)	3 (1.4%)	9 (4.3%)	9 (4.3%)	1.38	0.999
6	I assisted to mobilize project materials from stakeholders of the community water project	166 (80.2%)	16 (7.7%)	8 (3.9%)	7 (3.4%)	10 (4.8%)	1.45	1.055

7	I have allowed community water project to construct water pipes through my land	117 (56.5%)	9 (4.3%)	2 (1%)	17 (8.2%)	62 (30%)	2.51	1.832
8	The land on which water infrastructures including tanks is built belong to a member of the community	155 (74.9%)	9 (4.3%)	1 (0.5%)	12 (5.8%)	30 (14.5%)	1.81	1.504
9	Most of the resources needed for operations and maintenance of the water project is provided by the community	22 (10.6%)	11 (5.3%)	24 (11.6%)	82 (39.6%)	68 (32.9%)	3.79	1.255
<b>Mean of Means</b>							<b>2.81</b>	<b>1.293</b>

Results in Table 4.14 indicate that the study assessed whether community members contributed any labour towards the water project. The results recorded a mean score of 4.14 and standard deviation of 1.448 indicate that majority of the respondents were in agreement that they contributed labour towards implementation of the water projects.

In terms of financial mobilization of project members towards the water projects the findings of the study recorded mean of score of 4.70 and standard deviation of 0.897 as shown in table 4.14. This revealed that the respondents were in agreement that they contributed some money towards the initial water projects. The study examined whether community contributed funds towards operations and maintenance of the water project. The analysis returned a mean score of 4.0 as shown in table 4.12 and standard deviation of 1.53. This indicated that most of the respondents were agreement that they contributed funds to carry out operations and maintenance of the water projects.

Further the study established whether the community participated in contributing materials towards the water projects. From survey results returned a mean of 1.47 and standard deviation of 1.118 as shown in table 4.14. This indicate that majority of respondents were in strong disagreement that they never contributed materials towards implementation of the water projects.

The study assessed if the community members participated in sourcing of finances from external stakeholders. The findings indicate that most of the respondents' didn't participate in sourcing of finances from external stakeholders for the projects and is supported by a mean of 1.47 as shown in table 4.12.

In terms of how each of the individual community members participated in mobilizing project materials from other Project stakeholders, the study registered a mean score of 1.45 as is shown in table 4.14. The findings indicated that majority of community members were strong in disagreement that they didn't participate in mobilizing of finances from external project stakeholders. The study established if water pipes are laid through members land. The results recorded a mean score of 2.51 as shown in table 4.14. This meant that most respondent were of the view that the pipes were not laid through members land. It also sought to establish whether the land in which water projects tanks had been constructed belonged to community members. The findings returned a mean score of 1.81 and standard deviation of 1.504 as shown in table 4.14. This indicated that most of the respondents were in strong disagreement that most of the water infrastructure is constructed in members land. The study examined if community members participated in the provision of resources used in the running of the water projects. The results recorded a mean score of 3.79 with a standard deviation of 1.255. This means that majority of respondents were in agreement agreed that they participated in the provision of resources to run the water projects.

The means of nine items used to extract data on community participation in resource mobilization were aggregated and used to compute the mean of means that resulted to a mean of 2.81 and standard deviation of 1.293 this indicated that respondents were indifferent, whereas some participated in resources mobilization others didn't.

The study observed that community members were actively involved in mobilization of initial projects resources for them to be accepted to be members of the project. The resources came in form of labour and project capital.

**Table 4.17: Resources for sustenance of water services**

<b>Most important resources</b>	<b>Frequency</b>	<b>Percent</b>
Project finance	113	54.6
Big intake/storage	75	36.2
Human resource	10	4.8
<b>Total</b>	<b>207</b>	<b>100</b>

Table 4.15 indicates that the study sought the most important resource in the sustenance of water surfaces. Results on this items indicates that project finance as the most important resource followed big water storage or water intake then human resource in that order.

**Table 4.18: Sources of project resources**

<b>Source of the resource</b>	<b>Frequency</b>	<b>Percent</b>
Donors	25	12.1
Government	36	17.4
Donors and government	28	13.5
Community/donors/government	34	16.4
Community	84	40.6
<b>Total</b>	<b>207</b>	<b>100.0</b>

In table 4.16 the study sought the opinion of project beneficiaries on the sources of project resources. Results indicated that respondents believed that community beneficiaries were the biggest source at of project resources with a frequency of 40.6%, followed those who believed it was government 17.4 %, then those who believed it was a combination of community /donors/ & government 13.5% and finally those who believed it was donors was 12.1%.The findings indicated that project beneficiaries were the biggest source of project resources needed for sustenance of community water projects.

The quantitative results on community participation in resource mobilization were corroborated by some of the related themes explored from the qualitative data.

The study observed that members provided labour by clearing site where to build water intake, water tanks and dug trenches where to lay pipes. Members who for one reason or another could not avail their labour were offered alternative to convert labour to money, this practice continued to be applied even to new members who joined the projects later after the initial project implementation.

*“...community contributed 42 days of labour however if you couldn't provide you contributed Kshs 42000 which was equivalent to 42 days of labour- this is the amount of money that is still demanded of a new member to the project” (Respondent , Muteithia WP).*

Resource mobilization is very vital in sustainability of projects because it makes members to feel that they own the project. The observation of this study affirmed the assertion of Isham and Kahkone (2009) who observed that community participation in resource mobilization is closely linked to the question of project ownership and sustainability. The study observed that initial members in many project became members by contributing labour but those who come later after the project was in place were required to convert the labour hours into money.

The study observed some projects applied contribution of some money in admitting beneficiaries to project membership. This is the fund that was used to implement the projects during initial project development. However in some projects, the money contributed by the community was very little to cause any impact and required the intervention of the government. The study observed that in such instances the amount of fund the community contributed was so little to match either the Government or donors' contribution. This was also directly linked to community perception of project ownership which was also found to be low in cases where project beneficiaries' contribution was low. Perhaps this could also explain why sustainability in some projects was low.

*“...The projects was given Kshs 27000 for survey by the area members of parliament, National government gave 32 million from the ministry of irrigation and the members contributed kshs 857,500” (FGD, Githiru, WP).*

When beneficiaries are involved in one way or another in mobilization of resources for their projects it increases their emotional commitment which is significant for participatory development. This observation is line with the assertion made by Isham and Kahkonen (2009) who observed that breath community of participation in a project is measured in terms of the amount of cash or labor contributed to the project. The more the amount of cash or labor or the community contributed meant more demand-responsive the community, hence the more the likely hood of project sustainability.

The study observed that project beneficiaries were aware that beside taking charge of operation there was need for them to take full responsibility of maintenance and repair of their projects facilities because of wear and tear which occurred as a result of continued usage. On the other hand the study noted that due to their low economic status where the average income was Kshs 5000 and below, they fixed at between Kshs 150-300 per month, this user fee is low and was affordable to most of the beneficiaries. The study observed that in the

circumstance if the user fee was kept high it would result to high rates of default which could result to low sustainability.

*“Each member contributes Kshs 300 per month for operations and maintenance” (FGD, Hika WP) “...Our water is metered and therefore consumers pay as per the volume of water used” (FGD, Kiaguthu WP) “...Every member is supposed to pay Kshs 150 per month to cater for opration and maintenance of the water system” (Water officer, Gaithuri WP).*

It is important that community contribute some money to meet cost recovery as this vital issue for financial sustainability of any water project. The observation of this study is in line with that of by Carter 2009 who said that better cost recovery ensures sustainability of water project schemes.

Contribution by project beneficiaries could save the project from being captured by dependency mentality in which case could prevent the project from sustaining itself after the donor withdraws the funding.

This observation was consistent with that of Ostrom (2002) who observed that Voluntary provision of labor, time, money and materials to project by project beneficiaries is a necessary condition for breaking patterns of dependency and passivity.

The study noted that the main material for water project is the pipes which must be fitted when they are of uniform size. Therefore technical requirement necessitated that project beneficiaries make their contribution in form of money which was later used to buy the project materials. In many other projects like Githiru and Kiaguthu the project rule required that the beneficiaries contribute labour while the Government or the donor contributed project materials. Therefore non contribution of materials by members was not by default but by design. Participant in qualitative survey retorted;

*“Members were not required to contribute materials, instead after making the total project budget, the total sum was divided among members that each would contribute” (FGD, Muteithia WP) “...The project received initial project materials from the government through the ministry of water and irrigation and members were only required to mobize labour (FGD ,Githiru WP).*

The study found out that most of the respondents’ didn’t participate in sourcing of finances from external stakeholders; however it done on their behalf by the members of the management committee.

*“...In the year 2000 the management committee members were sent to office of the Vice President of the republic of Kenya to seek for assistance – it is after this that the Vice president then Hon Proffesor George Saitoti helped to realise Kshs 2Million in a fund raising conducted at Ihururu”(FGD, Zamwua WP).*

The findings indicated that majority of community members didn’t participate in mobilizing of finances from external project stakeholders. The reason behind the low participation was because the task of mobilizing finances from external sources was left to a few individuals who went to become project champions in form of project management committee members. The study also learnt that some of the project management committee members owed their positions in the community projects to their ability to mobilize resources from external sources on behalf of the other beneficiaries. The item was clearly clarified through quotes from respondents in FGD who said;

*“...We mandated some members to seek materials from donors like UNDP, Sasini later on elected the same members to become project committee members.*

Evidently having project champions as members of the management committee enhanced project performance, this is a factor that positively impacted on project sustainability. Notably the study realized that the reason why most of the pipes are not laid in members land is they were designed to follow the routes/roads leading to the beneficiaries’ homes hence there wasn’t any need to lay them on members land. This assertion is confirmed by responses from water officer in Zamwua and a participant in FGD Kinaini water project who had this to say:

*“Most of the water infrastructure like water tanks in this area is found on public utility land while most pipes follow the roads leading to beneficiaries homes”(Water officer, Zamua WP).*

However in situations where technical conditions couldn’t allow water pipes to pass following the roads beneficiaries were very willing to allow them to be laid through their lands

*“...Our lands are small and houses close to each other which necessitate most of the pipes to be laid through the members land “(FGD, Githiru WP).*

The study generally observed that what determined where the pipes passed had more to do with what was technically sensible rather than on the willingness of the beneficiaries to allow them laid through their lands.

The study found out that most of the water infrastructure are not constructed on beneficiaries land not because the individual beneficiaries were not willing donate some land but because public land was readily available for the purpose.

*“ ...There was no need of beneficiaries to donate land since the tanks were located on a public land that was initially a livestock holding ground during the colonial times” (Water officer, Njeng’u- Nyaribo WP).*

The study explored the resource most crucial for sustenance of water projects and participants were in agreement that the most crucial resource was project finance, followed by water intake and then human resource. This observation is evidently supported by the views of this participant who said;

*... finance is the most crucial resource because all others depend on it, then followed by a big water intake because if we had one we would get enough water not just for domestic use but even for irrigation purposes ” (FGD, Zamua WP).*

The study also sought the opinion of participants on the source of project resources. Participant responses indicated that the most of the project resources that are most crucial in putting up are sourced from the community project beneficiaries and not from the Government, donors or other stakeholders. The study captured this participant who retorted;

*“...After the donor assisted us with the construction of the infrastructure the duty of operating and maintenance of the project was left to project members , to ensure that everybody is responsible we installed water meters for every beneficiary so that we could be in a position to make cost recovery for the services rendered to beneficiaries” (FGD, Kiaguthu WP).*

This shows that there was a general feeling that community members had the responsibility of carrying out of operation and maintenance of the water projects. Willingness of the project beneficiaries is an indicator of project sustainability. This assertion is backed by Evans and Colin (2005) who observed that the level of willingness of users to provide the necessary resources to keep the system functioning which include time, money and labor may affect the level of sustainability of rural water system. On the hand project beneficiaries are only willing to pay for services commensurate with accrued benefits. This claim is also supported by Evans and Colin, (2005) who avers that water beneficiaries would be more willing to pay for operation and maintenance if they perceived significant improvements in services of the water system

**Table 4.2 Correlation between Resource Mobilization and Sustainability of Community Water Projects**

		Community Participation in Resource Mobilization	Water Project Sustainability
Community Participation in Resource Mobilization	Pearson Correlation	1	.474**
	Sig. (2-tailed)		.000
	N	207	207
Water Project Sustainability	Pearson Correlation	.474**	1
	Sig. (2-tailed)	.000	
	N	207	207

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

#### **4.3 Correlation between Resource Mobilization and Sustainability of Community Water Projects**

The study examined the correlation between community participation and sustainability of community water projects and the Pearson correlations between the variables are shown in table 4.2 .The results indicates The study found that community participation in resource mobilization was positively correlated to sustainability of community water projects (r = 0.474, p < .01).This implies that as the level of community project participation in resource mobilization increases, sustainability of community water projects increases. Community participation in resource mobilization is moderately correlated to sustainability of community water projects.



#### 4.4 Hypothesis Testing

The study hypothesized that: Community participation in institutional collaboration has a significant influence on sustainability of community water projects. Correlation analysis was conducted using Pearson Moment Correlation, to explore the direction of the relationship between independent variable and dependent variable. This was determined by checking the positive or negative value before the (r). The strength of the relationship was based on looking at the correlation value of ( r ) where a rank(r) of 1 implies perfect positive correlation, a rank of  $0.10 < r \leq 0.29$  implied a weak positive correlation, a rank of  $0.30 < r \leq 0.50$  implied a positive moderate correlation, a rank of  $0.5 < r \leq 1$  implied a strong positive correlation; a rank (r) of -1 implied a perfect negative correlation, a rank of  $-0.29 < r \leq -0.10$  implied a weak negative correlation, a rank of  $-0.50 < r \leq -0.30$  implied a moderate negative correlation, a rank of  $-1 < r \leq -0.5$  implies a strong negative correlation. Since the variables were measured on a Likert scale, Pearson Product Moment Correlation was used and these relationships were determined at a 95% confidence level. As such the sample proportion (p) was less is or equal to 0.05 is statistically significant.

The following model was adopted.

$$Y_2 = \beta_0 + \beta_2 X_2 + \varepsilon$$

Y1 = sustainability of community water projects,

X2 = participation in resource mobilization

**Table 4.3: Community participation in project resource mobilization**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.474 <sup>a</sup>	.224	.221	.1434695	.224	59.273	1	205	.000

a. Predictors: (Constant), Community Participation in Resource Mobilization

**Table 4.4: Coefficients of community participation in project resource mobilization**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	.396	.043		9.270	.000
	Community Participation in Resource Mobilization	.568	.074	.474	7.699	.000

Dependent Variable: Sustainability of Community Water Projects

The Table 4.3 also shows that community participation in project resource mobilization had a coefficient R .474 while R<sup>2</sup> was 0.224. Coefficient of R is 0.474 indicated that there was a moderate positive liner relationship between community participation in resource mobilization and sustainability of community water projects. The value of adjusted R<sup>2</sup> of 0.221 indicated that 22.1% of the variations in projects sustainability could be explained by community participation in project resource mobilization in Nyeri County. The final model is  $Y = 0.396 + 0.474X_1 + 0.043$ .

Hypothesis that Community Participation in project resource mobilization has a significant influence on sustainability of community water projects was statistically significant. This meant that an increase in participation of community in project resource mobilization of one unit influenced increased level of sustainability of community water projects by 47.4%.

Quantitative findings of the objective to assess the extent to which community participation in resource mobilization influenced sustainability of community water projects through linear model indicated that the community participation in provision of project labour, initial project capital, and fund for operational and maintenance positively boosted participation in resource mobilization. It further demonstrated that community participation in resource mobilization significantly influenced sustainability of community water projects at 5% level of confidence ( $p < 0.001$ ). The study found that that 22.3% of the variations in projects sustainability could be explained by community participation in project resource mobilization. The regression model explaining this relationship of resulted into  $Y = 0.396 + 0.474X_2 + 0.043$  which meant that an increase in participation of community in project resource mobilization of one unit influenced increased level of sustainability of community water projects by 47.4%. This therefore supported the hypothesis that Community Participation in project resource mobilization influenced sustainability of community water projects.

The findings that community participation in resource mobilization, confirms the assertion of most commentators' who said that it influenced sustainability of projects (Ostrom 2002, Reed 2003, Isham and Kahkone 2009, White 2011). This is also consistent with previous study on the relationship of community resource mobilization and sustainability of community projects. Haysom, (2006) carried out a study of the sustainability of rural water supplies in 38 villages in Tanzania on local financing and cost recovery. The study found a direct correlation between local contributions and project functionality in which 85% of communities that deposited local contributions into a water account were regularly operating and repairing their water systems. Communities that lacked water accounts had failed water systems.

However this study contradicted another by Harvey and reed (2007) on community water projects in Ghana, Kenya, Uganda and Zambia which indicated that whilst community management was an intended principle of encouraging project ownership and as a concept for shifting responsibility for ongoing project operation and maintenance(O&M), and hence sustainability to the community, findings of the study indicated that this didn't automatically led to a willingness to manage or finance a water supply over a prolonged period of time as facilities fell into disrepair soon after installation.

#### **4.5 Recommendations**

Research has shown that awareness on what it takes to produce water and have it delivered at the tap near or in households' has a positive effect on the willingness to pay. This study therefore recommends funds for O&M should be planned for before and responsibility shared out between the stakeholders. On the other household level beneficiaries should be sensitized about the cost of pumping, maintenance of lines and treatment of water supply in relation to the water tariff charged so as to create awareness on the need of user commitment. This has the effect of preventing financial problems during the O&M phase which are key attributes to sustainability.

#### **4.6 Conclusion**

The study sought to establish the extent to which community participation in resource mobilization influenced sustainability of community water projects. The study established that the community participation in project resource mobilization significantly influenced project sustainability. Community should participate in mobilization of labour, initial project capital, and fund for operational and maintenance. The study noted that this type of participation boosted project performance and eventually led to project sustainability. The study demonstrated that community participation in resource mobilization of community significantly influenced t sustainability of projects at 5% level of confidence ( $p < 0.001$ ). The study established that an increase in participation of community in project resource mobilization of one unit influenced increased level of sustainability of community water projects by 0.474 units.

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