

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

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Abstract: Water sector has been undergoing various reforms in the past decade aimed at promoting projects sustainability. There is a general acceptance that community project participation influence project performance however the influence of participation in resource mobilization on sustainability of community water projects is not clear. This study sought to establish the influence of community participation in resource mobilization on sustainability of community water projects in Kenya, a case of Nyeri County. The study adopted a mixed method research anchored on a concurrent triangulation. The study was conducted in three sub counties of Nyeri County, Tetu, Mathira and Nyeri central which had a total of 10 water projects with 1052 beneficiaries. Respondents for this study comprised three strata. In the first strata were water project beneficiaries picked using Yamane formula (1967) and resulted into a sample size of 290 and later proportionately stratified across the ten water projects. Individual respondents of beneficiaries were identified using a systematic sampling procedure and subjected to self administered questionnaire. Out of 290 contacted respondents 207 positively responded to the survey questionnaire representing 71.38 percent successful return rate. The second strata comprised of 8 respondents per project who were included in focus group discussions. Out of these included 3 committee members who were purposely selected and 5 randomly selected ordinary project beneficiaries. The third strata comprised of 10 water officers one each from the 10 water who were subjected to a semi structured interview. Instrument validity was ensured with input from two supervisors from the University of Nairobi while reliability was determined using a split-half testing technique. Quantitative data was analyzed using linear regression model in SPSS software. The study established a significant independent influence at ($p < 0.000$) of community participation in resource mobilization on sustainability of community water projects at 5% level of significance. The increasing strength of participation from weak, moderate to strong was positively correlated to the level of project sustainability. To guarantee project sustainability the study recommends that community projects ensure project beneficiaries are involved in all the stages of the project implementation and management.

Keywords: Community Project Participation, Community Water Projects, Sustainability of Community Water Projects, Water Service Provider, Water service regulatory board

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I. INTRODUCTION

Sustainability of water projects has been of great concern as fewer projects are being sustained which means that the cost of implementation is not commensurate to the benefits accrued (UNDP, 2009). Various global efforts have attempted to address the growing water problem, increasingly inefficient public sector services and lack of project sustainability. One of the major subscriptions has been community project participation and there has been a rush to jump on the participatory bandwagon (Mansuri and Rao, 2004). However attempts to address the problem using community management model have not born positive results in Sub-Saharan Africa. In Ghana, the government tried to address the challenge of lack of water project sustainability by establishing community sanitation authority within a framework of decentralization whereby community drilled boreholes and fitted them with manually operated; however the pumps often broke down within no time making the communities to fall back on traditional water sources (Carter, 2009). Kenya has approximately about 680 community water projects that provide over 740,000 households with water throughout the nation. However majority of them are not active due to poor management and lack of maintenance (Republic of Kenya, 2007).

In the year 2000, the UN established the millennium Development Goals (MDGs) and identified Water supply sanitation (WSS) as projects that could be used to achieve its social development objectives. The 2009 MDG report indicate that the world was on track to achieve the safe water target, however it cautioned that 884 million people worldwide still used unimproved water sources for their domestic activities in which 84 percent (746 million) of these people were reported to be living in rural areas (UNDP, 2009). Report by UNICEF and WHO (2012) indicate that in rural Sub-Saharan Africa 19 percent of the population still use surface water sources for domestic use. The low access to improved rural water supplies in this region is explained in part by poor sustainability of water infrastructure with report indicating that 36% of rural water supply infrastructure is not working at any given time (IEA, 2006).

Development planners attempted to address the challenges posed by lack of project sustainability by shifting from a centralized, supply-driven paradigm toward a more flexible, demand-oriented strategy (Briscoe and Ferranti 1988). The demand driven supply model requires that water users participate in project planning, implementation, monitoring and evaluation and vests in them key decisions making functions (Sara and Katz, 1997). It is envisaged by development actors and policy makers that Community-managed model of service delivery in the rural water sub-sector as the single most important of the strategies to deliver greater access, equity and sustainability in service delivery (UNICEF and WHO 2012). 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). When Kenya gained her independence in 1963 it adopted a water policy based on the principle that “water is a social good to be provided free of charge with heavy subsidies and without cost recovery” (JMP, 2012). However due to budgetary constraints and failure of centralized system of supply, a new approach was adopted in 1992 which emphasized on decentralization and demand driven approach. This policy was implemented by adopting Community-managed based model of service delivery in the rural areas of Kenya. Community management model brought some improvements which include time saving, reduction in water borne disease and other benefits in limited targeted projects (Sida, 2009). Despite these improvements, challenges of sustainability and viability continued in community level projects and this is noted in various sector reviews reports (Sida, 2009).

In an effort to improve sustainability and access to water, the Kenya water act 372 was reviewed resulting into a new of water act 2002 whose Implementation is guided by the national water service strategy (NWSS) for the year 2007-2015. The strategy is based on the principle of sustainable access to safe water as a human right as well as an economic good with commitments to cost recovery by service providers and formalization of service provision. The water act also established WASREB as the national institution with the mandate of carrying out water service regulation. 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).

Among the reforms brought by the Kenya water act 2002 was a requirement of active community involvement in terms of resource mobilization in the implementation and management of community water projects which envisaged at addressing the question of sustainability. According to WASREB (2013) annual performance report, access to water in Kenya stood at 54% with large disparities between geographic areas with Northern Counties of Kenya have less than 30% of access to safe water as compared to some 60% in Central Kenya with the highest level of 72% registered in Nyeri County. However even within Nyeri County large disparities still exist with some sub counties registering a performance index of 74% while others have a low of 30% which beg for answers. The report continued to cite Nyeri County as having some of the most efficiently run community water services; however the report didn't indicate if the observed performance is due to the difference made by community participation in resource mobilization nor has it attributed it to any known factor.

The water projects in this study are in Nyeri County of Central Kenya. The county is sandwiched between two fresh water towers of Aberdares Ranges and Mount Kenya. The projects are located in Tetu, Nyeri Central and Mathira Sub Counties of Nyeri County. They are managed by a committee of between 9 - 15 people under the supervision of Sub County Water Officers seconded from the Ministry of Water and Irrigation (M.E.N.R, 2010).

Participation in resource mobilization was aimed to intervene in various important aspects of community projects that includes planning (to ensure suitability of projects and technology Despite the existence of community participation in resource mobilization which is aimed at addressing the question of sustainability, no empirical study had been carried out to find out its influence on the sustainability of community water projects. A study in this area was therefore imperative.

This study was conducted in Tetu, Nyeri Central and Mathira Sub Counties of Nyeri county Kenya. The remainder of the paper is organized into the following sections; literature review, methodology, results and discussions, recommendations as well as conclusions.

II.LITERATURE REVIEW

The concept of project sustainability can be explained from the idea of resilience theory. Resilience in the human context is the ability to adapt to changing conditions through learning and innovation or even transformation (Norton, 2005). Resilience is essential for prosperous development of communities. A system in resilience is one that has the following three characteristics; the capacity to absorb disturbance and still remain within the same domain or state, capable self organizing itself and has the ability to increase the capacity to learn and adapt (Carpenter, Walker, Anderies and Abel 2001).

Applied to a water project a sustainable project is one capable of withstanding social economic challenges, is able to provide same level of services despite changes in the operating environment and has the capacity to even embrace changes and improve. The viewpoint of resilience emphasizes “the need for persistence” that has connection with sustainable development which has the objective of creating and maintaining prosperous social, economic, and ecological systems (Berkes and Folke, 2003).

Grounding the theory to community projects, communities depends on services of ecosystems for its socio-economic development, and hence a “resilient social-ecological system” is “one which has the capacity to continue providing goods and services that support quality of life while being subjected to a variety of shocks”

Literature on water and sanitation sector avers that a sustainable water system is one which has the ability to maintain or expand a flow of benefits at specified level for long period after project inputs have been ceased (Hodgkin, 1994), one which is able to provide an acceptable level of services all through the design period of the water supply system (Sara and Katz, 1997), one in which water continues to be available for the period for which it was designed in the same quantity and same quality (Abrams, Palmer and Hart, 1998), “one in which the water sources are not over exploited but naturally replenished, facilities are maintained in a condition which ensures a reliable and adequate water supply, the benefits of the supply continue to be realized by all users over a prolonged period of time, and the service delivery process demonstrates a cost-effective use of resources that can be replicated (Harvey, Reed and Skinner 2002; Carte, Tyrrel and Howsam 2009). From the above-mentioned definitions this study identified several key issues of sustainability in water and sanitation sector as revealed which include; users to finance operation and maintenance costs, some minimal long term external support and flow of benefit to be continued over a long period of time.

Several researchers have also depicted sustainability as a dynamic mechanism (Carter, Tyrrel and Howsam, 2009) have proposed a sustainability chain consisting of four essential components namely motivation, maintenance, cost recovery and continuing support from external institutions and avers that if any one of these is missing may endanger the sustainability of whole system

Sustainability of community water projects is also enhanced by both community involvement as well as community ownership. These are factors which have been found to boost community motivation which is deemed essential as it encourages community to utilize the new water services (Carter, Tyrrel and Howsam, 2009). Hence the researchers opines that signs of community involvement and ownership could be used as indicators of project sustainability.

Water services require cost recovery mechanism in order for their financial sustainability. Cost recovery is essential for water service projects since it enables them meet cost for staffing, training, transport, spare parts, materials, tools, and replacement of units. Cost recovery can ensure projects sustainability hence it is necessary for the community to establish good mechanisms for cost recovery such as the basis of payment, the means of administering and accounting for water charges (Carter, Tyrrel and Howsam, 2009). From the literature reviewed the study adopted sustainability that is based on three broadly defined indicators of a sustainable water project that include operation, maintenance and management.

Community participation in resource mobilization is closely linked to the question of project ownership and sustainability (Isham and Kahkone, 2009). Community projects require resources that are needed to meet the recurrent costs of running and maintaining the system. White (2011) 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. Ostrom (2000) observed that as a condition of breaking the patterns of dependency and passivity it was necessary for project beneficiaries to provide labor, time, money and materials. Reed-Erichem, (2003) emphasized that since water is a shared common property resource and water services have some basic investment costs it is imperative that local communities work together to manage the resources and the services accruing. Therefore communities could engage in civic organizations while donors encourage existing incentives for shared action or co-production of the services. Projects require collect tariffs and cost recovery to cover routine operation from beneficiaries for operation and maintenance of the infrastructure. On the other hand they need continued involvement of community of both men and women, in aspects of system management and maintenance (Harvey, Reed and Skinner, 2002).

Demand by households to be connected to water could be used to signal willingness to support the project; this assertion is supported by Reed-Erichem (2003) who observed that individuals demand to be connected to access safe water determines the extent to which they are willing to pay for the services. In the

same vein Evans and Colin (2005) observed that the level of willingness of users to provide the necessary resources for keeping 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. That notwithstanding willingness may also depend on the level of satisfaction consumer derives from the water service as compared to the previous water sources. Communities would be more willing to pay for operation and maintenance if they perceived significant improvements in services of the water system (Evans and Colin, 2005). Brikké and Rojas (2001) avers that willingness of the community to pay for water services is also affected either by perceptions of ownership and sense of entitlement to free services from the government.

The term willingness to pay is always encountered in almost all the literature on rural water supply. This variable is influenced by project approaches and plays a key-role in sustainability of rural water projects (Ohiani and Oni, 2010). Ohiani and Oni (2010) observed that many of the efforts to strengthen sustainability of community water projects are mainly directed towards the willingness to pay. Willingness to pay 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. Willingness to pay is an expression of the willingness to contribute in cash, but also in kind (Cornwall, 2009).

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).

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 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.

Harvey and Reed, (2007) conducted a literature review on studies of community water projects in Ghana, Kenya, Uganda and Zambia. The findings of the study were 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 study 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 on 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.

III. METHODOLOGY

The study applied cross-sectional survey design to guide the research process, including piloting, data collection, processing and analysis, as well as reporting. The study was based on 10 community water projects that had 1052 water project beneficiaries. The study picked respondents from three strata that included water project beneficiaries, focus group discussion groups and water project officers. Systematic random sampling was applied to select respondents from the first stratum that comprised of water project beneficiaries. Out of 290 contacted respondents 207 positively responded to a survey questionnaire representing 71.38 percent successful return rate. The second stratum comprised ten focus discussion groups (FGDs). Each of the group comprised eight individuals of three committee members who were purposely sampled and five ordinary members who were randomly selected. The third stratum comprised of ten water officers who were purposefully sampled one from each project and used as respondent in semi structured interviews. Quantitative as well as qualitative techniques were employed in the processing and analysis of the data.

The descriptive study utilized the quantitative analysis whereby mean and frequency distributions with percentages and cross tabulation were obtained. Regression analysis was utilized to test the hypothesis. On the other hand qualitative data was transcribed, clustered into nodes and explored for patterns and meaning to participation in resource mobilization on sustainability of community water projects.

IV. RESULTS AND DISCUSSIONS

Demographic Information of the Respondents

This section present demographic information of the respondents of the members of the ten community water projects in the three sub counties of Nyeri County. The study began on the premise that capacity of the community is a critical antecedent to participation, which in turn, enhances resource mobilization process in the course of project implementation.

Table 4.1: Demographic Information

Categories of Demographics	Frequency	Percent
Gender		
Male	121	58.5
Female	85	41.1
No Response	1	.5
Total	207	100.0
Age of the respondent		
18-25	3	1.4
26-35	16	7.7
36-45	27	13.0
46-55	60	29.0
56 and above	101	48.8
Total	207	100.0
Education		
No formal education	12	5.8
Primary	94	45.4
Secondary	80	38.6
College Diploma certificate	17	8.2
First Degree and above	4	1.9
Total	207	100.0
Current Occupation		
Farming	169	81.6
Employed	11	5.3
Causal Labour	4	1.9
Business	17	8.2
Others	6	2.9
Total	207	100.0
Monthly income(approximate)		
5000 and below	88	42.5
5001-10000	60	29.0
10001-15000	23	11.1
15001-20000	19	9.2
20000 and above	17	8.2
Total	207	100.0

The result is presented in table 4.1 revealed that 121(58.5%) of respondents were male while 85(41.1%) female. This indicates that the roles of both gender is being appreciated in the water projects under this study. This is very important because when both men and women are working together on projects their aspirations and needs are considered, valued and favoured equally which facilitate project sustainability (EU, 2005).Furthermore for water services delivery initiatives to succeed, particularly in the rural areas, the role and the status of women in the sector should be associated with the recognition that water is women’s work and that they play an important role in environmental protection and management (UNDP, 2006).

The age of the respondents indicated that 101(48.8%) were 56 years old and above while 60(29%) were between 46-55 years old. When computed the average mean of the respondents was 4.16.the data indicates that majority of the respondents were of the age 56 and above. Therefore most of the community members are aged.

Water use is directly related to the age of the members of the households. Households teaming up with youth tend to use volume of water for domestic chores and economic activities as opposed to with those with aged households (Wijk-Sijbesma, 1998). The study noted that like in many other rural areas majority of the community members were aged and not economically very productive hence their demand for water is not very high and this could partly explain the observed water project sustainability because of low demand for the commodity.

The results of the study revealed that community under the study had some level of basic education with 94(45.4%) of the respondents having primary school education while 80(38.6%) had secondary school education. The result reveals that the communities in the water projects had some moderate level education. Given that the community had some level of education had the implication that they were be in a position make some valid and informed decisions that impacted moderately positively on project sustainability. This observation is consistent with that of Gitari, Mbabazi and Jaya (2016) who avers that households with some basic education are in a position to provide valid and consistent information that impact positively on sustainability of water Projects in their locality. The findings also support those by UNESCO (2002) that observed that sustainable development requires knowledgeable, caring and informed decision makers capable of making the right choices on the complex and interrelated economic, social and environmental issues facing mankind. Issues raised in water projects are complex and transcends economic, social and environmental sectors and therefore require that the stakeholders are be informed and hence their level of education has some implications.

The study also study revealed that 169(81.6%) of the respondents were farmers and who earned income above Kshs 5001 per month. The literacy levels coupled with the levels of income of the community implies that that the communities in the water projects have some capacity to manage the water projects. Capacity at community level is needed inform of the skills to manage water effectively and to lobby for improvements. (Sullivan, Meigh, Fediw, 2002). Indicators of the community capacity include the levels of education, income, as well as the presence and effectiveness of water users' associations (Sullivan, Meigh, Fediw, 2002).

Sustainability of Community Water Projects

The study examined sustainability of community water projects using the following indicators; ability of the consumers to pay monthly water bills promptly, ability of the project to pay workers salaries payment on time ,ability to pay the required licenses and tariffs on time, whether the water infrastructure in good working condition, whether the project has capacity to carry out major repairs whether water provided by the project is free of dirt and germs whether provides continuous flow of water on daily basis, whether the project has ability to meet emerging water demand if there has been an increase in membership in the projects willingness to pay for services given by water projects and if the consumers were satisfied with the services of the community water project. Respondents were asked to provide answers on 11 Likert items in the questionnaire that were measured by a five point Likert scale where 5= strongly agree, 4= Agree, 3=Neutral, 2=Disagree and 1=strongly disagree. The results data obtained from the respondents is indicated in table 4.2

Table 4.2: Sustainability of Community Water Projects

	Statements	SD	D	N	A	SA	MN	STDV
1	I am able meet payment of my monthly water bills promptly	29 (14.1%)	9 (4.3%)	14 (6.8%)	51 (24.6%)	104 (50.2%)	3.93	1.417
2	The water project is able to pay salaries of workers on time	30 (14.5%)	6 (2.9%)	31 (15.0%)	57 (27.5%)	83 (40.1%)	3.76	1.386
3	The project is able to pay the required licenses and tariffs on time	4 (1.9%)	3 (1.4%)	40 (19.4%)	57 (27.5%)	103 (49.8)	4.22	0.938
4	The water pipes and tanks are always in good working condition	77 (37.1%)	22 (10.6)	8 (3.9)	67 (32.5)	33 (15.9)	3.06	1.328
5	Project has capacity to carry out major repairs on time	17 (8.2%)	46 (22.2%)	13 (6.3%)	84 (40.6%)	47 (22.7%)	3.47	1.284
6	The water provided by the project is free of dirt and germs	36 (17.4%)	68 (32.9%)	23 (11.1%)	58 (28.0%)	22 (10.6%)	2.86	1.477

7	The project provides continuous flow of water on regular basis	23 (11.0%)	59 (28.5%)	15 (7.2%)	62 (30.0%)	48 (23.3%)	3.26	1.378
8	The Project has ability to water Demand	26 (12.6%)	90 (43.5%)	6 (2.9%)	52 (25.1%)	33 (15.9%)	3.26	1.378
9	The membership of the project Increasing	17 (8.2%)	8 (3.9%)	15 (7.2%)	73 (35.3%)	94 (45.4%)	4.06	1.193
10.	Willingness to pay for services water Projects	15 (7.2)	6 (2.9)	8 (3.9)	80 (38.6)	98 (47.4)	4.16	1.123
11.	I am satisfied with the services community water project	17 (8.2%)	8 (3.9%)	15 (7.2%)	73 (35.3%)	94 (45.4%)	3.70	1.226
Mean of Means							3.61	1.284

Item 1 in Table4.2 assessed the ability to pay monthly water bills promptly. The result returned a mean score of 3.93 and a standard deviation of 1.417. Respondents were in agreement that most of them were able to pay their water bills on time. Item 2 examined whether Salaries Workers was paid on time. The score on this item was a mean of 3.76 and a standard deviation of 1.386. This result indicated most of the respondents believed that their water projects were in a position to pay workers salaries on time.

Item 3 examined whether the water paid the necessary tariffs on time. The item scored a mean of 4.22 and standard deviation of 0.938. The result indicated that most of the respondents in agreement that their water of the opinion that their water projects complied with the payment of the necessary licenses and water tariffs. Item 4 reviewed whether the water infrastructure was in good working condition. The result recorded a mean score of 3.06 and a standard deviation of 1.328. The results indicate that there wasn't a clear consensus that the water project infrastructure was always in good working condition. Half of the respondents were in agreement that the projects pipes and tanks were always in good working condition while the other half expressed opposite opinion.

Item 5 sought the Project capacity to carry out major repairs. The mean score was 3.47. It shows that almost an equal number of respondents either affirmed or failed to affirm that the projects had the capacity to carry out major repairs.

Item 6 examined if water provided by the water projects was free of from germs and Dirt. The mean score was 2.86 and standard deviation was 1.477. The result indicated that almost an equal number of respondents either affirmed or failed to affirm that the water provided by the projects was free from germs and dirt.

Item 7 investigated whether the water projects supplied continuous flow of water. The item recorded a mean score of 3.26 with standard deviation of 1.378. The results indicate that Respondents were indifferent with almost half of the respondents who were in agreement that the projects provided continuous flow of water with another half who disagreed.

Item 8 examined the ability of the projects to meet emerging water demand. The score on this item was a mean of 3.26 and standard deviation of 1.378. Similarly results showed that the respondent were divided over the issue, with one half holding that the projects were not in a position to meet to meet emerging water demand while the half affirmed. Item 9 assessed if the project membership had been increasing. The item returned a mean score of 4.06 and standard deviation of 1.193. The results indicated that majority of the respondents were in agreement that membership in their project had increased.

Item 10 assessed the willingness of project members to pay for services provided by the water projects. The score on this item was a mean of 4.16 and standard deviation of 1.123. This indicated that majority of the respondents were in agreement of their willingness to continue paying for the services provided by the water projects.

Item 11 reviewed the satisfaction of the project members with services provided by the water projects. Responses returned a mean score of 3.70 and standard deviation of 1.226. The result implied that majority of the respondents were in agreement they were satisfied with the services offered by the water projects.

The study explored ability of the water beneficiaries to pay their monthly bills for water consumption on time. In summary the findings of the study indicated that the respondents were able to pay their water bills on time, the projects paid workers, licenses and tariffs on time, projects had the capacity to carry out major repairs, project membership had increased with time, indicated the continued willingness of the beneficiaries to pay for services rendered by the projects and indicated that beneficiaries were satisfied with the services provided by the water projects. However the respondents were indifferent that the water provided by the project was free of dirt, flow of water was continuous and projects had ability to meet emerging water demand. The study went

further and to compute the mean of means of the 11 items that extricated the project sustainability in order to obtain the composite scores for this variable. The mean of means was 3.61 and a mean standard deviation of 1.284. The result indicates that majority of the respondents were convinced that community water projects were sustainable.

Using both focus group discussions and semi structured interview was also able to obtain qualitative data. The study sought information on ability of water consumers to pay their monthly water bills on time. Payment of monthly water bills is vital for project to recover cost required for activities required to run the water system. This observation supports the views of Carter, Tyrrel and Howsam (2009) who averred that it was necessary for water schemes to fix cost recovery mechanism such as the basis of payment and accounting for water charges because cost recovery could ensure sustainability community projects. Majority of the respondents were in agreement that they were able to pay their water bills on time. The study noted that the fixing and reviewing water user fees was set by members through consensus and as such the rate set were affordable to the majority. However despite the low charges some members still raged behind in payment. Majority being rural farmers depend on income from farm produce whose market prices fluctuates seasonally hence the income.

Majority of the respondents were rural farmers whose income depended on farm produce whose price fluctuates seasonally hence lack money when the prices go or when there isn't anything to sell. Majority of the projects under this study were small in scale, employed a few workers hence the wage bill was small and therefore had the ability to pay workers on time. Projects like Kiaguthu and Muteithia had committee that performed project monitoring activities on voluntary basis and this perhaps explains the small wage bill hence the ability to pay. That notwithstanding some projects experienced difficulties paying their workers owing to the refusal of the project members to pay for water services. When probed further, the study revealed that the refusal of members to pay was as a result of poor service delivery by said projects. This meant that the ability to pay was closely tied to the question of the quality of the service delivered. This meant ability to pay would improve with improvement of the services.

Majority of the project under this study had up-to-date in compliance with payment of water sector licenses and tariffs. Capacity of the water sector institutions was enhanced by coming into force the Water Act 2002. As such their watch dog roles was enhanced to an extent that it is difficult for water service providers to fail to comply with tariff payment, otherwise non compliance results to closure projects. In this case most projects opt to comply with requirements. The study reviewed the state of the water infrastructure to find out if it was in good working condition. There was wasn't a clear consensus that the water project infrastructure was always in good working condition. Halfway the respondents were in agreement agreed that the pipes and tanks were always in good working condition. The other half expressed opposite opinion. The study observed that respondents who received continuous flow of water answered this question in the affirmative. However the study also noted that water rationing was practiced in many projects and as such respondents didn't perceive their projects to be in good working conditions.

A sustainable community water project has to have a preventive maintenance (Harvey and Reed, 2006). The study revealed that a slight majority of the respondent were of the view that the projects had the capacity to carry out major repairs. Majority of the water projects investigated were of small scale in nature and delivered water through gravity. They applied simple technology that could be efficiently operated under community water project model. However it was also noted that at times breakdowns overwhelmed the capacity of the projects operation and maintenance team and in such circumstances indulgence of external collaborators was necessary.

This study examined if the water provided by the water projects was safe of from germs. Respondents were in different with half indicating that the water provided by their projects was clean because it rarely caused outbreak of water borne diseases. Many of the respondents associated cleanliness of water to lack of disease causing microorganisms. Many are a times respondents commented that although the water received had some solid particles it was clean since they couldn't attribute it to water borne diseases. Some of the respondents perceived the water to be dirty even if it caused no illness. On further probing it was found that that this perception was associated with the fact that since most of the water provided by community water projects was not treated at times it had solid particles suspended on it hence wasn't clean.

The study sought on whether the water projects supplied continuous flow of water. Respondents were indifferent with a half expressing the opinion that projects provided continuous water supply. The other half felt that projects were not in a position to sustain a continuous water supply of water in all seasons. The study observed that due to increased growth in the number of consumers many of the water projects were not in a position to keep pace with demand and as a stop gap measure had resulted to water rationing. Where communication about the reasons behind rationing was not proper it had resulted to apathy among the beneficiaries of the water services especially the pioneer members. Sustainability of water projects was also examined in terms of the ability of projects to meet future water demands. Findings from the study indicated that

there wasn't an outright consensus on this. Half of the respondents were of the opinion that their water projects could meet emerging water demands. This view was shared by respondents in projects that had continuous supply of water and whose management committee was perceived as efficient. On the other hand the study found out that the respondents who felt that their projects couldn't match the expanding demand due exponential increase in the population and therefore thought that the future scaling capacity was only possible if the projects were to partner with external institutions like Government and donors. The study established that projects had the capacity to construct small scale projects that required simple technology and small scale financing that was available in the community. However this wasn't possible for projects that could manage to meet the ever expanding population demanded complex water projects that required more advanced technology and huge capital investment. In this scenario the study established the necessity for the community projects to engage the assistance of external institutions to fill this gap. This observation is in line with that of Kwanja 2004 who observed that communities are good in mobilizing resources and managing projects that are nontechnical in nature but poor in projects that required sophisticated technology.

The study assessed dynamism of projects in terms of project membership. Majority of the respondents felt that membership in their project had increased. The study attributed this phenomenon to transparency and efficient management. The study observed that increased membership occurred only in projects that were deemed to run transparently and efficiently. However when members perceived their management committee to be corrupt they withdrew their membership.

Sustainability of water projects was also measured in terms of the willingness of project members to pay for services rendered by the water projects. Majority of the respondents expressed their willingness for continued payment for the services rendered by the water projects. The study noted that willingness for continued payment of services was directly linked to benefits accrued to members. Similar sentiments were expressed by the water officer in Kinaini water project who observed that payment of water services had picked up to 90% from since he was seconded to the water projects. He felt that he had managed to build the capacity of the new management committee on prudent project management hence the confidence of the beneficiaries had increased.

Willingness of the majority of the water projects beneficiaries to pay for the water services indicated better project cost recovery that could ensure project sustainability. The study observed that water consumers were willing to pay for the water services so long as they are assured of a predictable supply. In projects whose supply ceased consumers indicated willingness to resume payment if they were assured of supply. This clearly indicated that water consumers were ready to support projects as long as they associated them with benefits. Satisfaction of the project members with services provided by the water projects was determined in this study. Majority of the respondents implied they were in agreement that they were satisfied with the services offered by the water projects. The study observed that project members associated high level of projects control open project management with more project benefits, this them to be more satisfied.

Assessment of the changes realized since implementation of the water projects, indicated that 107(51.7%) of the respondents realized improvement in access to domestic water, 40(19.3%) access to domestic and irrigation water, 47(22.7%) to irrigation water while 13(6.3%) didn't observe any change. The study observed that project implementation resulted in many positive changes. Access to domestic water resulted into significant changes which included improvement in the level of hygiene, reduced distance to water point which also saved on time. The saving on time to fetch water resulted in increased farm productivity because people put more time doing farm labour and livestock rearing. Majority of the households in this region are small scale farmers whose live hood depended on subsistence farming. When access to domestic water improved farmers were in a position to improve their livestock husbandry by embracing zero grassing method of cattle rearing; a method that depends on a standby water source, at the same time farmers were as also able to easily practice other forms of livestock rearing like chicken and piggery. These activities resulted into increased food security and household income.

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 data obtained from the respondents is indicated in table 4.3

Table 4.3: Community Participation in Resource Mobilization

	Statements	SD	D	N	A	SA	MN	STDV
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
	Mean of Means						2.81	1.293

Item 1 in Table 4.3 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.

Item 2 reviewed the financial mobilization of project members towards the water projects. The findings recorded mean of score of 4.70 and standard deviation of 0.897 as shown in table 4.14. Majority of the respondents were in agreement that they contributed some money towards the initial water projects.

Item 3 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 4.3 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.

Item 4 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.

Item 5 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.

Item 6 examined if the individual community members participated in mobilizing project materials from other Project stakeholders. This item registered a mean score of 1.45 as is shown in table 4.3. 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.

Item 7 established if water pipes are laid through members land. The results recorded a mean score of 2.51 as shown in table 4.3. This meant that most respondent were of the view that the pipes were not laid through members land.

Item 8 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 4.3. This indicated that most of the respondents were in strong disagreement that most of the water infrastructure is constructed in members land.

Item 9 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 they 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.

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. 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.

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 in 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 the project beneficiaries were aware that beside taking charge of operation there was need for them to take full responsibility in 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. 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. 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. 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. 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 they were designed to follow the routes/roads leading to the beneficiaries' homes hence there was no need to lay them on members land. 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. The general observation is that what determined where the pipes passed had more to do with what t made technical sense rather than the willingness of the beneficiaries to allow to be 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.

Table 4.4: Resources for sustenance of water services

Resources most important	Frequency	Percent
Project finance	75	36.2
Big intake/storage	113	54.6
Human resource	10	4.8
Total	207	100

Table 4.4 shows respondents response on they believed was crucial in sustaining the services of the water projects; 113(54.6%) sited big intake/storage, 75(36.2%) finances while 10(4.8%) human resources. These finding implies that most the crucial resources that the community value most is big intake, finances and human resources in that order. The researcher observed that most of the community water projects were constructed to cater for small population that has since expanded hence the need for big intake to cater for the ever increasing population hence the increased water demand. When asked about the sources of the projects resources they responded as follows; from the community 84(40.6%, Government 36(17.4%), Community/Donors/Government 34(16.4%) 28(13.5%), Donors and Government 25(12.1%). This is shown in Figure 4.5.

Table 4.5: Source of the resource

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

Most of the beneficiaries were of the opinion that the resources that are most crucial in putting up and sustaining the water project are sourced from the community project beneficiaries and not from the Government, donors or other stakeholders. 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.

Hypothesis: Community participation in resource mobilization had a significant influence on sustainability of community water projects. The following model was adopted.

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

Y₁=sustainability of community water projects,

X₂= participation in resource mobilization

Table 4.6: 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 ^a	.224	.221	.1434695	.224	59.273	1	205	.000

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

Table 4.7: 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 4.7 also shows that community participation in resource mobilization had a coefficient R .474 while R² was 0.224. Coefficient of R is 0.474 indicated that there was a weak positive liner relationship between community participation in resource mobilization and sustainability of community water projects. The value of adjusted R² 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 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 labour, initial 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 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 intentioned 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.

V. RECOMMENDATION

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.

VI. 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.

REFERENCES

- [1] Abrams L, Palmer I, & Hart, T (1998); Sustainability Management Guidelines: Pretoria: Department of Water Affairs and Forestry.
- [2] Briscoe, J., and Ferranti D (1988); Water for Rural Communities, Helping People Help Themselves. Washington, DC: World Bank.
- [3] Carpenter, S, B. Walker, Anderies J. M., and Abel N (2001). From metaphor to measurement: Resilience of what to what? *Ecosystems* 4:765–781
- [4] Carter RC, Tyrrel SF, Howsam P. (2009). Impact and Sustainability of Community Water Supply and Sanitation Programmes in Developing Countries, *Journal of the Chartered Institution of Water and Environmental Management* 13. 292-296
- [5] Carter, R. C. (2009). Operation and Maintenance of Rural Water Supplies: Challenging the Community-based O&M Paradigm. *Rural Water Supply Network Perspectives* No. 2. Retrieved from www.rwsn.ch
- [6] Cleaver F. (2001). *Institutions, Agency and the Limitations of Participatory Approaches to Development in Participation: The New Tyranny?* Cooke, B. and U. Kotharieds. Zed Books Ltd. London, UK.
- [7] Ediriweera, I.V.W. (2005). Strategies adopted for sustained water supply and sanitation through community participation in Sri Lanka. 31st WEDC International Conference, Kampala, Uganda.
- [8] EU (European Union), 2005. Toolkit on Mainstreaming Gender Equality in European Community Development Co-operation, Draft Version. E.C. Relex Family Gender Help Desk, p.3-87.
- [9] Gatari S, Mbabazi M, Jaya S (2016); Factors Influencing Sustainability of Water Projects in Gahondo ;: A Case of Water Projects in Muhanga District, Rwanda.
- [10] Hair, J. B., Babin, W., Anderson, & Tatham, R. (2006). *Multivariate Data Analysis*, 6th edn, , New Jersey: Pearson Education
- [11] Harvey P.A., Reed R.A. and Skinner B.H (2002). “Guidelines for Sustainable Hand pump Projects in Africa” Interim Report, WEDC
- [12] Harvey, P. A., & Reed, R. A. (2007). Community-managed water supplies in Africa: sustainable or dispensable? *Community Development Journal*, 42(3), 365.
- [13] Hodgkin J. (1994); *The Sustainability of Rural Water Supply Projects*”, WASH Technical Report No. 94, April IEA (Institute of Economic Affairs)(2007); “A Rapid Assessment of Kenya’s Water, Sanitation and Sewerage Framework.” Nairobi:
- [14] Haysom, A. 2006. A Study of the Factors affecting Sustainability of Rural Water Supplies in Tanzania. Cranfield University, Silsoe: Institute of Water and the Environment.[Online] Available from http://www.wateraid.org/documents/plugin_documents/functionality_and_sustainability_study_by_alexia_haysom.pdf [March 10, 2012].
- [15] Institute of Economic Affairs (IEA), (2006), Kenyans’ verdict. A citizen’s report card on the Constituencies Development Fund (CDF), Nairobi.
- [16] Isham, and Kahkonen (2009); "Institutional Determinants of the impacts of community Institute of Economic Affairs: A Rapid Assessment of Kenya’s Water, Sanitation and Sewerage Framework, ; Retrieved 16 March 2010.
- [17] Joint Monitoring Programme for Water Supply and Sanitation (JMP) (2012): Retrieved 24 April 2012
- [18] Khwaja, A (2004), Is Increasing Community Participation Always a Good Thing? *Journal of the European Economic Association* April-May 2004 2(2-3):427- 436 © 2004 by the European Economic Association.
- [19] Lockwood, H. and Smits S. (2011); *Supporting Rural Water Supply: Moving towards a servicedelivery approach*. Warwickshire, UK: Practical Action Publishing Ltd.
- [20] Mausuri, G. and V.Rao. (2004); “Community based and Driven Development: A critical Review.” *The World Bank Research Observer*, 19(1): 6, 31.
- [21] M.E.N.R. (2010); “Zaina Water Scheme Handing over Statics Report” Ministry of Environment and Natural Resources WD/NYR/PRI/8/VOL.1/379 Nyeri , Kenya.
- [22] MWI (2010), *Challenges Facing Water Resources in the World*. World Water Day Advertising feature. Nairobi
- [23] Norton, B. G. (2005). *Sustainability: A philosophy of adaptive ecosystem management*. University of Chicago Press Chicago, Illinois, USA.
- [24] Ostrom, E. (2000). Private and Common Property Rights. In *Encyclopedia of Law and Economics*, Vol. II: Civil Law and Economics. Ghent, Belgium: University of Ghent, pp. 332–379.
- [25] Prokopy, L. S. (2005); “The Relationship between Participation and Project Outcomes: Evidence from Rural Water Supply Projects in India.” *World Development* 33 (11): 1801–19.

- [26] Republic of Kenya, (2007). National Water Services Strategy: 2007-2015. Ministry of Water and Irrigation, Nairobi.
- [27] Sara, J and Katz Travis. (1997). "Making Rural Water Supply Sustainable: Report on the Impact of Project Rules." Washington, DC: UNDP/World Bank Water Program.
- [28] Sida (2009). Kenya Water and Sanitation Programme and the Water Sector Reform Programme; A Joint Sida, GTZ and Government of Kenya Mid-Term Evaluation Mission Report.
- [29] Sullivan, C.A., Meigh, J.R., Fediw, T., 2002. Developing and Testing the Water Poverty Index: Phase 1 Final Report. Report to Department for International Development. Centre for Ecology and Hydrology, Wallingford.
- [30] UNDP (2006), Resource Guide: Mainstreaming Gender in Water Management. Produced by the Energy and Environment Group of the UNDP and the Gender and Water Alliance, accessed in 2007 at www.groundwater.org.
- [31] UNDP (2009) Experience of Water Supply and Sanitation, pp. 48–49. London: Human Development Report. New York: UNDP.
- [32] UNESCO (2002) Teaching and Learning for a Sustainable Future. See www.unesco.org/education/tlsf
- [33] UNICEF and WHO (2012); Progress on Drinking water and Sanitation. New York: United Nations.
- [34] Water Services Regulatory Board (WASREB) (2013) Impact: A performance Report of Kenya's Water Services Sub-Sector, Issue No. 3
- [35] Wijk-Sijbesma, C. (1998). Gender in Water Resources Management, Water Supply and Sanitation. Roles and Realities Revisited. The Hague: International Water and Sanitation Centre.

Fredrick N. "Community Participation in Resource Mobilization and Sustainability of Community Water Projects In Kenya." IOSR Journal Of Humanities And Social Science (IOSR-JHSS) 22.8 (2017): 54-68.